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INFORMATION SYSTEMS IN ECONOMIC AND BUSINESS

*Methodical instructions for performance of laboratory works for training
bachelors in Telecommunication*

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LABORATORY WORK № 1

Theme: Automation systems of enterprise management

1.1 Purpose of work: To research work principles of the automation system of management of the enterprise «ИНФИН-УПРАВЛЕНИЕ».

1.2 Key points

The system of enterprise automation of «ИНФИН-УПРАВЛЕНИЕ» was developed by the company "INFIN", by the leader of market of the computer programs for automation of record-keeping and management of an enterprise. This system of automation contains a financial, operative and administrative account on an enterprise or a group of enterprises of different industries and spheres of activity and oriented on work in the environment of the operating systems «Windows». The system of enterprise automation of «ИНФИН-УПРАВЛЕНИЕ» is an ERP system

The **enterprise resource planning (ERP)** system is an integrated computer-based application used to manage internal and external resources, including tangible assets, financial resources, materials, and human resources. Its purpose is to facilitate the flow of information between all business functions inside the boundaries of the organization and manage the connections to outside stakeholders. Built on a centralized database and normally utilizing a common computing platform, ERP systems consolidate all business operations into a uniform and enterprise-wide system environment.

In 1990 Gartner Group first employed the term ERP. The term «enterprise resource planning» originally derived from manufacturing resource planning (MRP II), which followed material requirements planning (MRP). MRP evolved into ERP when «routings» became a major part of the software architecture and a company's capacity planning activity also became a part of the standard software activity. ERP systems typically handle the manufacturing, logistics, distribution, inventory, shipping, invoicing, and accounting for a company. ERP software can aid in the control of many business activities, including sales, marketing, delivery, billing, production, inventory management, quality management, and human resource management.

The main advantages of the ERP

Today there are the five main advantages of the ERP:

1. If you want integrate all financial information of the enterprise it is necessary to use ERP.
2. If you want integrate all information about sales it is necessary to use ERP.
3. If you want to standardize and speed up the production process it is necessary to use ERP.
4. If you want to cut down the storage size it is necessary to use ERP.
5. If you want to standardize the human resources it is necessary to use ERP.

The main function of the ERP

Enterprise resource planning systems or ERP systems integrate all departments and functions across a company onto a single computer system that can serve all departments' particular needs. ERP ensures seamless integration of all the information flowing through the company – financial, accounting, human resources, sales, manufacturing, distribution, project and inventory management, planning and maintenance, customer information and e-business. In addition business specific optimization modules can be integrated, analyzing the information flow as a whole and proposing effective optimization steps, leading to more efficient business and manufacturing process.

The most part of modern ERP-systems are constructed by a modular principle that gives the chance of choice to the customer and gives the opportunity of introducing only those modules which are really necessary for him. Modules of different ERP-systems can differ both in their names, and in the maintenance. Nevertheless, there is some set of functions which can be considered typical for software products of the ERP class (see Figure 1.1).

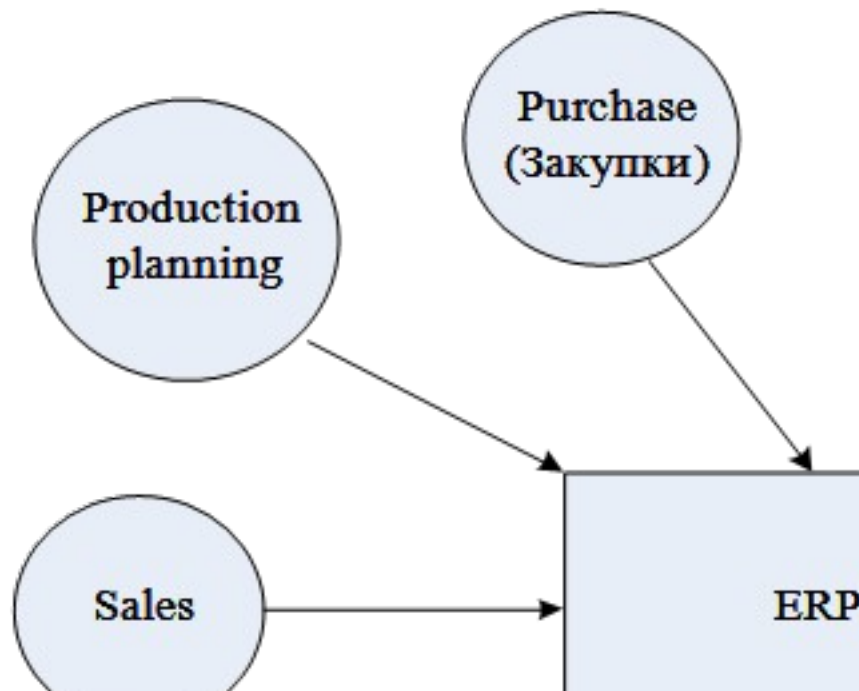


Figure 1.1 – The modules of the ERP

Such typical functions are:

1. Conducting design and technological specifications (engineering) – such specifications define structure of a final product, and also material resources and the operations which is necessary for its manufacturing (including routing).

2. Demand management and formation of plans of sales and manufacture (Sales and BP) – these functions are intended for the forecast of demand and output planning.

3. Materials requirement planning (Production) – allow to define volumes of various kinds of material resources (raw materials, the materials completing),

necessary for production plan performance, and also terms of deliveries, the sizes of parties etc.

4. Inventory management and purchasing activity (Inventory and Purchase) – allow to organize conducting contracts, to realize the scheme of the centralized purchases, to provide the account and optimization of warehouse stocks etc.

5. Planning of capacities (Production) – this function allows to supervise presence of accessible capacities and to plan their loading. Includes the integrated planning of capacities (for an estimation of realness of production plans) and more detailed planning, up to the separate working centers.

6. Financial functions (Accounting) – are included into this group of function of the financial account, the administrative account, and also an operational administration the finance.

7. Functions of management by projects – provide planning of problems of the project and the resources necessary for their realization.

The ERP system the same as the MRP II system, but the ERP has more functions. The main differences between the ERP and MRP II are:

1. The ERP system can manage more types of enterprises than the MRP II.
2. There are more financial functions.
3. There are possibilities to integrate into other systems.
4. There is more attention to the information infrastructure of the enterprise.
5. There exist more efficient tools of setup and configuration system.

The ERP system gives the following advantages for your business:

1. Full integration of all corporative information.
2. The cut down of capital production cost.
3. There is a chance to take an investment for the development of your enterprise.

The structure of ERP systems

The **enterprise resource planning (ERP)** system is an integrated computer-based application used to manage internal and external resources, including tangible assets, financial resources, materials, and human resources. Its purpose is to facilitate the flow of information between all business functions inside the boundaries of the organization and manage the connections to outside stakeholders. Built on a centralized database and normally utilizing a common computing platform, ERP systems consolidate all business operations into a uniform and enterprise-wide system environment.

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optimization modules can be integrated, analyzing the information flow as a whole and proposing effective optimization steps, leading to more efficient business and manufacturing process.

On the figure 1.2 you can see the base concept of the ERP system.

On the figure 1.3 you can see the work diagram of the ERP system.

The adoption of e-commerce and e-business solutions (especially business-to-business (B2B) solutions) within a traditional ERP system enables effectively reaching global customers and remote process control. The Web-based Internet accessible user interface is integrated with the back-office ERP application. The concept of the Internet-enabled extended ERP system is shown in the figure 1.4.

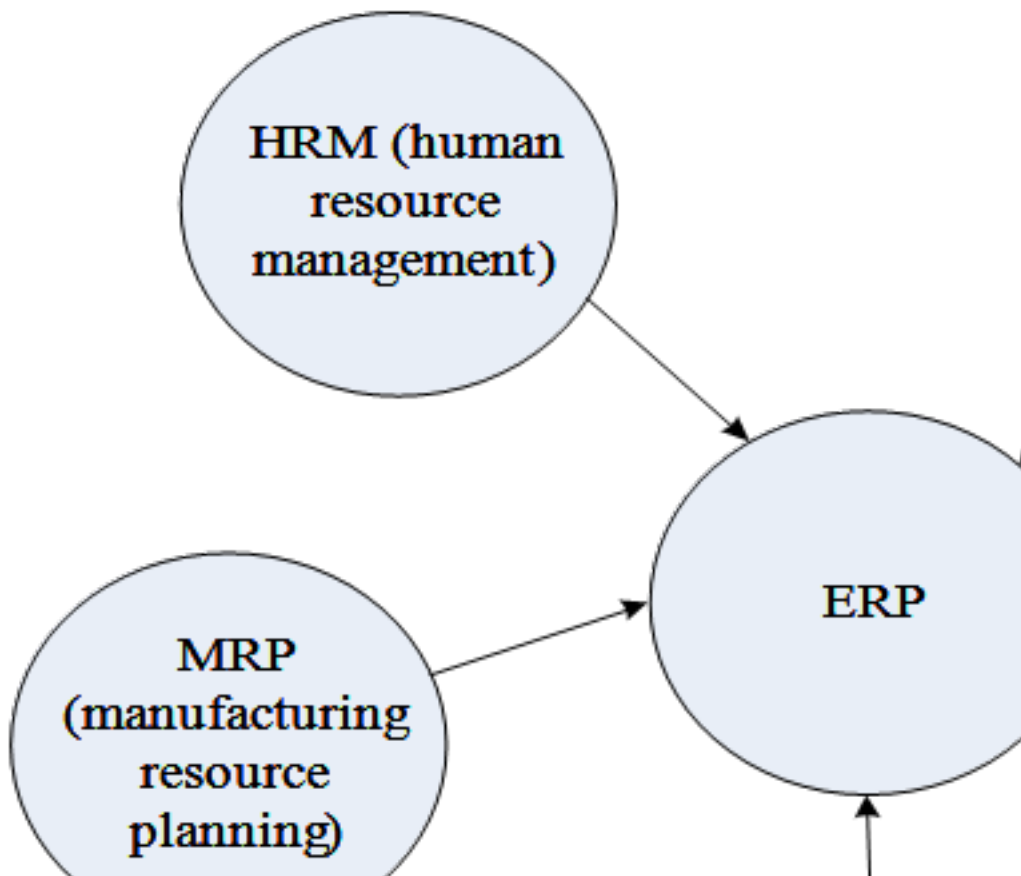


Figure 1.2 – The base concept of the ERP system

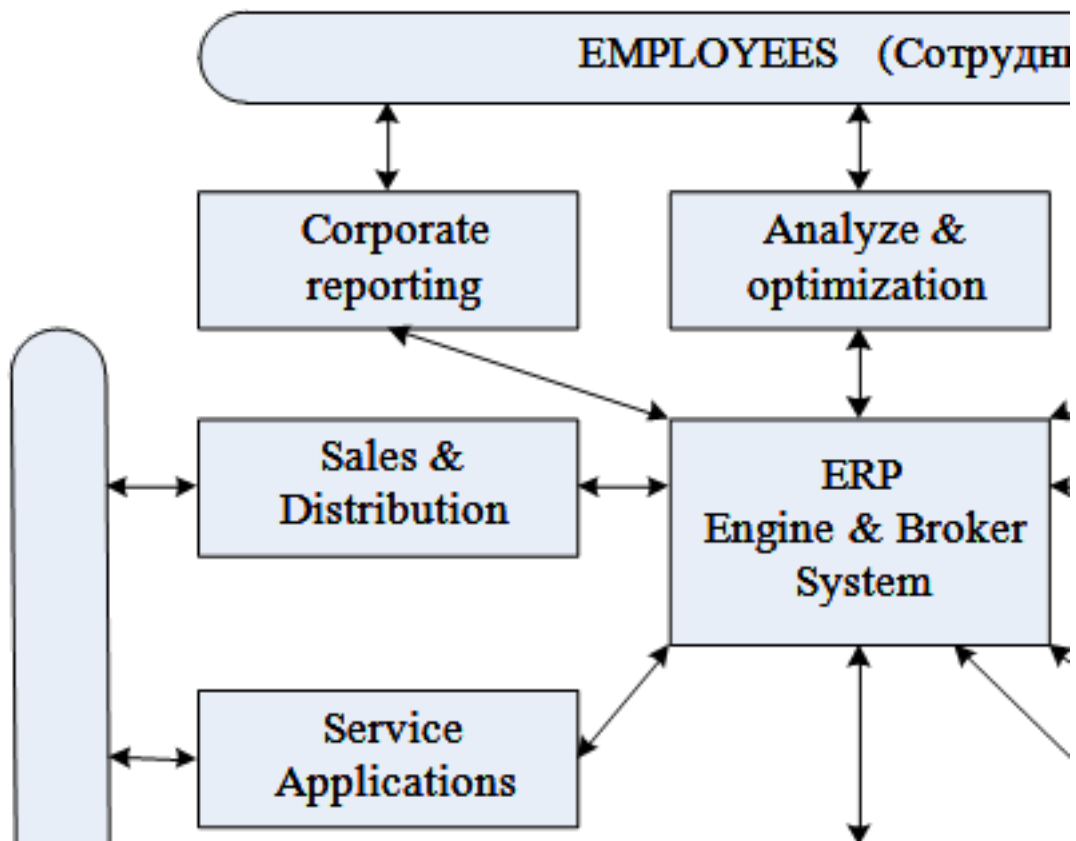


Figure 1.3 – The work diagram of the ERP system

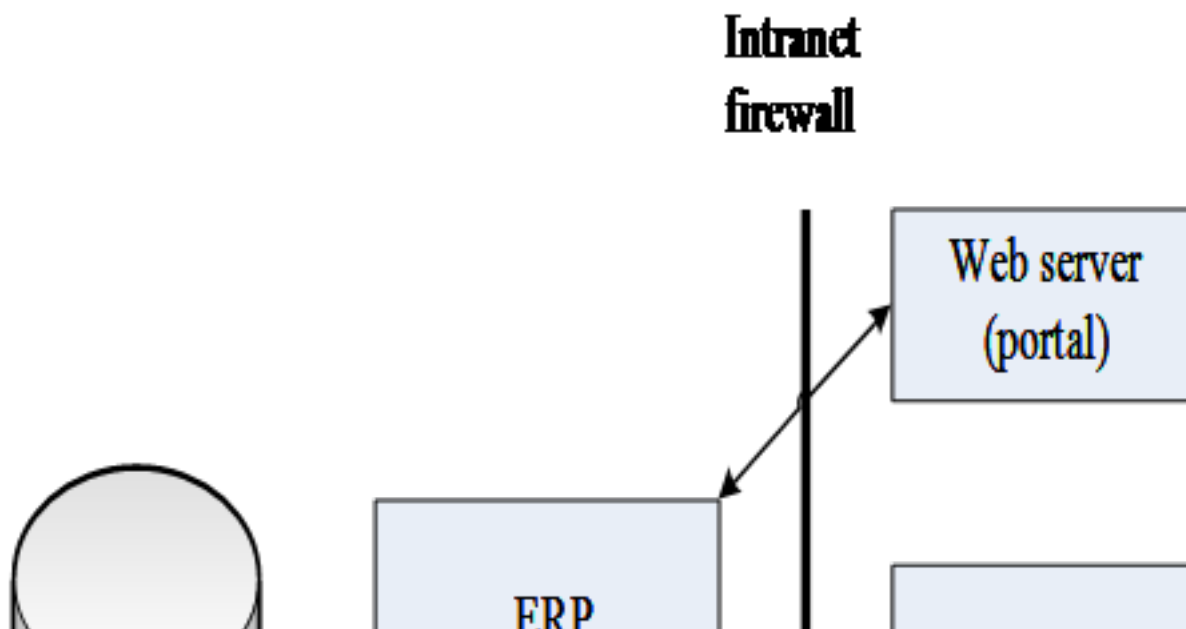


Figure 1.4 – The concept of the Internet-enabled extended ERP system

Classification of the ERP systems

Today there is used the following classification for ERP systems. The ERP systems have the type of classification like the one for the enterprises.

All enterprises can be divided conditionally into the following basic categories (according to the number of employees):

- big corporations (more than 10 thousand employees);
- averages corporations - from 1000 to 10 thousand persons;
- averages enterprises (from 100 to 1000)
- small enterprises (to 100 employees).

So the ERP systems can be classified into the following classes:

- Light ERP systems.
- Average ERP systems.
- Heavy ERP systems.

Basic possibilities of the system of automation of «ИНФИН-УПРАВЛЕНИЕ»

A programmatic complex «ИНФИН-УПРАВЛЕНИЕ» was projected as valuable computer-integrated control system for an enterprise, which allows complex to work out the problems of automation of enterprise or group of enterprises of different industries and spheres of activity, such as:

- Book-keeping in accordance with international standards;
- Ware-house account of commodities, materials, prepared products and other financial values;
- Balanced account, including a consignment commodity, the fixed assets which are leased, etc;
- Management and control of purchases and sales, performing the orders and invoice
- Calculation of unit and pricing cost;
- Operative management of the production cycle or the one of building;
- Budget planning.

Basic advantages of the program «ИНФИН-УПРАВЛЕНИЕ»

Program complex is built according to the architecture client-server and has the following advantages:

- Possibility to work with the greater amount of users and volume of information;
- The unique database is for all programs of the complex;
- High-rate of work of the programs;
- Reliable work in a network;
- It works using both « accounting documents» and « a simple document»;
- Possibility of creation of specialized workplaces;
- Creation of registration lists of any complication;
- Creation of reference books with any additional fields;
- Adjustability of any forms of revision and reports;
- Adjustability of screens of introduction of operations;

- Comfortable screen interface;
- Possibility of work with any printers;
- Comfortable printing forms (analogue of documents in MS OFFICE);
- Possibility of export of any document into EXCEL;
- A simple and comfortable tuning of printing forms in form of a spreadsheet.

Technical requirements to the hardware and software

The basic requirements of «ИНФИН-УПРАВЛЕНИЕ» to the hardware and software resulted into the table 1.

Table 1.1 – The basic requirements to the hardware

	Minimum	Recommended
CPU	Celeron 600	Pentium III 1 GHz
Video adapter mode	640 X 480 256 colors	1024 X 768 high color (16bit)
RAM	128M	256M
OS	Windows 98	Windows 2000/XP
Disc space using		
Files		100M
Database		100M

In the process of working with the operation system Windows and modules of «ИНФИН-УПРАВЛЕНИЕ» temporary files are created, for their creation sufficient free space on a system disk (a size of free space must be at least 100Mb, and optimum to make no less 20% from the general volume of disk) is necessary.

NB: Work of the program under the management of Windows 95 is not possible. Work of the program under the management of Windows NT 4.0 is not recommended.

Control of database system

Work with information in the programming complex «ИНФИН-УПРАВЛЕНИЕ» is conducted on base of the architecture “client-server”. It means that specialized program which is named SQL-server, not an application, works with this database directly. A sql-server is set up on the same computer as the base, in his task includes executing commands (query), which comes from the programs which can work on different work stations connected to it. At the same time the complex «ИНФИН-УПРАВЛЕНИЕ» supports the server of Sybase Adaptive Server Anywhere and Microsoft SQL Server.

Sybase Adaptive Server Anywhere

Sybase Adaptive Server Anywhere is multiplatform and simple in exploitation, economic, undemanding to the calculable resources control system to data bases. It

can be used as both a local server and server, for working groups (2-20 users). The minimal size of the database is 100Mb.

If you work in the local mode (there is a unique copy of the program «ИНФИН-УПРАВЛЕНИЕ», the SQL-server and the database, are set on one computer) Personal Server will be used as a SQL-server. The personal server starts automatically, as soon as any program turns to the database and stops, as soon as there are no data coming.

During work in the network mode (the program «ИНФИН-УПРАВЛЕНИЕ» is set on a few work stations, and a SQL-server and database are on separate computers – the server of local network) Network Server will be used as a SQL-server. On the work stations Network Client software must be set it's a necessity for telecommunication with a SQL-server. A network server must be started by hand or given in the list of tasks which start automatically at the load of computer-server. Hardware requirements to the network server are marked in the table 1.2.

Table 1.2 - Hardware requirements to the network server

	Minimum	Recomended
CPU	Pentium-II 600 MHz	Pentium-III 1 GHz
RAM	128M	256M
Disc space	100 M	

A SQL-server works on selected computer under the management of the server operating system, such as:

- Windows 2000/2003 Server is biggest-selling network OS, it's simpler to administer a server exactly under the management of this system it recommended itself as one of the best servers for the applications;

- Novell Netware 4.12/5.0/6.kh is a popular enough OS it's not a bad file server, however it's weaker as a server than Windows 2003/2000 Server or UNIX. It means that the good productivity of sql-server is provided during work of not more than ten clients;

- UNIX is family of OS, Sybase Adaptive Server Anywhere is produced for Linux, HP UX, Sun Solaris/intel, Sun Solaris/spark, IBM AIX. They are proof operating systems which require more thorough knowledge and skills from an administrator.

Microsoft SQL Server

MS SQL Server is a reliable, powerful and popular control system of ruling information bases. Can be used as both local server and an enterprise server. Administration of the system is relatively simple, low-limit of database – not less 200M. at setting MS SQL Server it is necessary to provide implementation of the followings terms:

- A server must be set with the support of code page 1251;
- The sorting should be “Dictionary of case-insensitive” (taking into account possibilities of language, without the account of register);

- An option of client utility of SQL Server Client Network Utility Use of international setting must be set at every work station;
- Requirements to the hardware of computer, on which SQL Server will be set is showed into a table 1.3.

Table 1.3 - Requirements to the hardware of computer, on which SQL Server

	Minimum	Recomended
CPU	Pentium-III 1GHz	Pentium-IV 2 GHz
RAM	512Mb	2 Gb
Disc space	200 Mb	

A SQL-server works on selected computer under the management of the server operating system Windows 2000/2003 Server. Choice of client OS as a platform for work of sql-server (Windows of 98/me/ 2000 Professional/XP) can be justified only during work in the local mode («ИНФИН-УПРАВЛЕНИЕ», a database and server of SCDB are set on one computer).

User interface and example of work of the system

After setting of the system, there will be an accessible row of the modules of the system in the system in accordance with the parameters of the user's registration record. General view of main window of the system for a user which owns the rights to administrate is showed on the figure 1.5.

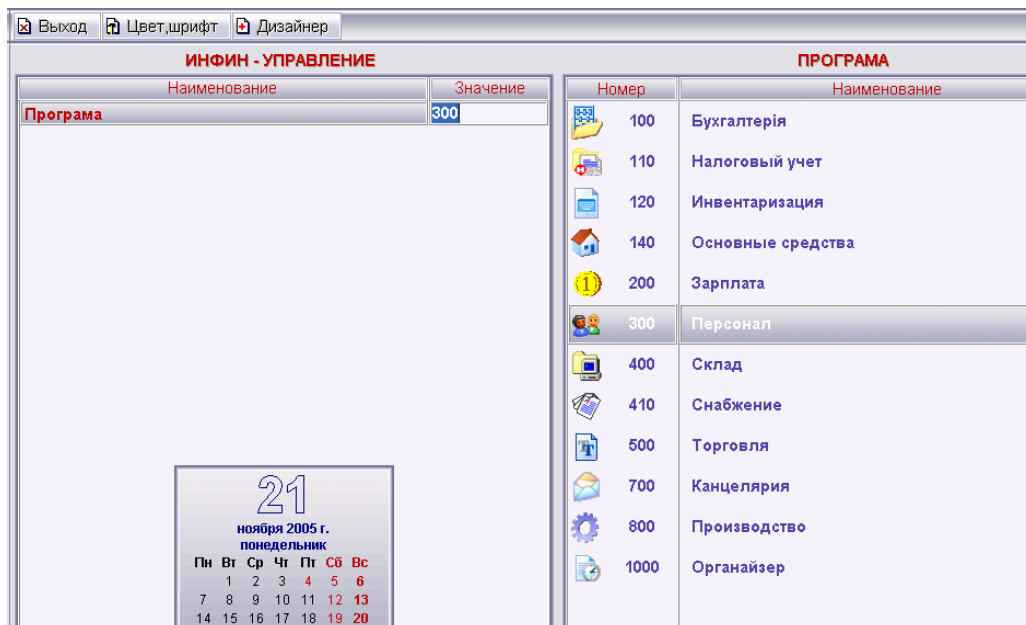


Figure 1.5 – The main windows of the program

Every line in a menu presents an independent module of the system, that is consist sub-modules. On the figure 1.6 you can see the module of control system «Персонал» represented in screenshots (unfolded).

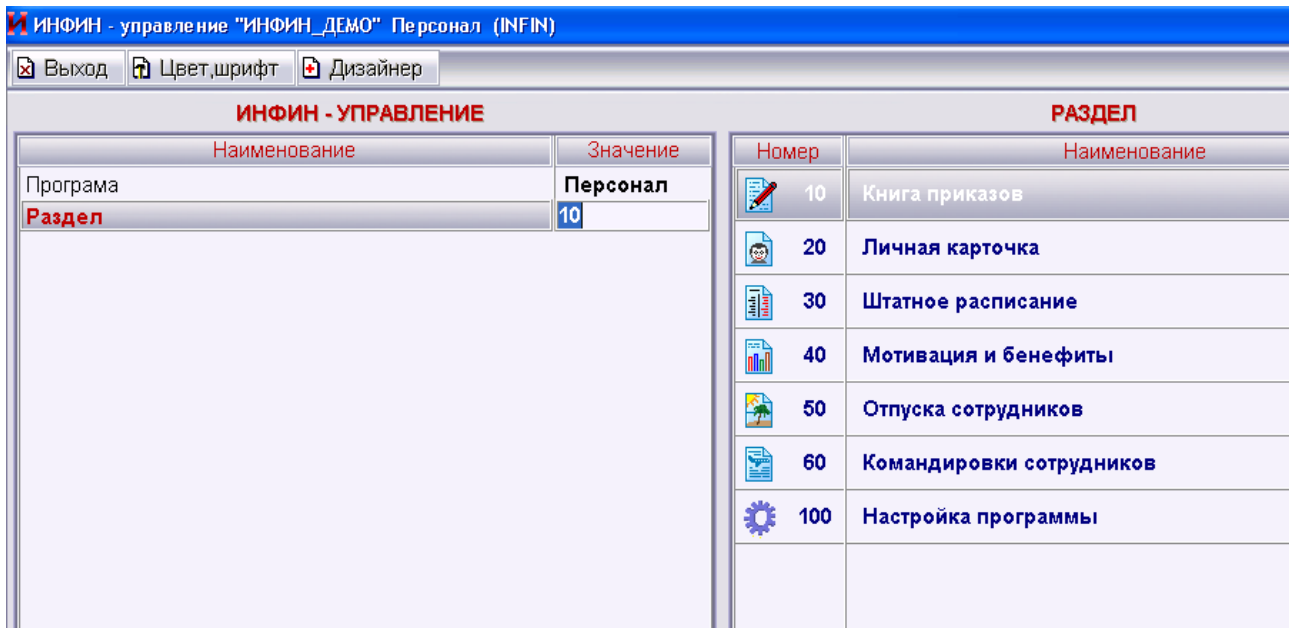


Figure 1.6 – The module “Персонал”

Let’s consider work of this system on the example of creation of manning table and employment order. To forming a manning table it is necessary to create an enterprise, and also to form its structure. Two methods are possible to introduce the system of a new enterprise: it is the introduction of the enterprise through a system reference book and introduction of the enterprise directly through a subsystem manning table in the section “structure of enterprise”. The second method of introduction of new enterprise is shown in figure 1.7.

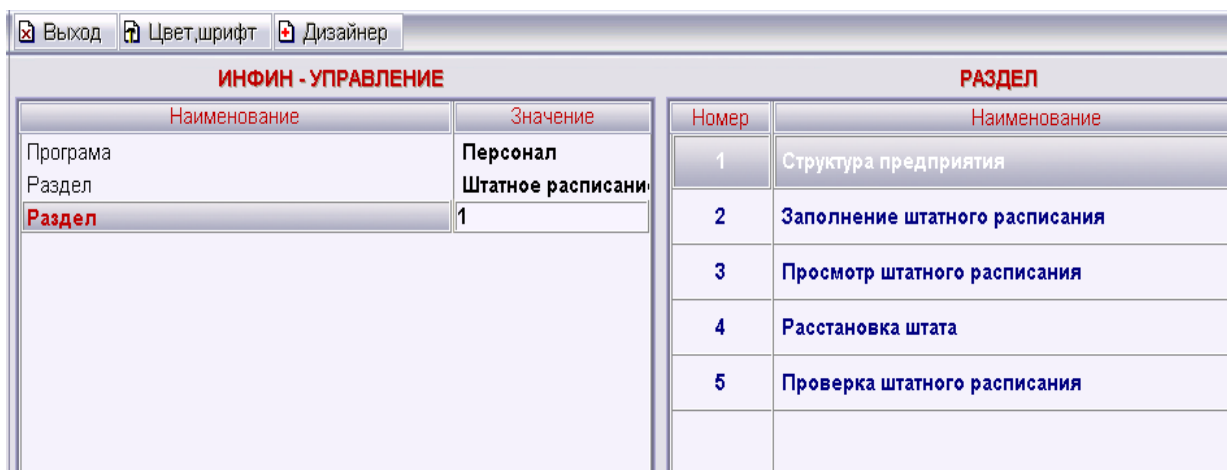


Figure 1.7 – The process to add a new enterprise in system

For introduction of enterprise to the system it is necessary to go to the section “structure of enterprise” and press the key of F3 to call the form of introduction of new enterprise, which must be filled, – see figure 1.8.

Наименование	Значение
Номер	6
Наименования коротко	
Повний найменування	
Територія	
Місце знаходження	
Поштовий #ндекс	
Телефон	
Факс	
E-mail	
Инд. податковий N	
Код підприємство ОКПО	
Керівник	
ИНН керівника	
Головний бухгалтер	
ИНН гол. бухгалтера	
Касир	
Статус по прибыли	
Вид економічної діяльності	
Форма власності	
Орган державного управління	
Галузь	

Figure 1.8 – Creation of new enterprise form

It is possible to add information about the structure of enterprise (structural subdivisions) in the same section. See figure 1.9.

After the system has enterprise and its structural composition it is possible, to begin forming of manning table, for this purpose it is necessary to go to the section of filling the manning table. Since the manning table is formed, it is possible to organize the reception of employees on vacant positions. The reception of employees (and similarly liberation, transition, departure on vacations et cetera) is carried out through a subsystem «Книга наказів».

Наименование	Значение
Номер	12
Наименование	ИТ отдел
Архив	Нет
Входит в штат	В штате
Зависит от	Ваше підприємство

Figure 1.9 – The form to add structural departments

All orders are added to the basic list – «Журнал реєстрації наказів» in which it is possible to bring in new orders and correct the already existing, – see figure 1.10.

ЖУРНАЛ РЕГИСТРАЦИИ ПРИКАЗОВ: ПРИЕМ НА РАБОТУ					
Предприятие	Ител		Автор	Главный пользователь	
Номер п/п	Дата	Пер.N	Стадия приказа	Дата регистрации	
3	01.11.2005		В проекте		

Figure 1.10 – The main form “Журнал реєстрації наказів”

To add an order use the key F3, and to adjust it press Shift+f3. After the order is registered, it is necessary to bring in the proper information – see figure 1.11.

ПРИКАЗ: ПРИЕМ НА РАБОТУ							
Предприятие	Ител		Пер.N				
Подразделение			Дата регистрации				
Должность			Стадия приказа	В проекте			
Таб.N							
Основание N	Основание дата	Лиц.счет	Сотрудник	Начало работы	Ставка	Оклад	Статус

Figure 1.11 – The form to add a new order

The considered examples demonstrate the by basic principles of work of subsystem «Кадры», the way work with other modules of the system is organized (but taking into account the row of specific properties for these subsystems).

1.3 Key questions

1. Specify the basic setting of the program «ИНФИН-УПРАВЛЕНИЕ».
2. Specify the basic advantages of the program «ИНФИН-УПРАВЛЕНИЕ».

3. What systems of the database management work with the program «ИНФИН-УПРАВЛЕНИЕ»?

4. What requirements are there to the hardware in the program «ИНФИН-УПРАВЛЕНИЕ»?

5. What hardware requirements are there to the network server at setting MSDB at MS SQL Server?

6. What are the requirements to the network server at settings Sybase Adaptive Server Anywhere on it?

7. Specify requirements which must be executed setting of MS SQL Server?

8. Under the management of which OS the program «ИНФИН-УПРАВЛЕНИЕ» work?

1.4 Home task

1. Study key points.
2. Prepare answers to key questions.

1.5 Laboratory task

1. Install the program «ИНФИН-УПРАВЛЕНИЕ».
2. Enter new enterprise and its structure into the system.
3. Form a manning table for the created enterprise.
4. Check that a manning table is formed.
5. Enter two employment orders for two different subsections of the created enterprise.

1.6 Protocol requirements

1. Name of the laboratory work.
2. Purpose of the work.
3. Home task results.
4. Short report on the laboratory task.
5. Conclusions.
6. Date, signature of the student, visa of the teacher.

LABORATORY WORK № 2

Theme: The front end part of the system E-Diste Internet office

2.1 Purpose of work: to investigate process of installation and adjustment of the E-business system E-Diste, to get practical skills of work with the system.

2.2 Key points

Electronic commerce, commonly known as *e-commerce*, is a type of industry where buying and selling of product or service over electronic systems such as the Internet and other computer networks. Electronic commerce draws on such technologies as [mobile commerce](#), [electronic funds transfer](#), [supply chain management](#), [Internet marketing](#), [online transaction processing](#), [electronic data interchange](#) (EDI), [inventory management systems](#), and automated [data collection](#) systems. Modern electronic commerce typically uses the World Wide Web at least at one point in the transaction's life-cycle, although it may encompass a wider range of technologies such as e-mail, [mobile devices](#) social media, and telephones as well.

Electronic commerce is generally considered to be the sales aspect of e-business. It also consists of the exchange of data to facilitate the financing and payment aspects of business transactions.

E-commerce can be divided into:

- E-tailing or "virtual storefronts" on Web sites with online catalogs, sometimes gathered into a "virtual mall";
- The gathering and use of demographic data through Web contacts and social media;
- Electronic Data Interchange (EDI), the business-to-business exchange of data;
- E-mail and fax and their use as media for reaching prospects and established customers (for example, with newsletters);
- [Business-to-business](#) buying and selling;
- The security of business transactions.

The classification of the electronic commerce systems are showed on figure 2.1.

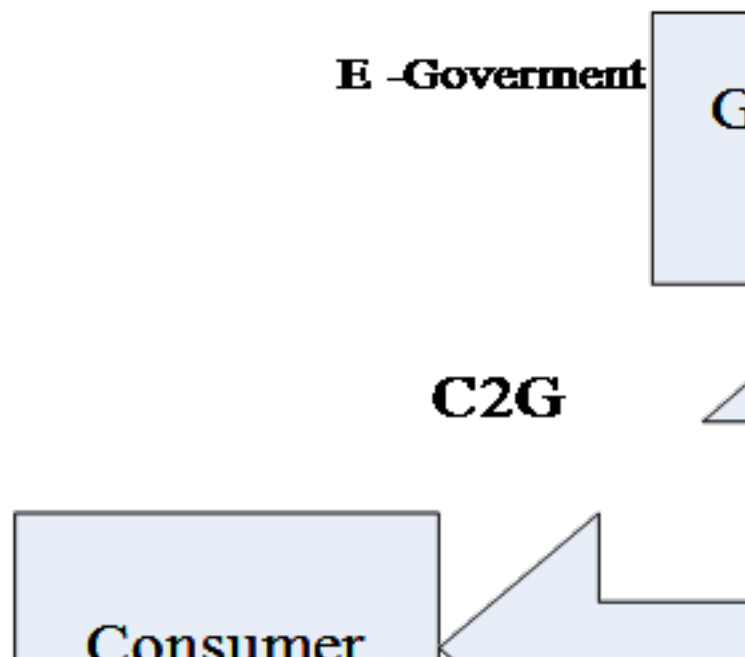


Figure 2.1 – The classification of the electronic commerce systems

The system «E-Disty» was created by the company R&M. It is used to organize booking and order processing with the help of the global network, the Internet. The system «E-Disty» is B2B system.

The E-business system allows clients to receive the information on their interesting product at any time convenient for them, to generate the order, to estimate expenses, to place the order, to see terms of shipment and a condition of each order, to get technical and information support, etc.

The advantage of the E-business system

Using the system E-Diste in a business process of an enterprise it makes it possible to raise overall performance of the enterprise several times. System "E-Diste" has the following advantages in comparison with the usual schemes of the conclusion of contracts (by phone, by e-mail, etc.):

1. Operative reception of the actual and necessary information (production presence in a warehouse, its characteristics and the price; the information on dates of following deliveries and etc.) provides:
 - The decision of tasks connected with tracing of a warehouse condition of the supplier;
 - Competitive recovery of the enterprise;
 - The full information technical support;
 - Sales planning.
2. The use of R&M stores gives:
 - Possibility to correct effectively the work of the company for the purpose of reduction of an overhead charge;
 - High turnover of stock resources which results into considerable liberation of circulating assets;
 - There is possibility of sale from the R&M warehouse;

- Increase sales volume.
 - 3. There is access to the database R&M at the level of the company manager:
 - There is possibility to make orders for the necessary production and to write out invoices that allows accelerating considerably the process of orders registration and accounts reception;
 - One can load price lists, invoices;
 - There exists the function of reception of the financial reporting documents (balance, reports on payments or shipments, information on a payment calendar).
- Export of documents and specifications to various formats, for example MS Excel.

The functionality of the system «E-Disty»

The system «E-Disty» uses the model B2B (Business-to-Business). This one is a close corporative system that uses Internet/Intranet technologies and provides the following services for users:

- It supports work personification - the personal information is given to the user: the price-list with its prices, discounts, etc. Thus, each user has possibility to create the production profile: to do a sample with interesting production from the given big catalog of production;
- Gives in qualitative or in a quantitative kind the actual information on production presence in a warehouse and terms of its delivery;
- Supports the online-system of production reservation;
- Has a considerable quantity of typical specifications for possibility of the order of difficult compound production;
- Automatic formed of invoices;
- Gives the user the information on the condition of his order/orders;
- Realizes the built-in system of auction sales. Supports carrying out of auctions, both on simple, and on compound prizes. It also provides automatic creation and mailing of accounts by the auction results;
- Carries out mailing of post messages on movement of the orders in the technological chain;
- Gives the customer the financial reporting - balance, turnover balance sheet, the report on shipments, the report on payments, the information on a payment calendar and back payments, current reserves of the customer;
- Realizes full-function system of access division;
- Provides system of safety and cryptographic protection of the information on the basis of the advanced and reliable cryptographic algorithms;
- Provides integration with information system of the customer: an automatic exchange of the information on production, the prices for it, shipments, the invoice and orders, etc.

System requirements, installation and system adjustment

There are three main elements in the system «E-Disty»:

- Application server «E-Disty»;
- Gateway to information system of the R&M;

- The front end part of the system E-Diste Internet office.

The contractor of the system (the remote user) gets the small client software, independently develops it on a workplace (the computer with access to the Internet). After that he is registered in a database like an administrator of the system and is connected to the application server of «E-Disty» through protected connection Internet/Intranet network. After authentication and authorization of the user in the system, it gets access to the data according to his personal profile, the corresponding partner agreement of company R&M with the company-user. This profile is also reflected in a client part of the user. Depending on the requirements and personal preferences, the user can modify the interface of a client part, optimizing the interaction with the system.

The minimal system requirements for workstation with the front end part of the system E-Diste Internet office are the following:

- Processor – Pentium 1000 Mhz;
- RAM – 128 MB;
- 15 MB free spaces on HDD;
- Rate access to Internet – 64 kbit/s;
- Operating system – Windows /98/Me/Windows 2000/WindowsXP.

You have to use special software that works under the control of OS Windows.

You have to set up the following elements on your workstation:

- E-Disty Internet Office – the front end part of the system E-Diste Internet office;
- E-Disty Internet Office Update – the program for updating software into the background.

You also are to have the keys and the security certificates to work with E-Disty Internet Office.

After installation of the system it is possible to start work with it. To log in it is necessary to insert a floppy disk (flash drive) with keys into the disk drive and to start the program. When the system is started there will be a window for registration (see figure 2.2).

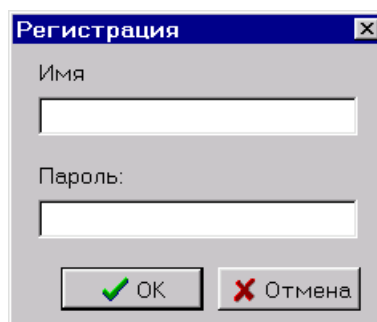


Figure 2.2 – The window of registration

You should enter the following username – GUEST and the password – guest177 for registration into the system.

The main control panel of the system is showed on figure 2.3.

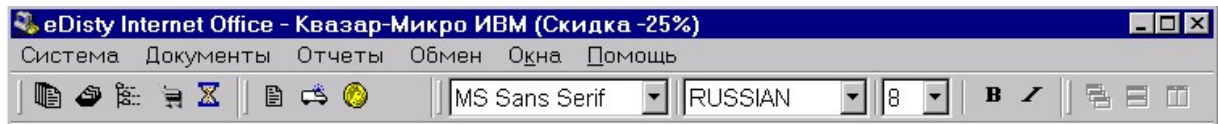


Figure 2.3 – The main control panel of the system

At the top of windows there is written the program name, the client name and his discount rate. There are icons which open the main windows of the program and parameters of the fonts – size, encoding, type.

The main menu of the program contains the following menu items:

1. System contains the following submenu:

- re-registration means re-registration in the system;
- Settings are settings of the system;
- Request of a new certificate is request and reception of a new security certificate;
- Exit.

2. Documents:

- Orders – entry order, search, edit order;
- Invoices – search of the invoices;
- Price lists contains the catalogs of products and prices;
- recycle bin you can add an order from the catalog of products;
- auction means that the system works in auction sales mode

3. Report:

- Balance contains the user balance of payments;
- Shipping contains the report about user shipping;
- Payment contains the report of user payments;
- Turnover balance sheet.

4. Exchange:

- Export of the bill of lading;
- Export of the invoices;

5. Windows are the standard command of the windows control.

6. Help.

Setup of the bonding characteristics:

1. The workstation has to have the access to the Internet.

2. Start up E-Disty Internet Office. In window Registration press the button Cancel. After that start up the menu system and choose the submenu “Settings” (see figure 2.4).

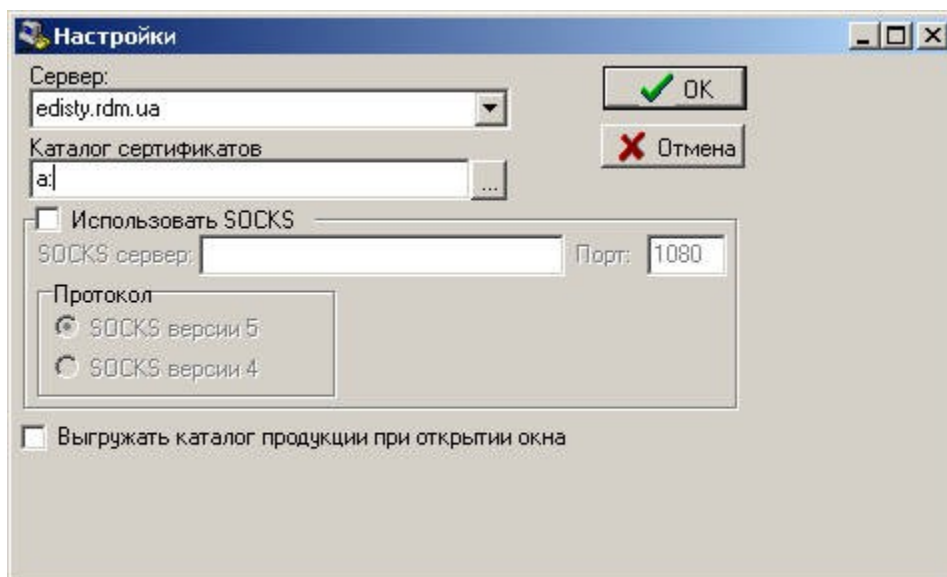


Figure 2.4 – Setup of the bonding characteristics

3. In the field Server there should be written the following server address - edisty.rdm.ua.

4. In the field Catalog of the certificate write the path to security certificates (disk A is default).

5. Choose option – Export catalog of products.

If your network uses Proxy-server to connect to the Internet you should make the following settings:

1. Choose option “Use Socks”;

2. In the field SOCKS the server writes Socks server address (for example socks.mycompany.com).

3. Write the port number of the Socks-server (usually it is 1080).

4. Choose protocol that your Socks-server supports - Socks 5 or Socks 4.

5. If it’s needed write the Proxy server parameters.

If there is a firewall in your network you have to open access to the e-Business server eDisty and open ports 5000 and 7000.

Security system into E-Disty

Any document finds validity only in the presence of the signature (press) of its author. Thus, the author of the document confirms its validity and an accessory to a concrete legal or to a physical person.

For protection of electronic documents in the system the mechanism of the digital signature is used. Protection of the electronic document by means of the digital signature is based on methods of asymmetric or two-key cryptography. The essence of these methods consists in the fact that for each participant of an information exchange there are generated two keys connected between themselves by a certain rule. One key appears open, and another is closed. The open key is published and is accessible to anyone who wishes to send the message to the addressee. The confidential key remains as a fiduciary. The initial text is ciphered by

an open key of the addressee and transferred to it through open communication channels. The ciphered text basically can't be deciphered by that open key with the help of which the ciphered message has been received. Message decoding is possible only with the use of the closed key of the addressee. The closed key in similar systems is a personal secret of its owner, and is stored inaccessible to strangers.

E-Business Provides safety and security of the transferred information in a mode online. The safety system provides mutual authentication, enciphering and protection against the change. The order transferred to the Internet, is ciphered by means of the last cryptographic technologies. Access to the database is limited by application server CORBA with strictly certain business logic. System E-Business uses industrial standard Secure Socket Layer (SSL) for cryptographic protection of the information transferred through the Internet. The information is protected by transfer to both parties - both from the Customer to the Supplier, and from the Supplier to the Customer. All messages are transferred in coded form, with the use of cryptographic algorithms of information protection - RSA, RC4, MD5, DH, 3DES, SHA with length of a key up to 2048 bits. Session keys are applied to information enciphering only, i.e. for each session a new key is generated. In addition R&M E-Business uses the protected servers, digital certificates x.509 and technology of online-authorization which raise the level of safety of system even more.

Each client receives his own keys and safety certificates. The given keys and safety certificates are a key of access to your business information

Instruction to work with E-Diste

Price-list viewing

For price-list viewing it is necessary to choose menu Documents and open submenu Price-list. The form shown in drawing 2.5 will open:

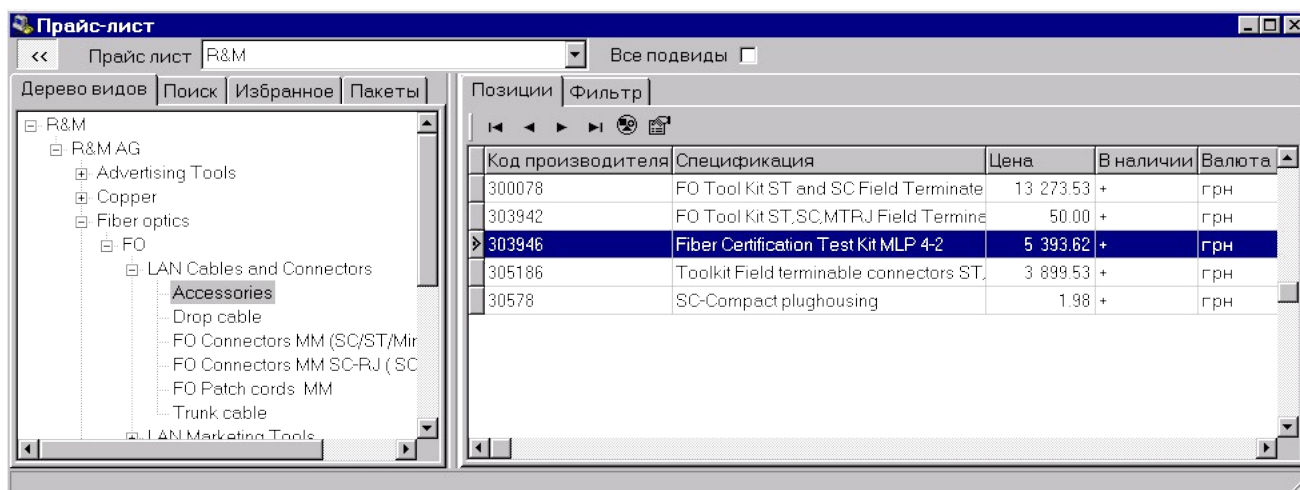


Figure 2.5 – The price-list

In the left part there is the production catalog the navigation of which is carried out by a mouse. The right part is a list of production which belongs to the item

chosen in the left part of subdirectory. Pay attention to the fact that in production list there are columns – the *Price*, *Available* and *Retail price*.

Price – is a special price for each client.

Available – the information on the rests in a warehouse of R&M. This information can be presented in two variants, depending on access rights, quantitative and qualitative. Quantitative, means that it is the quantitative rest in a warehouse taking into account the reserved products. In qualitative column the information is given in a kind "is", "is not present" and "Is but comes to an end".

Retail price – the recommended retail price of product, i.e. the price on which it is recommended to sell the product.

Code is the inner code of R&M product.

Vendor – vendor of product.

Description – full description of the product.

Next delivery – the date of the next delivery.

Picture – this product has a picture

It the left part there is four elements – Favorite, Search, Packets, Tree of view.

Tree of view– this page opens as default. There is a catalog of the products.

Search is the page for searching the needed item in the catalog.

Favorite – on this page there is the list of catalogs which you can select not to search for them in the big catalog of production each time you need them. If you move along this list the production list will be shown in the right part. To place something into the list of the selected catalogs, choose the necessary catalog in a tree of the catalogs and with the right button of a mouse call the emerging menu. In it choose the point – to Add to Favorite. The general view of the page is showed on the figure 2.6.

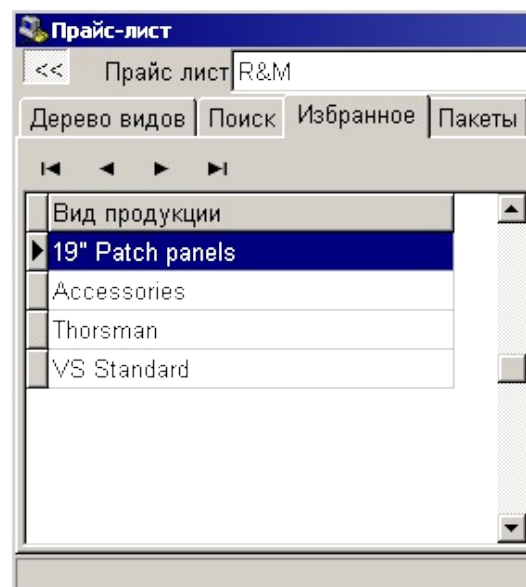


Figure 2.6 – The favourite

In the right part of the form there are pages too – Positions and the Filter. The position page as you already know contains production list in the current catalog.

The packet page.

On this page (see figure 2.7) there are shown the production. Packages can be predetermined by R&M or be defined by the client. The predetermined packages are allocated with bond font and it is impossible to remove or modify them. Packages are used for grouping of positions of the catalog according to any logic sign. In difference from the selected groups, Packages allow you to group products being in different branches of the catalog.

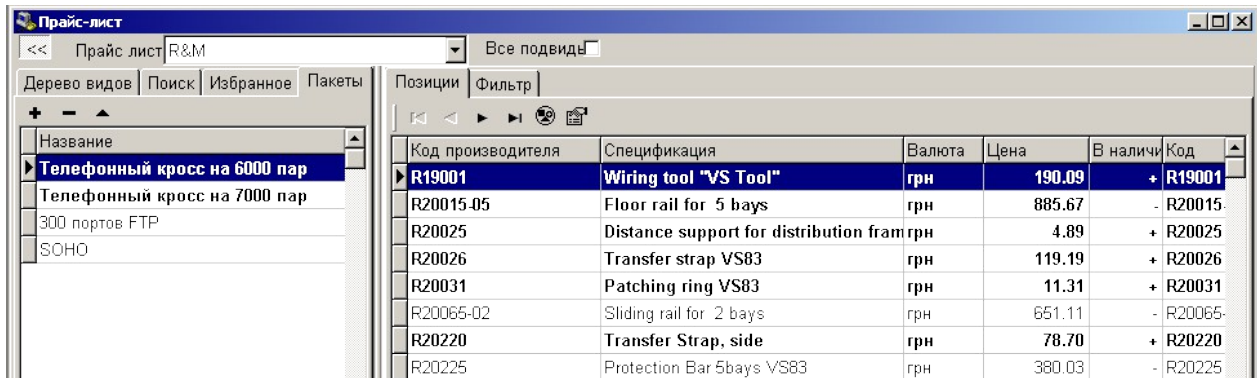


Figure 2.7 – The packet page

On the figure 2.7 the package telephone cross by 6000 pairs and package telephone cross by 7000 pairs is predetermined packages. The package by 300 ports of FTP is the user package.

To add a package presses the key “Insert” or the button “+” over the list of packages. After that the list will pass to a condition of addition of record, and into a line of a package you should enter the necessary name.

To add a product into a package, it is necessary to come to the page with product catalog, and choose the necessary position (in case of choice of several positions note them with the mouse pressing the key CTRL simultaneously) and choose the element “to Add production into a package” in the menu with the right button of the mouse. In the appeared window choose the package necessary for you and press OK (see figure 2.8).

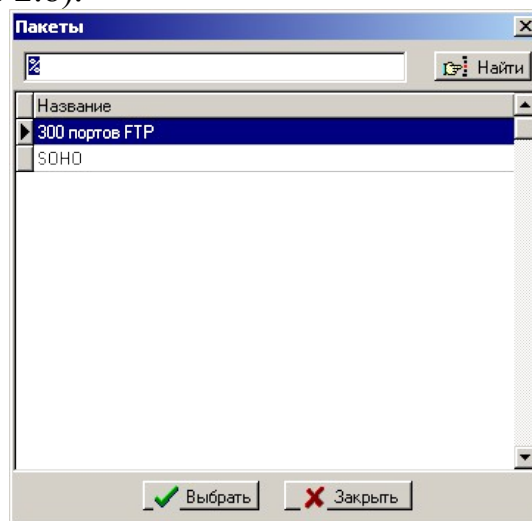


Figure 2.8 – Adding products into a package

The filter page

Allows filtering the products if there is too much of them in the current catalog. Appearance of this page is shown on figure 2.9.

Figure 2.9 – The filter page

Input orders

If you want to work with orders you have to select the submenu Orders from the menu Documents. In this case there is opened the form as shown in the figure 2.10.

Figure 2.10 – The order form

The form consists of three pages *List*, *Record* and *Filter*. First the page Filter opens it makes it possible to specify conditions of a choice of the information. To open other pages or to add the new order is only possible after instructions of conditions of a choice and pressing the button Search. After that the List page (see figure 2.11) will open.

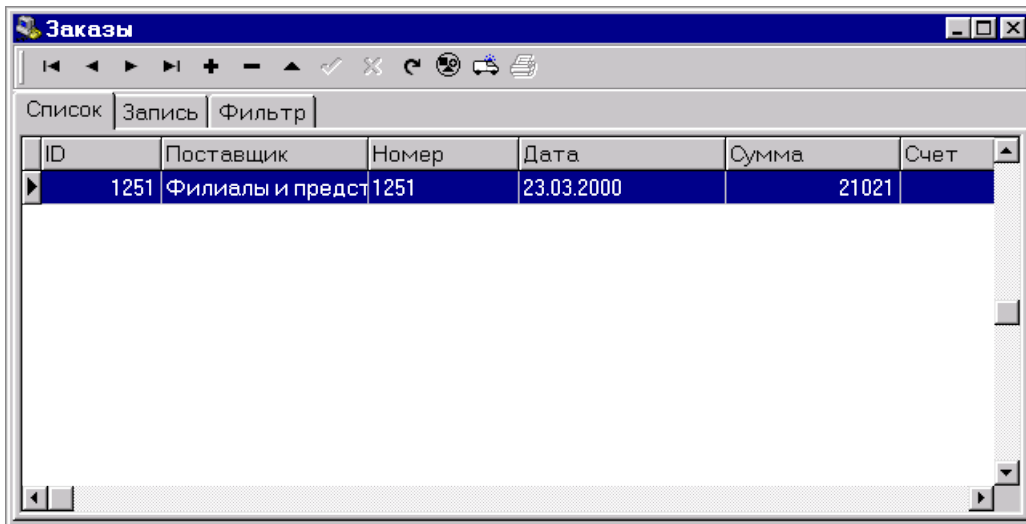


Figure 2.11 – The page order

There are number of orders, number of invoice, sum of orders, and date of orders and comments.

Rules of input of the order are the following: at first the order cap is entered, then products are brought in their positions. Having pressed the button “+” it is possible to open page the Record as shown in the figure 2.12.

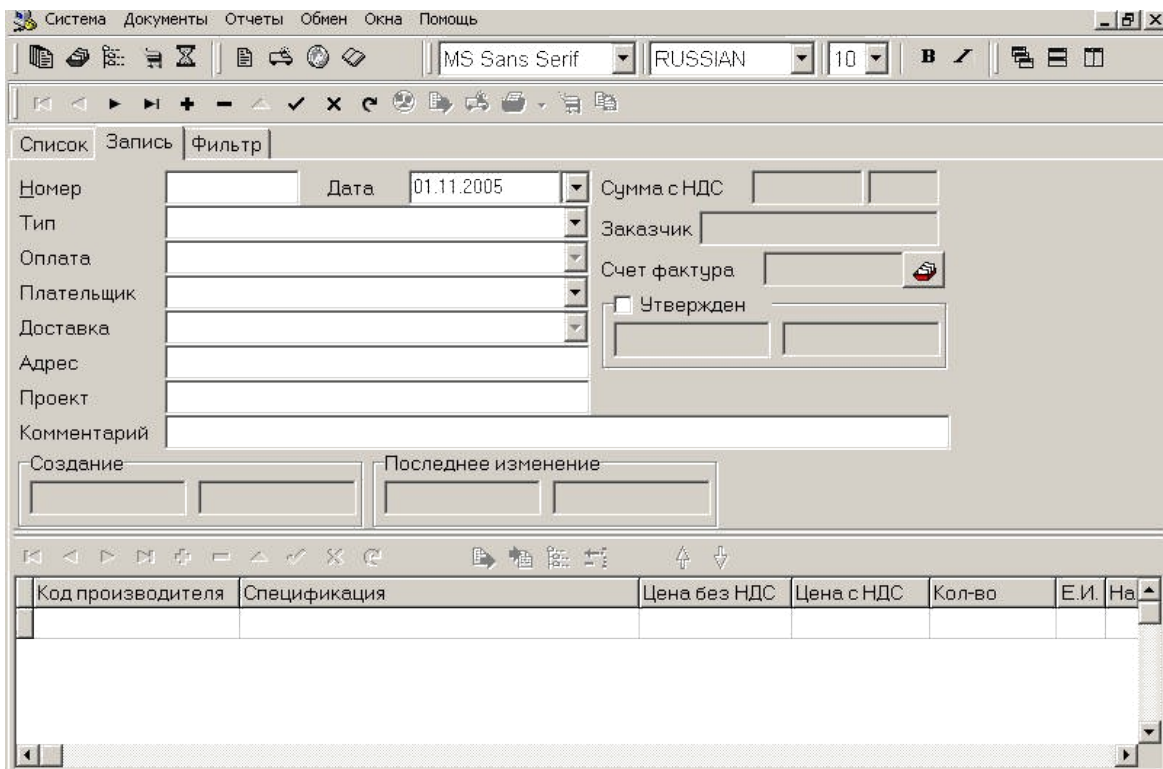


Figure 2.12 – The record form

There are following elements on the form:

- Number – number of order;
- Date – date of order;

- Type – type of order;
- Payment – terms of payment;
- Payer;
- Delivery– delivery terms;
- Address – address of delivery;
- Comments;
- Sum – sum of order.

After all the requisites of the order are entered it is necessary to press the button for preservation of the cap of the order in a database.

If you want to add product in the order you can press button “+” at the top of the production list in order. There will open a new window where you can choose and add new product into order. You always have to write how much you need (see figure 2.13).

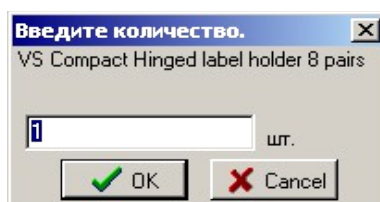



Figure 2.13 – The windows to enter the amount.

If you want to update the price you should press on the button 

The order signature

After the order is entered, it is necessary to sign. The order signature is line after which the order isn't edited and goes in R&M for processing. Unsigned orders are considered being on a stage of formation and on them no actions are made.

For the order signature press checkbox in the field "is confirmed". If signature imposing has occurred successfully, in the field opposite there will be the date, time and the surname of the author of the signature. At signature imposing the message about not performance of any business rules is possible:

1. Check of the size of the line of credit of the Customer.
2. Absence of delay at the customer.
3. Check of the maximum limit of a reserve of production.
4. Stock-taking of free production in a warehouse and successful reservation.
5. Absence of an interdiction of shipment on the given customer.
6. Absence of an interdiction of shipment on the given products.
7. Absence of an interdiction of shipment under the given account.

The user recycle

Another method to add orders is to use the users recycle. On the figure 2.14 you can see the main form of the user recycle.

If at window opening there is the message that stands out that the template for orders necessary for you isn't found you should define it. Appearance of the form is

very similar to the form with price-lists. Addition is the bottom list of production which can be selected, being in the order. So, for example, moving under product catalog it is possible to select production which has interested you in the bottom list (the user recycle). By pressing button OK on selected production the order is formed.

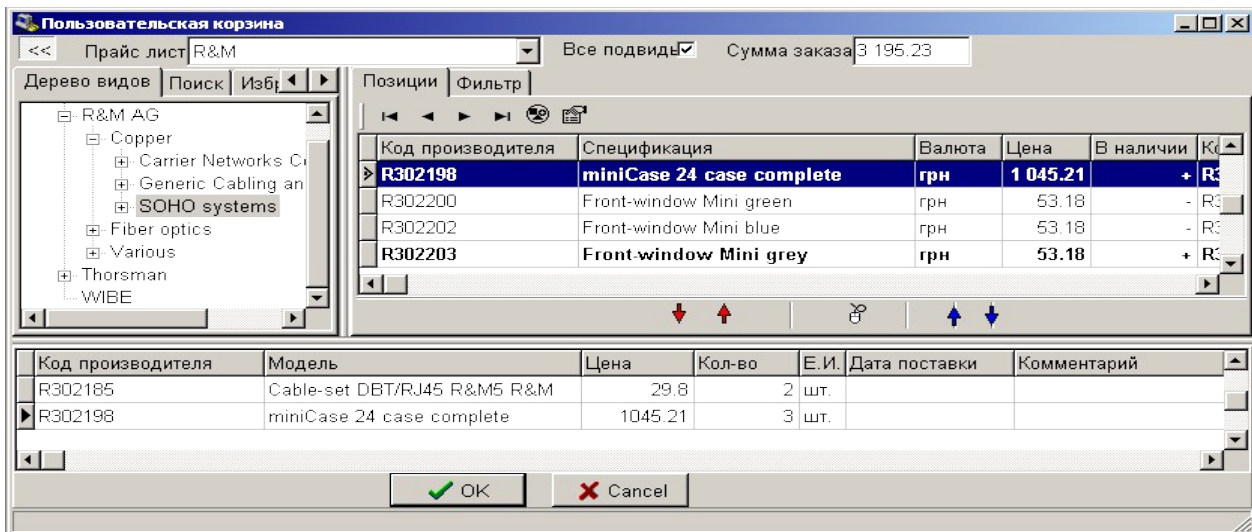



Figure 2.14 – The user recycle

This order is in an unsigned condition, and you can specify it still – to add/remove production, to specify a way of delivery, a condition of the demand line of credit and to sign. Values by default in the order undertake from a special template. It is possible to specify templates for each supplier separately.

Definition of templates of orders

For definition of templates of orders you should do the following acts:

1. Open the order form.
2. Write the head of order.
3. At the top press the bottom  “Saved template for recycle”.

Viewing the invoices

If you want to view the invoices you have to open submenu Orders from menu Documents. The following form is opened (see figure 2.15).

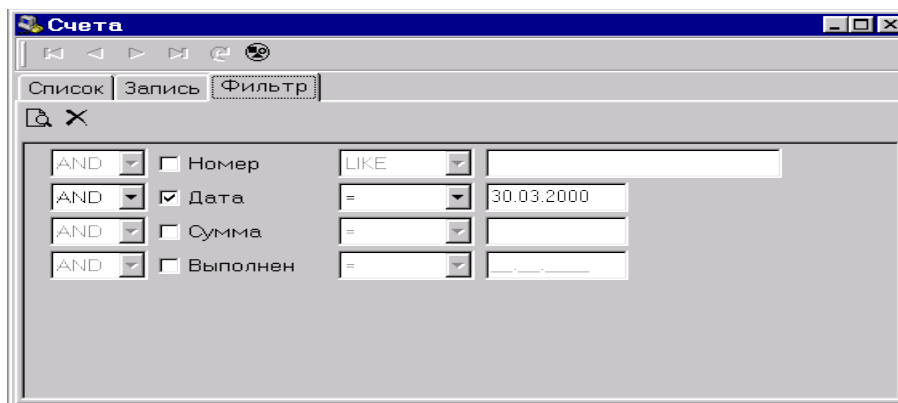


Figure 2.15 – The form to choose the invoice

After you write all parameters you must press button Search and open list of invoice (see figure 2.16).

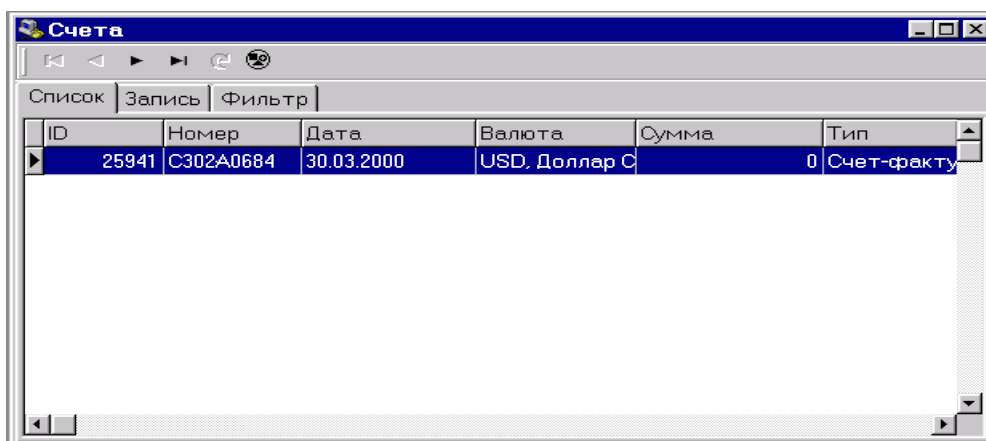


Figure 2.16 – The list of invoices

If you press insert “Record” you see full information about invoice (see figure 2.17).

Definition of templates of the form accepts all requisites of the invoice. Pay attention that all information is only for viewing. Its editing is authorized only by R&M.

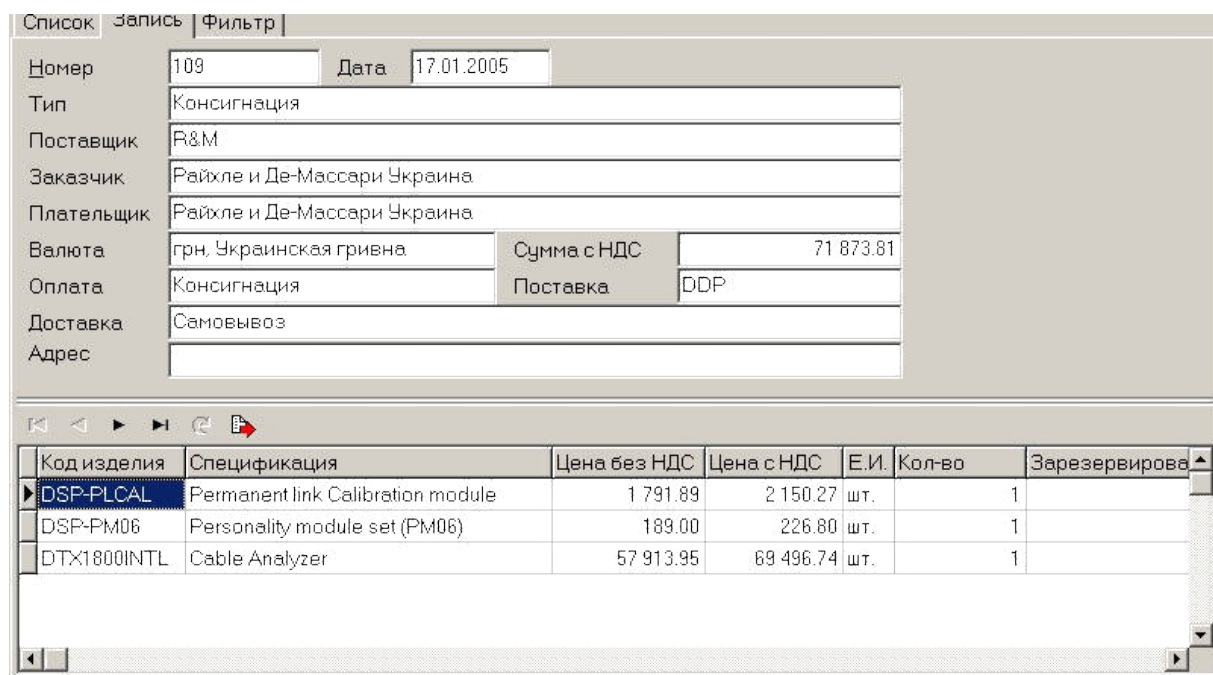


Figure 2.17 – The full information of the invoice

Reception of reports

For reception of reports it is necessary to come into the menu Reports and choose the necessary report – Balance, Shipments or Payments. For the choice of each of points there will be a dialogue window in which it is necessary to specify the period of construction of the report (by default 7 days ago from current date) and the name of the Payer (see figure 2.18). On each Payer it is possible to construct separate reports.

Figure 2.18 – The form request of the reports

After construction of reports they can be unpacked or exported to one of accessible formats using corresponding pictograms in the top part a window of preview of reports.

Balance of client

At construction of balance of the client there is the report as shown in the figure 2.19.

Баланс с заказчиком

Заказчик 1055
Поставщик Дисти
С даты 23-03-2000 **По дату** 30-03-2000

Дата	Оплата	Отгрузка	Рибейты	Баланс	План. оплата	Общий долг	По датам
23.03.2000	-5 600	23 060	0	43 107	3 245	0	0
24.03.2000	-7 400	7 605	0	43 312	5 595	0	0
25.03.2000	0	0	0	43 312	7 381	0	626
27.03.2000	0	4 674	0	47 986	0	0	0
28.03.2000	0	4 474	-1 643	50 817	4 474	0	4 156
29.03.2000	0	2 480	0	53 297	5 086	2 786	0
30.03.2000	0	8 950	0	62 247	8 218	11 004	6 222
Итого	-13 000	51 243	-1 643				

Figure 2.19 – The balance report

There are the name of client, the Supplier and the period of dates for which the report was made.

Shipping to client

On the figure 2.20 you can see the shipping in client report.

Отгрузки заказчику

Заказчик 1055
Поставщик Дисти
С даты 23-03-2000 **По дату** 30-03-2000

Дата	№ накладной	Изделие	Цена	Количество	Сумма
23.03.2000					
	13777				
		Tray Cel-466 PPGA	85	60	5 100
		Celeron 500 box PPGA-корпус	102	20	2 040
		BOXED PP III 500 FCPGA, 256k	220	7	1 540
		BOXED PP III 500 FCPGA, 256k	220	3	660
		PIII-550/256/100 TRAY FCPGA ("Cumline")	220	10	2 200
	Итого по накладной				11 540
	13860				
		Tray Cel-466 PPGA	85	100	8 500
		Celeron 500 box PPGA-корпус	102	10	1 020
		Tray Cel-500 PPGA	100	20	2 000
	Итого по накладной				11 520
Итого за день					23 060

Figure 2.20 – The shipping in client report

There are the name of client, the Supplier, the number of consignment note and the period of dates for which the report was made.

Payments

in the figure 2.21 you can see the payment report.

Платежи заказчика

Заказчик 1055
Поставщик Дисти
С даты 23-03-2000 **По дату** 30-03-2000

Дата	Оплата	Рибейты	Зачисления	Комментарии
23.03.2000	5 600	0	0	126895- IS_USD
Итого за день:	5 600,00	0,00	0,00	
24.03.2000	7 400	0	0	127118- IS_USD
Итого за день:	7 400,00	0,00	0,00	
28.03.2000	0	1 643	0	4955 IPI 01/2000
Итого за день:	0,00	1 643,00	0,00	
Итого:	13 000	1 643	0	

Figure 2.21 – The payment report

There are the Customer, the Supplier and the period of dates for which the report was made. Besides, there are the payments which have arrived from the Customer, *rebate* added to it and charge. *Rebate* means reduction of debts of the Customer for R&M, and charge – increase in its debts.

2.3 Key questions

1. Specify appointment and the basic advantages of system of electronic business «E-Diste».
2. What are the functional capabilities of the system «E-Diste»?
3. Name the main elements of the system.
4. Name hardware requirement to the workstation if you want to set up there a front-end part of the system.
5. How is safety of the transferred information realized in system "E-Diste"?
6. What is different between Package and Favourite?
7. Explain the goal of the User recycles.
8. How acknowledgement of the made order is made in the system.

2.4 The home task

1. Study key positions.
2. Prepare written answers to key questions.

2.5 The laboratory task

1. Setup the front-end part system «E-Diste» on the workstation
2. Adjust parameters of communication with the system server.
3. Register in the system as a Guest.
4. View the price list. Create a new Package.
5. Create an order on products which included in the Package.
6. View all types of reports.

2.6 Protocol requirements

1. Name of the laboratory work.
2. Purpose of the work.
3. Home task results.
4. Short report on the laboratory task.
5. Conclusions.
6. Date, signature of the student, visa of the teacher.

LABORATORY WORK № 3

Theme: Customer Relationship Management System.

3.1 Purpose of work: research of work principles of the *customer relationship management system* in the example of “Terrasoft CRM 3.0 system”.

3.2 Key points

Purpose and classification of the CRM systems

CRM-system (Customer Relationship Management System,) is a control system of interaction with clients - the corporate information system intended for improvement of servicing by preservation of the information on clients, stories of mutual relations with clients, establishments and improvements of business procedures on the basis of the kept information and the subsequent estimation of their efficiency.

The CRM-system is software which is intended for gathering, storage and processing of the information on the enterprise clients and allows doing certain conclusions, to export the information to other systems or to give it in a convenient kind on the basis of the available information.

Collection of information– system gives the employees of the company a convenient way to enter the information into the database. All accessible information about the client is entered into system, but first of all it's the information on interaction between the client and the company (type of goods bought by the client, a way of reception of the information on the company, the purchase purpose, a payment kind) and also personal information about the client (age, marital status, the income, contacts and etc.).

Storage and information processing – there is a possibility to keep the received information and to range it according to the set criteria and to analyze the received information for the purpose of its further use.

Export of information – the information which is in the system is used by various departments of the company which can request it from the system, in different kinds of display.

CRM systems use the following principles in their work:

1. There is only one storage of the information, all data on all cases of interaction with clients which are accessible at any moment.
2. Management synchronization by plural channels of interaction (that means there are organizational procedures which regulate the use of this system and the information in each department of the company).
3. The constant analysis of the collected information on clients and acceptance of corresponding organizational decisions – for example, segmentation of clients on the basis of their importance for the company.

Classification of the CRM systems

Today CRM systems are classified by functional capabilities and by types of the information processing.

CRM is divided into the following classes by types of the information processing:

Sales force automation - [Sales force automation](#) (SFA) involves using software to streamline all phases of the sales process, minimizing the time that sales representatives need to spend on each phase. This allows sales representatives to pursue more clients in a shorter amount of time than would otherwise be possible. At the heart of SFA is a [contact management system](#) for tracking and recording every stage in the sales process for each prospective client, from initial contact to final disposition. Many SFA applications also include insights into opportunities, territories, sales forecasts and workflow automation, quote generation, and product knowledge. Modules for Web 2.0 e-commerce and pricing are new, emerging interests in SFA.

Marketing – CRM systems for marketing help the enterprise identify and target potential clients and generate leads for the sales team. A key marketing capability is tracking and measuring multichannel campaigns, including email, search, social media, telephone and direct mail. Metrics monitored include clicks, responses, leads, deals, and revenue. This has been superseded by marketing automation and Prospect Relationship Management (PRM) solutions which track customer behavior and nurture them from first contact to sale, often cutting out the active sales process altogether.

Customer service and support (Call centers) – Recognizing that service is an important factor in attracting and retaining customers, organizations are increasingly turning to technology to help them improve their clients' experience while aiming to increase efficiency and minimize costs. Even so, a 2009 study revealed that only 39% of corporate executives believe their employees have the right tools and authority to solve client problems.“

eCRM-systems – eCRM-systems – CRM-systems for use only in electronic commerce, feature of such systems is that they are integrated with a company site. All information which gets on a company site automatically is brought in eCRM-system.

CRM is divided on the following classes by functional capabilities:

Analytics – Relevant analytics capabilities are often interwoven into applications for sales, marketing, and service. These features can be complemented and augmented with links to separate, purpose-built applications for analytics and business intelligence. Sales analytics let companies monitor and understand client actions and preferences, through sales forecasting and data quality. Marketing applications generally come with ***predictive analytics*** to improve segmentation and targeting, and features for measuring the effectiveness of online, offline, and search marketing campaign. Web analytics have evolved significantly from their starting point of merely tracking mouse clicks on Web sites. By evaluating “buy signals,” marketers can see which prospects are most likely to transact and also identify those who are bogged down in a sales process and need assistance. Marketing and finance personnel also use analytics to assess the value of multi-faceted programs as a whole. These types of analytics are increasing in popularity as companies demand greater visibility into the performance of call centers and other service and support channels, in order to correct problems before they affect satisfaction levels. Support-focused applications typically include dashboards similar to those for sales, plus capabilities to measure and analyze response times, service quality, agent performance, and the frequency of various issues.

Integrated/Collaborative – Departments within enterprises – especially large enterprises – tend to function with little collaboration. More recently, the development and adoption of these tools and services have fostered greater fluidity and cooperation among sales, service, and marketing. This finds expression in the concept of collaborative systems which uses technology to build bridges between departments. For example, feedback from a ***technical support*** center can enlighten marketers about specific services and product features clients are asking for. Reps, in their turn, want to be able to pursue these opportunities without the burden of re-entering records and contact data into a separate SFA system.

Operative CRM-systems – **the system is intended for use by employees of the company for reception of operative access to the information on the concrete client during direct mutual relation with the client – sale and service processes. The basic component of such system is the program module giving to the employee the saved up information on the client. The given type of CRM-systems is characteristic for traditional business.**

The CRM system “Terrasoft CRM 3.0”

Terrasoft CRM 3.0 is an integrated CRM systems which covers all spheres of management of mutual relations with clients and the organizations of internal processes of the company.

Terrasoft CRM is application software that includes kernel, modules and services.

The kernel of software includes the set of modules and services which realize the configuration of the system.

Services are the basic object of the system that is used by the developer to create a configuration.

Modules are a component part of the configuration which makes it possible to group services into functional blocks.

Terrasoft CRM 3.0 is based on client-server architecture. The server part (database server) is a server with SMDB that includes database, administration tools and access tools to store the information. The database server is the main element system of Terrasoft CRM 3.0 and it is used independently from selected configuration system. The Terrasoft CRM 3.0 system works with the following types of database:

- MS SQL Server;
- Oracle;
- Firebird – database was developed company Borland.

The client part of the system Terrasoft CRM 3.0 is an independent program that is installed on the users workstations and used like an access module to database server and can make data processing in automatic mode. The client part can fulfill the following operations:

- Form database query to database Terrasoft CRM 3.0;
- Receive and process the data;
- Execute commands of the applications of the system Terrasoft CRM 3.0.

The architecture of the system

The Terrasoft CRM 3.0 system has a hierarchical structure and is divided into several logical levels. The fig. 3.1 shows the architecture of the system.



Figure 3.1 – The architecture of the system

The base of all architecture is the level SMDB. This level provides interaction between the database part of system and the client part of the system.

The access to the data level interprets the database query that come from the client to the database.

The security level provides check database query if there are permissions of accesses to the database, tables and fields of tables. If users don't have permissions to the data they can't receive this data.

The service level is the heart of the system. This level has information about all the services of the system. At this level the mechanism of initialization and interaction of various services of system are realized. The main goal of this level is maintenance of functionality of configuration. Besides, through this level interaction between the interface part of the applications and the data stored in SMDB is provided.

Configuration is a solution created on base of CRM system that help to solve specific user's business tasks. Configuration includes the realized a concrete business logic and set of tools for processing data.

The technical requirements to hardware and software

The requirement to server part of system

The requirements to hardware and software of the database server Terrasoft CRM 3.0 depend on the type of chosen SMDS. Table 3.1 is shows the requirements to server firmware.

Table 3.1 – The requirements to the server firmware

Number connection to the database	Size database, Gb	Minimal requirements	Recommended requirements
1 - 5	1 - 5	Processor: <ul style="list-style-type: none"> Intel P4 – 1,5 GHz Memory: <ul style="list-style-type: none"> 512 MB 	Processor: <ul style="list-style-type: none"> Intel Xeon 1 –2 GHz Memory: <ul style="list-style-type: none"> 1 GB
5 - 10	5 - 15	Processor: <ul style="list-style-type: none"> Intel Xeon –2GHz Memory 1 GB 	Processor: <ul style="list-style-type: none"> Intel Xeon – 3 GHz Memory: <ul style="list-style-type: none"> 2 GB
15 - 20	15 - 30	Processor: <ul style="list-style-type: none"> Intel Xeon dual – 2.2GHz. Memory: <ul style="list-style-type: none"> 2 GB 	Processor: <ul style="list-style-type: none"> Intel Xeon dual – 2.8GHz Memory: <ul style="list-style-type: none"> 3 GB
20 - 30	More than 30	Processor: <ul style="list-style-type: none"> Intel Xeon dual – 3GHz. Memory: <ul style="list-style-type: none"> 3 GB 	Processor: <ul style="list-style-type: none"> 2 Intel Xeon dual – 3.8GHz Memory: <ul style="list-style-type: none"> от 4 GB

The requirements to operating system OS

In table 2 shows the requirements to OS for database server.

Table 3. 2 – The requirements to the OS

Version SQL Server 2000	Operating system
Enterprise Edition	Microsoft Windows 2000 Server SP 4, Microsoft Windows Server 2003 Standard
Standard Edition	Microsoft Windows 2000 Server SP 4, Microsoft Windows Server 2003 Standard
Version SQL Server 2005	Operating system
Express Edition	Microsoft Windows XP SP2 or height, Microsoft Windows 2000 Server SP 4, Microsoft Windows Server 2003 Standard, Enterprise, Windows Small Business Server 2003 SP1
Workgroup Edition	Microsoft Windows 2000 Server SP 4; Windows 2000 Professional Edition SP 4; Windows XP Service Pack 2; Windows Server 2003 Standard Edition, Enterprise Edition, or Datacenter Edition SP 1; Windows Small Business Server 2003 SP 1
Developer Edition Standard Edition Enterprise Edition	Microsoft Windows 2000 Server SP 4; Windows 2000 Professional Edition SP 4; Windows XP Service Pack 2; Windows Server 2003 Standard Edition, Enterprise Edition, or Datacenter Edition SP 1; Windows Small Business Server 2003 SP 1 X64 Microsoft Windows Server 2003 Standard x64 Edition, Enterprise x64 Edition, or Datacenter x64 Edition with SP1; Windows XP Professional x64 Edition

The type OS for SMDB for Oracle or Firebird depends on the version of SMDB that is used. There can be used OS Windows or OS Unix.

The requirements to the client part of system

The requirement to firmware of the client part is showed in the table 3.3

Table 3.3 – The requirements to the client firmware

	Minimal requirements	Recommended requirements
Processor	Pentium III 1,2GHz	Pentium IV 1,8 GHz
Memory	256 MB	512 MB
Volume hard drive (HDD)	500 MB	750 MB

Client part can be working under the management of the following OS:

- Microsoft Windows 2000 Service Pack 4;
- Microsoft Windows XP Service Pack 2;
- Microsoft Windows Vista;
- Microsoft Windows 7.

Setup and configuration system

After system and database are installed it is necessary to make configurations of the parameters of program connection with database. In this laboratory work the program works with database FireBird 2.0 to configure the parameters of connection there is used the utility which opens from a window of authorization of the user of the system (fig. 3.2).

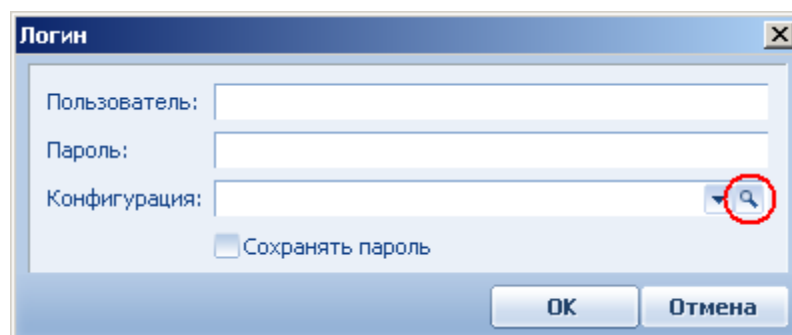


Figure 3.2 – The authorization windows

The interface of the utility of parameter configuration of connection is showed in fig. 3.3. The window shows all earlier connection parameters to all existing configurations of the system (databases), and also there are displayed the management buttons, allowing to change the established parameters of connection.

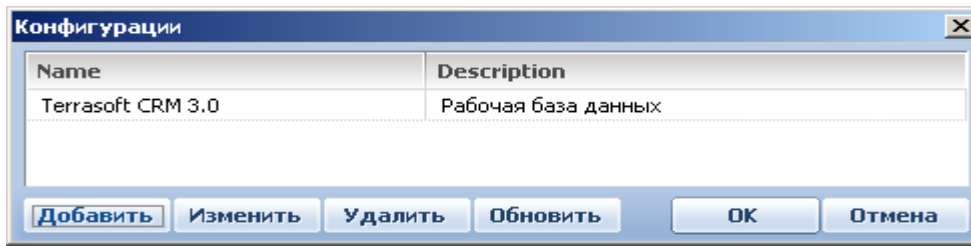


Figure 3.3 – The utility of configure parameters of connection with database

To create a new connection it is necessary to press the button Add, it opens the window of registration of the new connection in which it's necessary to write the following parameters:

- The name – the short name of connection which will be displayed in the window of authorization of the user at a configuration choice;
- The Description – the description of current connection allowing the user to understand, with which configuration (DB) this connection is established;
- DB Type – database type from which there is established the connection. Depending on the chosen type of DB parameters for adjustment of a line of connection are also changed;
- The Line of connection – there is necessary to write specific parameters of connection in a special edit window. You can open this window if you press the button Change.

To change the parameters of connection it is necessary to press the button to change and to bring respective alterations in the opened window.

In our case the system works with database FireBird 2.0 on the local computer and it is necessary to establish connection parameters, as shown in figure 3.4.

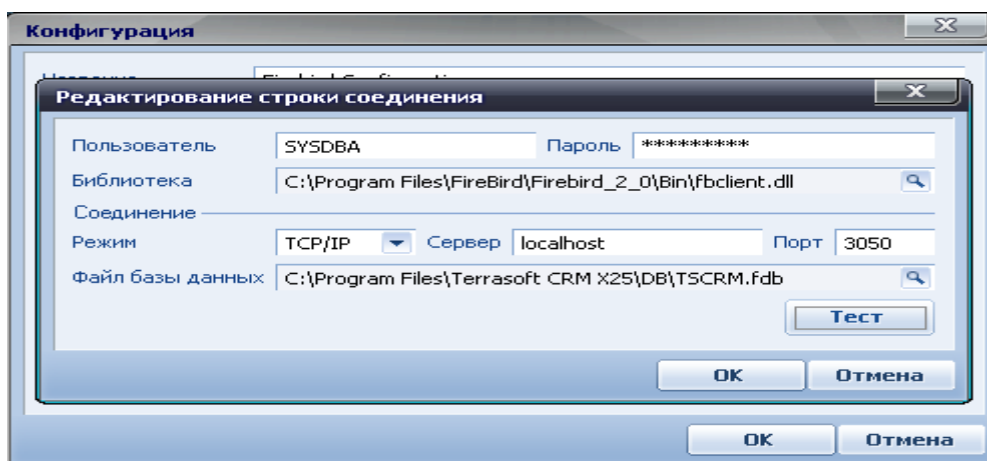


Figure 3.4 – The connection parameters with database for local version

In this case you have to use the following parameters:

- User – username SMDB FireBird 2.0, default: SYSDBA;
- Password – password for username “SYSDBA” default: MASTERKEY;

- Library – the path to the library for connection to the database server FireBird;
- Mode – this parameter identifies the type of connection with the database (local/network), there is written the protocol, the type of services and port number;
- File DB – the path to the database Terrasoft CRM 3.0 on the server FireBird 2.0.

After setting up all connection parameters you can test this connection with help of the Test button it is possible to make test connections to the base and if parameters are specified correctly that system will send the message as showed in figure 3.5.

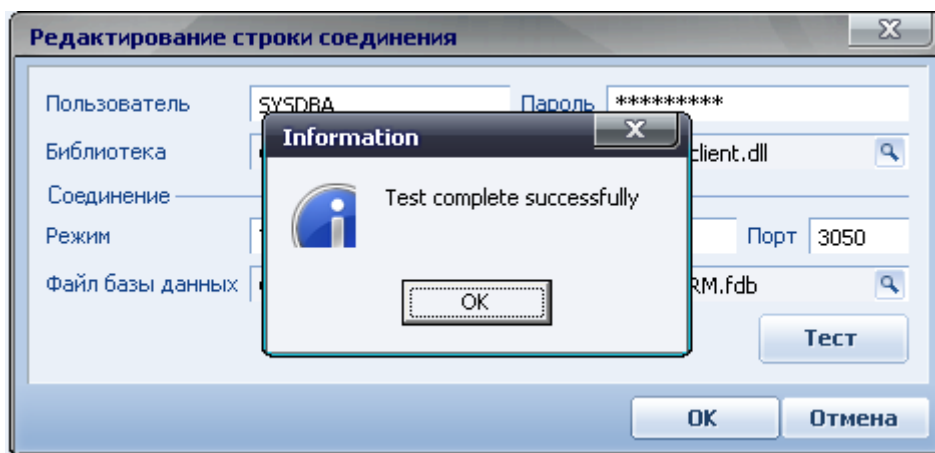


Figure 3.5 – The test of connection

After setup connection parameters with DB Terrasoft CRM 3.0 are done it is necessary to register in the system with help built-in account - Supervisor (without the password) – see fig. 3.6.

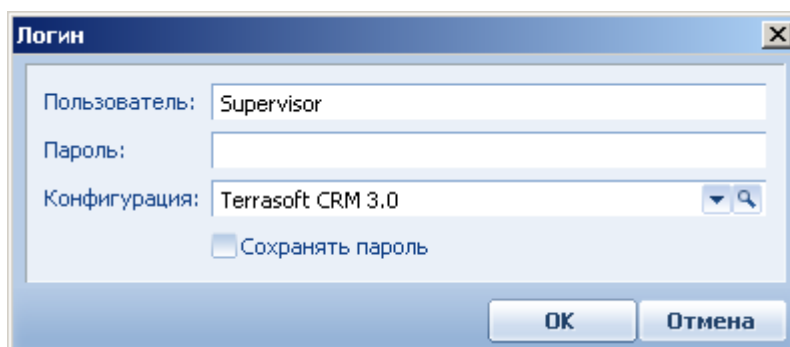


Figure 3.6 – Registration in system like as administrator

After registration into system like administrator you should create the user accounts for works in the system. At first you have to create accounts for the system administrator. You have to open the window *Administration/Users* and press the button *Add* (see fig. 3.7).

After addition of new users it is necessary to get licenses for their work. For that it is necessary to close the system and to start the program «Manager of

licenses». «The manager of licenses» allows generating a file inquiry about getting the license for the created users (fig. 3.8).

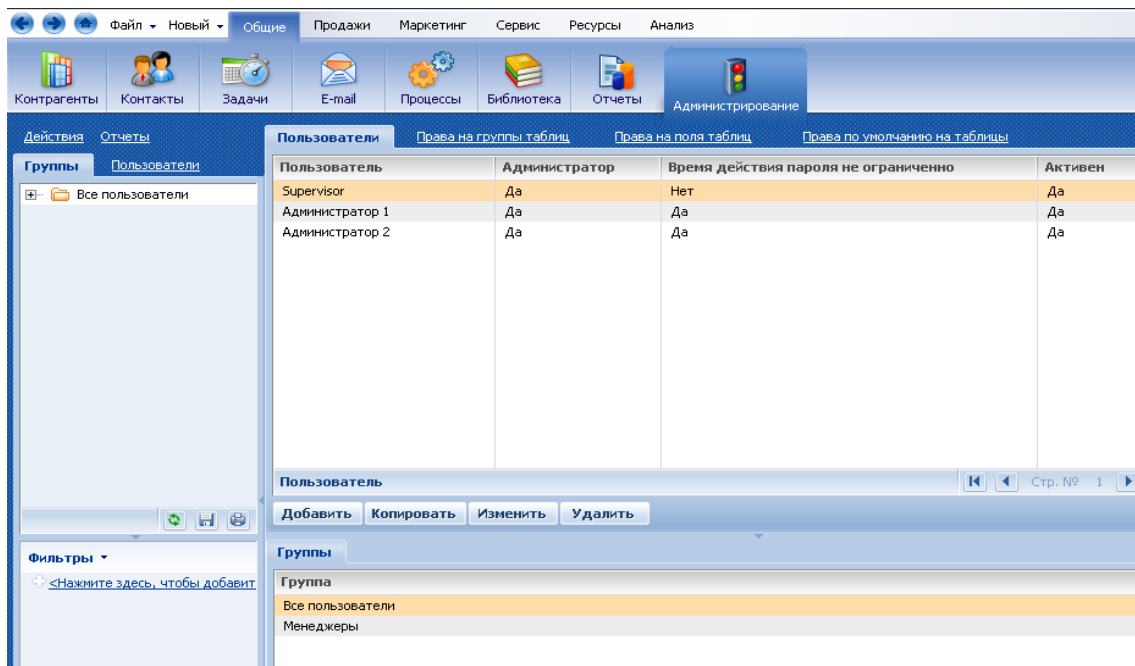


Figure 3.7 – Add the new user

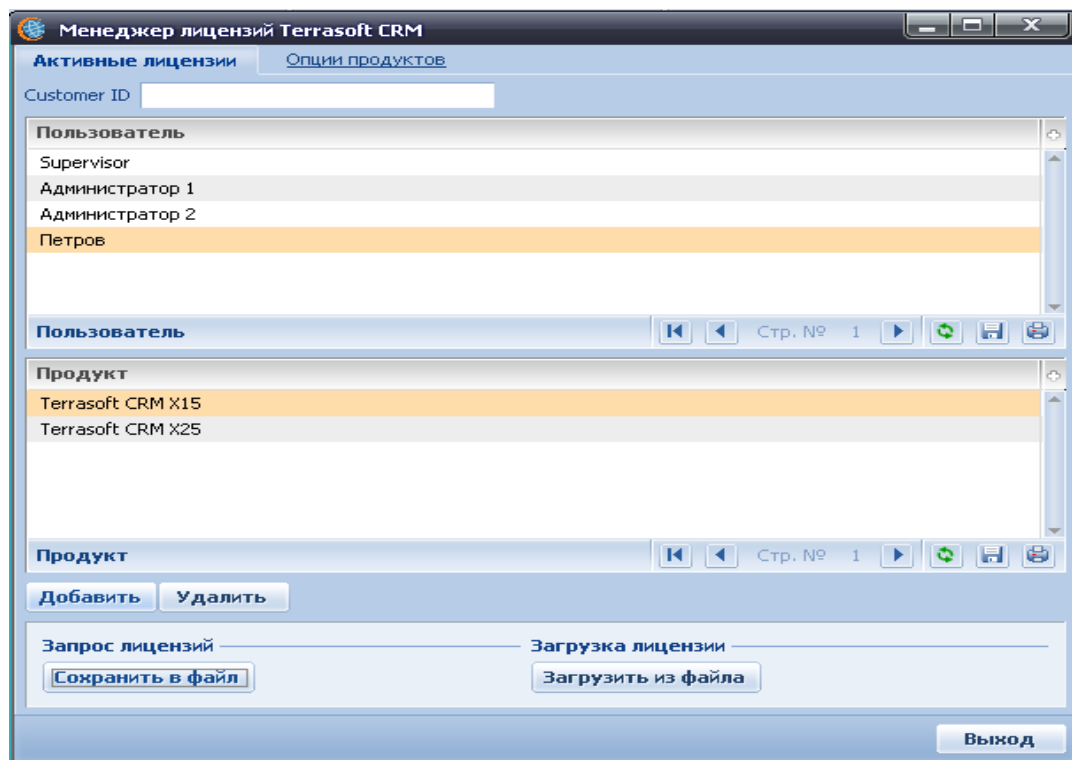


Figure 3.8 – The generate inquiry file of licenses

You have to choose accounts for which it's needed to request licenses, after that you have to save request in a file. The file saves it in the directory *bin* where the system was setup. To generate licenses you have to start up the program "Generator of licenses" and it opens the "file request" in this program (see fig. 3.9).

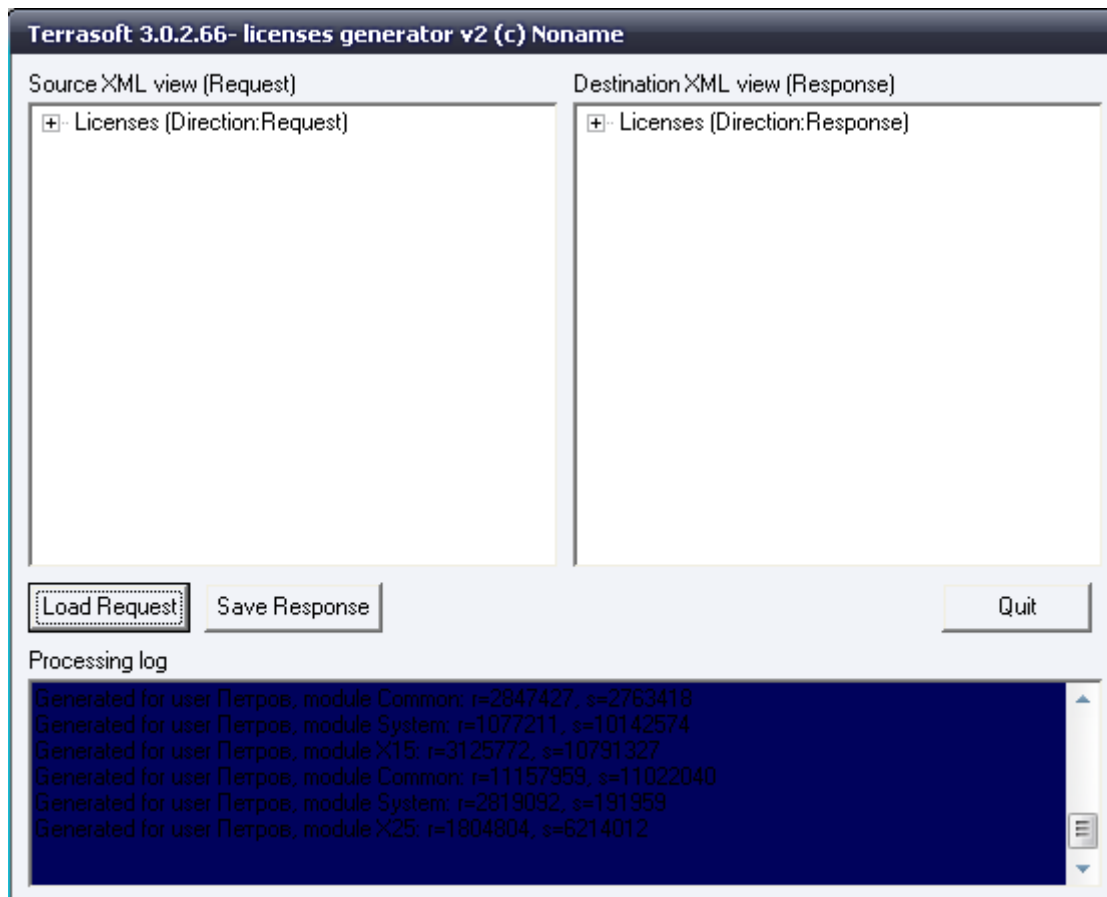


Figure 3.9 – Generate the file licenses

After you get the file licenses it is necessary to load them in the system with the help of “Manager of licenses”. If you do that users can register and work in the system.

The users interface and an example work of system

The general view of the main window of the program is showed in figure 3.10. The program allows the user to have history of interaction with clients, to plan tasks for the work with the client, to analyze and process the received information, and form reports according to the results of work.

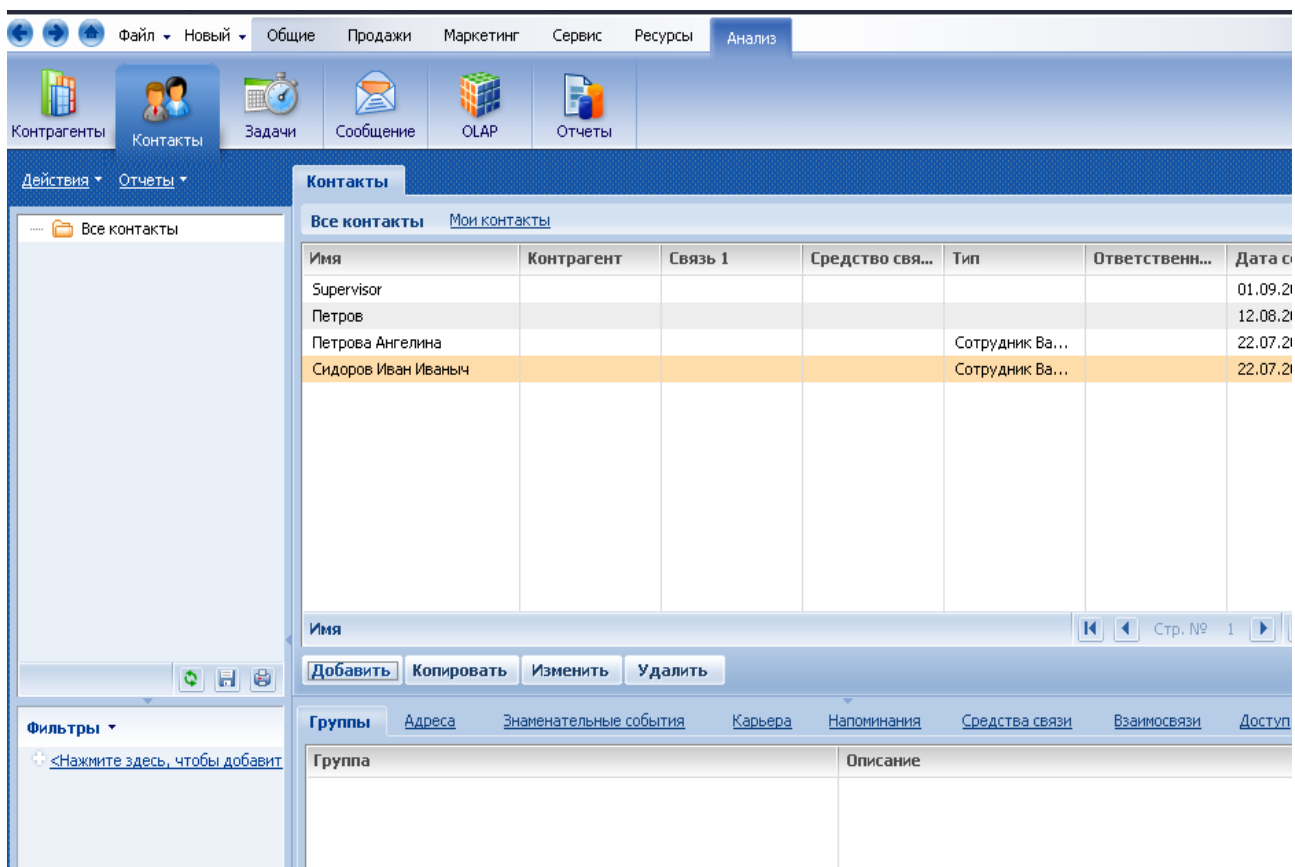


Figure 3.10 – The main windows of program

System basis are directories which are filled through the menu Files/directories. The system allows having directories of production, counterparts, types of documents, types of contacts and etc. the system can support more than 60 kinds of directories. Having registered in the system, the user has an opportunity to bring the new information in it or to analyze the information already existing in the system. The user can add new contacts, new counterparts and conduct history of interaction with them. Figure 3.11 shows the example of addition of a new counterpart, and figure 3.12 shows new contacts. Information addition is carried out through the dialog form which is started by the button "Add". As the counterpart there is understood physical or legal face engaged in enterprise activity (it is possible to tell that the counterpart is some kind of the enterprise). Contact is the concrete physical person (the employee of the enterprise) through which we cooperate with the counterpart.

Название	Тип контрагента	Основной контакт	Связь	Средство связи
Контрагент				
Название	Трейс			
Полное название	Трейс Инвест Групп			
Код	1			
Основной контакт	Сидоров Иван Иванович	Ответственный	Сидоров Иван Иванович	
Воздействие		Отрасль	Телекоммуникации	
Тип контрагента	Поставщик	Вид деятельности	Производство	
Количество сотрудников	12	Годовой оборот	1000000	
Средства связи		Местоположение		
Телефон	7122036	Территория	Украина	
Web	www.ter.ua	Тип адреса	Юридический адре	
E-mail	mec@ter.ua	Страна	Украина	Регион
		Город	Одесса	Индекс
		Адрес		
<input type="button" value="OK"/> <input type="button" value="Отмена"/>				

Figure 3.11 – The add a new counterpart

Контакт				
Имя	Сидоров Иван Иванович			
Приветствие	г-н	Ответственный		
Обращение	Иван Иванович	Пол	Мужчина	
Воздействие		Тип	Поставщик	
Место работы				
Контрагент	Трейс	Роль		
Должность	Руководитель отдела	Департамент	ИТ	
Полное название должности	Руководитель отдела			
Средства связи		Местоположение		
Телефон	7122036	Территория	Украина	
Web	www.ter.ua	Тип адреса	Юридический адре	
E-mail	mec@ter.ua	Страна	Украина	Регион
		Город	Одесса	Индекс
		Адрес		
<input type="checkbox"/> Не звонить <input type="checkbox"/> Не включать в рассылку				
<input type="button" value="OK"/> <input type="button" value="Отмена"/>				

Figure 3.12 – The add new contact

Filling the card of Contact if contact belongs to any counterpart is possible in the column "Counterpart" chosen from the directory of corresponding value and the system itself will fill the contact information.

The system allows to put tasks and to trace terms of their execution this function is accessible through the menu *Task*. The process of creating a new task is showed in figure 3.13.

The screenshot shows a window titled "Задача (Новая запись)". The form is organized into several sections:

- Название:** "Подготовить договор для компании Траст ЛТД"
- Дата начала:** "11.11.2008 15:05" (dropdown)
- Дата завершения:** "11.11.2008 15:20" (dropdown)
- Приоритет:** "Высокий" (dropdown)
- Тип:** "Выполнить" (dropdown)
- Ответственный:** "Сидоров Иван Иванович" (searchable field)
- Автор:** "Сидоров Иван Иванович" (searchable field)
- Напоминания:** Автору (11.11.2008 15:05), Ответственному (.. :)
- Отображать в расписании:**
- Сроки:**
 - Состояние:** "Не начата" (dropdown)
 - Продолжительность:** "0 ч. 15 мин."
 - % выполнения:** "0"
 - Фактически завершена:** ".. :" (dropdown)
 - Результат:** (dropdown)
 - Фактически часов:** "0" (input), **Минут:** "0" (input)
 - Подробно:** (text area)
- Связи задачи:**
 - Контрагент:** "ТрастЛТД" (searchable), **Документ:** (searchable)
 - Контакт:** "Павлюк Андрей" (searchable), **Счет:** (searchable)
 - Воздействие:** (searchable), **Договор:** (searchable)
 - Проект:** (searchable), **Инцидент:** (searchable)

Buttons "OK" and "Отмена" are located at the bottom right.

Figure 3.13 – The process of creation a new task

In section "Reports" it is possible to carry out the analysis of work of employees on various indicators. There are several pre-established reports which analyze the activity of the company by one or other indicator in the system. The system gives possibility to form new reports (by means of the designer of reports). Figure 3.14 is showed the list of system reports.

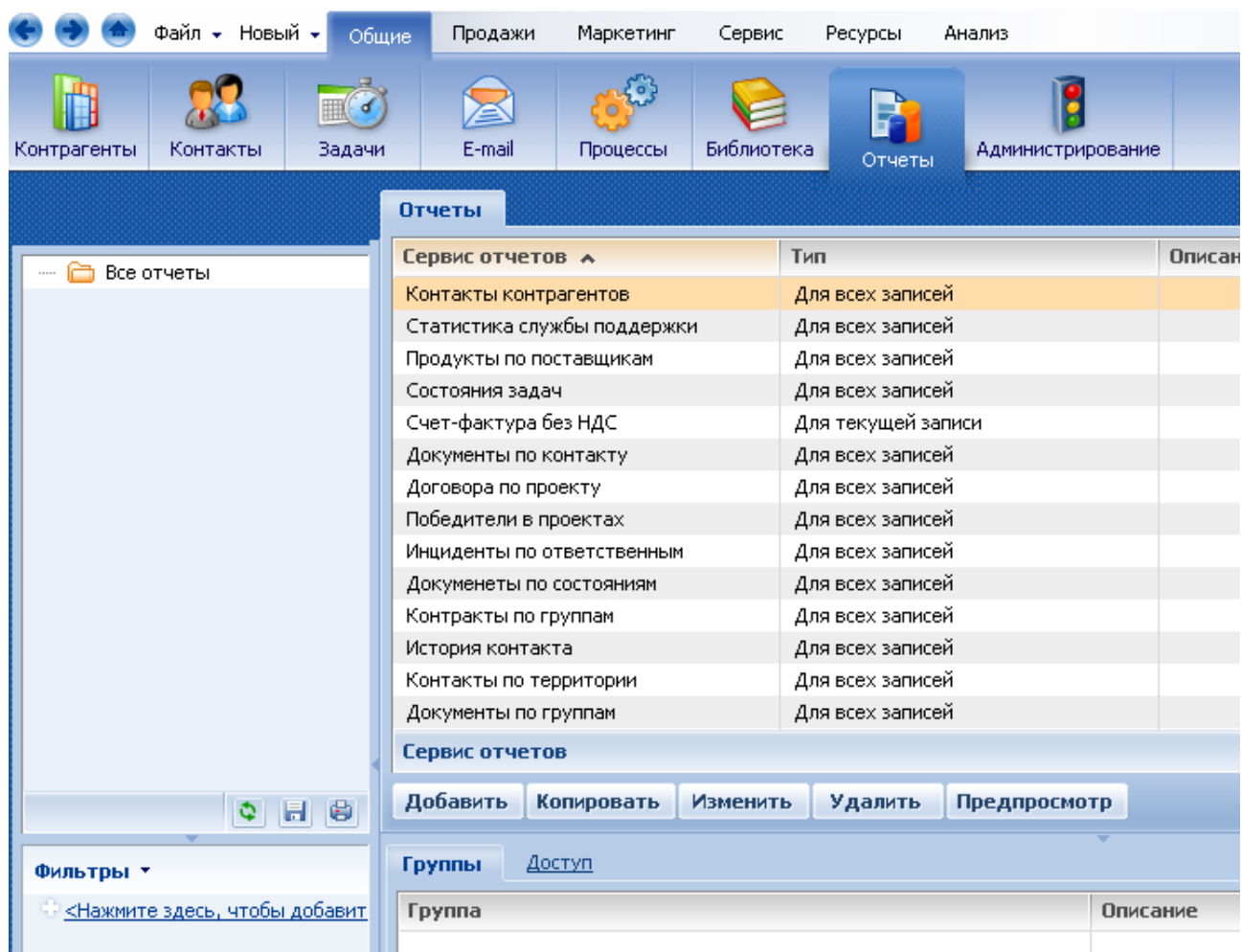


Figure 3.14 – The system reports

Let's consider an example of formation of the report on contacts of counterparts. For formation of the report the system suggests the user to establish several filters with the help of which it is possible to detail these or those parameters of the report. For the report «Contacts of counterparts» it is possible to use the following filters:

1. Contact – it is possibility to choose needed records from the handbook counterpart.
2. Owner – it is possibility to write the name of employer of company and get information about contacts which was created them.
3. Owner Department – is the set filter by departments of company.

Figure 3.15 shows the report which was created using the filter Owner.

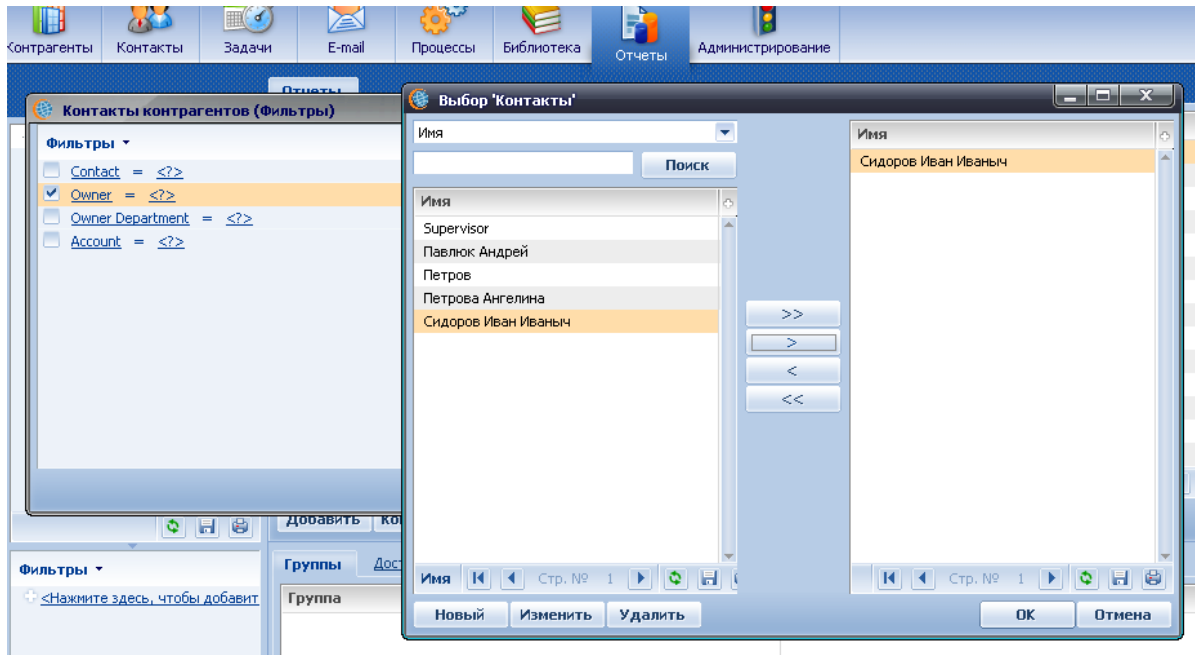


Figure 3.15 – The report which was created with used filter Owner

Figure 3.16 shows the result of performance of the report «Contacts of counterparts» with the use of the filter Owner.

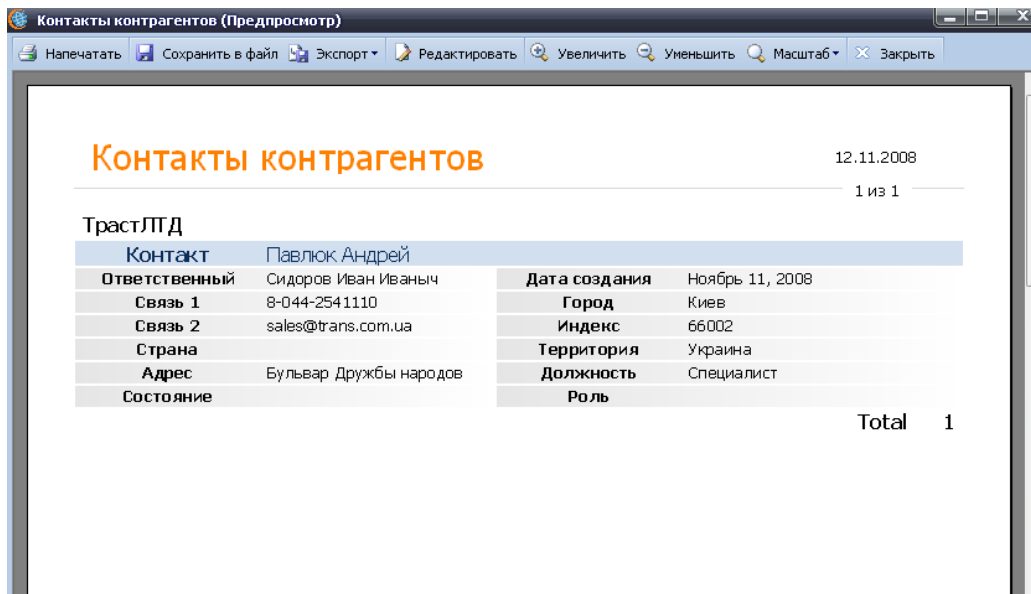


Figure 3.16 – the result of performance of the report «Contacts of counterparts» with use filter Owner

If surface of the report doesn't approach those or other parameters it is possible to edit it by means of the editor of reports, for this purpose it is necessary to press the button "Edit" in a preview window.

3.3 Key questions

1. What is the CRM system? Where can it be used?
2. What types of the CRM system do you know? What is the difference between it?
3. What main functions of the CRM systems do you know?
4. According to what technology does Terrasoft CRM work?
5. Describe the functional parts of the Terrasoft CRM system?
6. What types of the database can Terrasoft CRM system use?
7. How many levels does Terrasoft CRM architecture have? Describe these levels.
8. What type does Terrasoft CRM belong to?
9. What types of the OS can Terrasoft CRM use?

3.4 The home task

1. Study key points.
2. Prepare answers to key questions.

3.5 The laboratory task

1. Setup the «Terrasoft CRM» system.
2. Configure the Settings with the system.
3. Register like an administrator into the system and add a new user.
4. For a new user generate a file of license and add new licenses into the system.
5. Register in the system with a new user account.
6. Add a new contact and a new counterpart. Fill in necessary handholds.
7. Add a new task and set the task control.
8. Create reports for additional contact with the help of different filters.

3.6 Protocol requirements

1. Name of the laboratory work.
2. Purpose of the work.
3. Home task results.
4. Short report on the laboratory task.
5. Conclusions.
6. Date, signature of the student, visa of the teacher.

LABORATORY WORK № 4

Theme: Automation systems of accounting. Part 1:

4.1 Purpose of work: to research work principles of automation financial activity of the enterprise on the example of the accounting system 1C.

4.2 Key points

The main information about the system 1C

1C:Enterprise is a system of automation of the enterprise activity (some business processes of the enterprise). The system 1C:Enterprise can be used for automation of different sides of economic activities of the enterprise: the account of commodity (goods) and material means, mutual settlement with counterparts, calculation of salary, calculation of amortization of the fixed assets, accounting on any sections and etc. The system 1C consists of several components (elements). In figure 4.1 there is showed the scheme of interaction between the different components of 1C: the Enterprises.

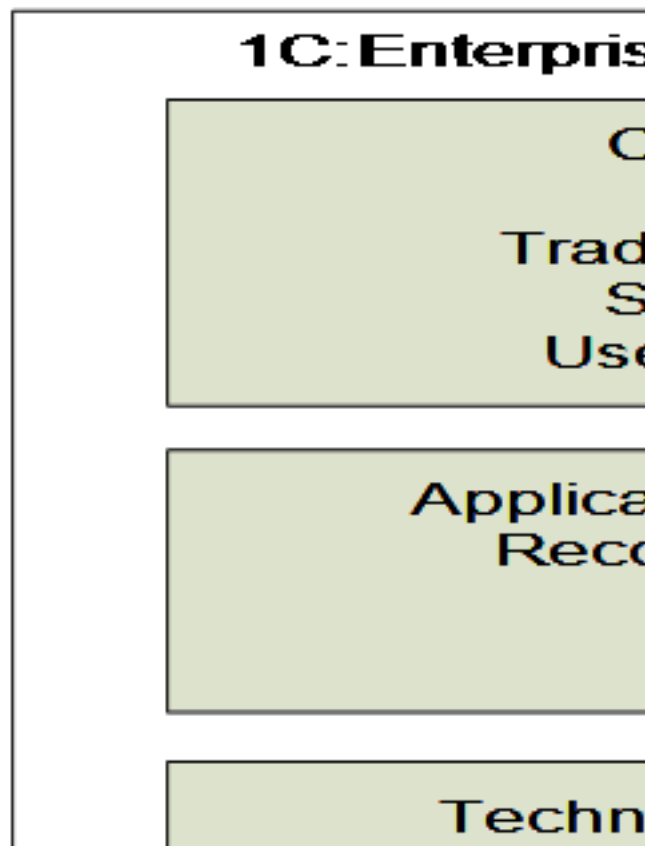


Figure 4.1 – The structure chart 1C: Enterprise

One of accents of the program, is its scalability: the same configuration can work on the local computer, in a network and on the server under control of MS SQL Server 2000/2005.

At starting the system 1C: Enterprise there opens the dialogue form (fig. 4.2) in which you can choose the information base and the mode of operation ("Enterprise", "Configurator", "Debugger", "Monitor").

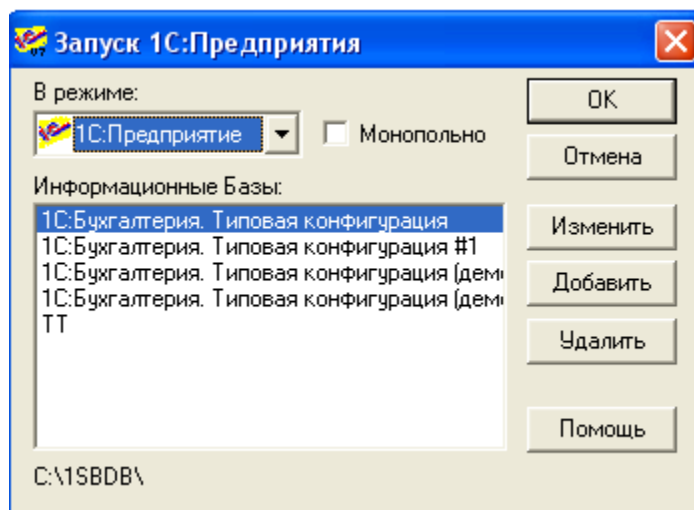


Figure 4.2 – Starting up the system 1C:Enterprise

The first start is always made in an exclusive (monopolistic) mode because there is a creation of index files.

The component structure of system 1C

The system 1C: has the component structure. Some possibilities of the system 1C are basic for the decision of automation problems that means they are supported in any variant of delivery of system. First of all these are mechanisms of handbook and document support. Other possibilities are realized by the system components: for example, conducting the list of business accounts. Thereby the structure of established components defines the functionality of the system.

There are three main components (see fig. 4.1): "Accounting", "Record management", "Calculation". Every component has a special information processing mechanism that expands possibilities of system. These mechanisms can't be compared with specific goals of subject domain automation however they have definite orientation which defines the choice of necessary structure components for creation of a concrete configuration.

The Component "Accounting" realizes the reflection of the business transactions that take place in accounting of the enterprise. It uses the terms like accounting records, accounting transactions and accounting conducting. The "Accounting" possibilities allow to keep records parallel in several accounting records, to keep multidimensional and multilevel analytical account, the quantitative and currency account. The component "Accounting" gives possibility of conduct accounting for several enterprises in the same information base.

Component «Record management» is used for automation of the record management of presence and movement of means. The Record management

possibilities allow to register movements and to get the information about movements and the rests of commodity, material, cash means and other means of the enterprise in real time in different cuts. The Record management supports the mechanism of registers which provides record of movements and get the record of the rests in different cuts. This mechanism allows automating the account of mutual settlements with clients, the account of warehouse stocks of the goods, and many other things. One of the ranges of using the component “Record management” is automation of the account of warehouse and trading operations.

The component "Calculation" is used for automation of difficult periodic calculations. The “Calculation” possibilities allow to carry out calculations of different complexity, including recalculation of results "backdating" (post factum) and to conduct archive of calculations for the recent periods. These possibilities are realized by the calculations magazines that support this component. One of the ranges of using the component “Calculation” is salary calculation.

The system 1C: Enterprise represents a set of mechanisms intended for manipulating different types of objects of subject domain. A specific set of objects, structures of information files, algorithms of the information processing are defined by a concrete configuration. The configuration and the system 1C: Enterprise is represented like a ready software product that can be used for solving the tasks of accounting. The configuration is created by authorized tools of the system. The configuration is usually delivered by company «1C» as typical for a concrete scope, but can be changed by the user of the system, and also there can be developed a new one.

The elements of the system 1C

Configurator

One of system 1C basic elements is the Configurator. The system can be started in two modes – in the Configurator mode (it allows to adjust the system components and to remember them in a database) and in a user mode (it is used for the purpose of input, processing, storage and delivery of the summary information on enterprise activity).

Programs for 1C are usually called "configurations" and are created in a special "Configurator" mode. Users usually work in the mode "Enterprise".

The 1C “Configurator” is a special mode of starting the 1C and is used for developers and programmers. In this mode the developer creates or corrects the database structure, programs modules, compiles administrative works.

In the “Configurator” mode it is impossible to enter new information into the database. Users usually work in the other mode "Enterprise". In this mode allows data input, filling of handbooks and input of documents, formation of reports and start of processing. In the mode Enterprise it is impossible to edit the configuration structure. In figure 4.3 there is shown the main window of the “Configurator”

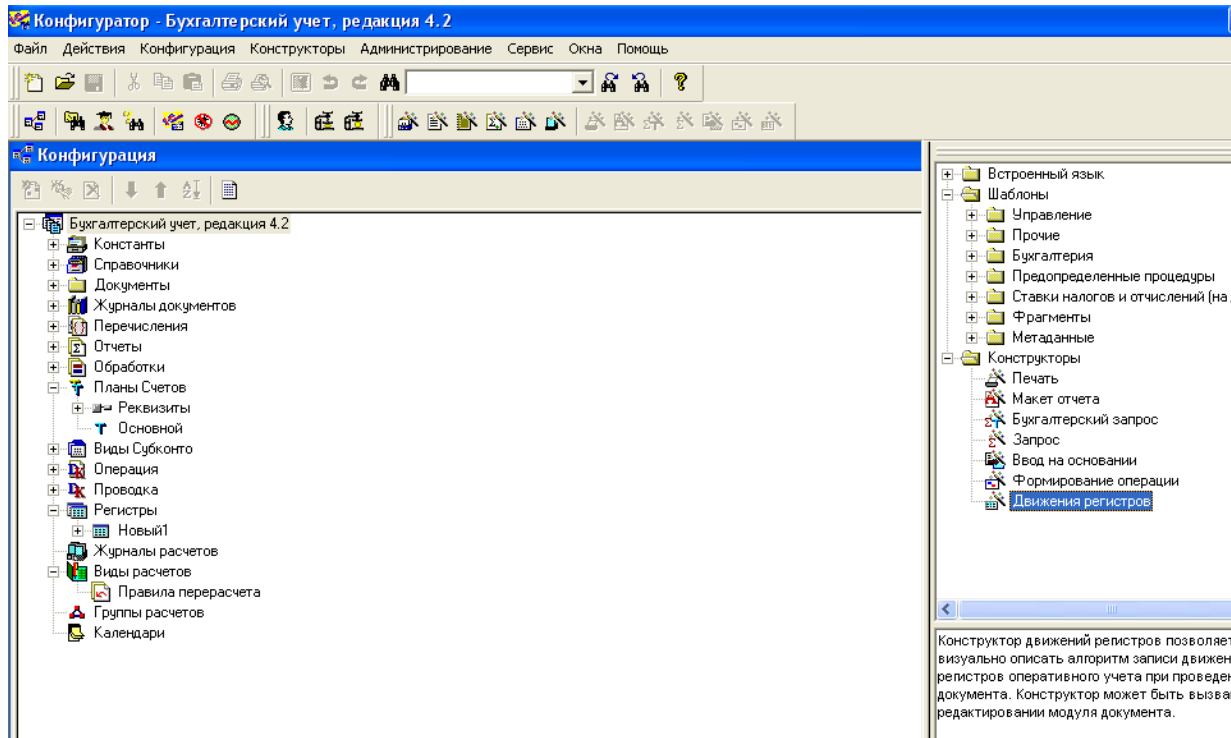


Figure 4.3 – The main window of the “Configurator”

In the left part of the window there is presented the configuration tree in which the database structure is edited. In the right part the window presents the Syntax-assistant which is often used in writing program modules to remember syntax or parameters of a concrete procedure/function.

Configuration tree (metadata)

The configuration tree makes it possible to open lists of objects (a constant, handbooks, documents etc.). It’s possible to add, delete, edit the objects, change their order, to sort, to write to make a description of them. Each object has properties and the context menu (it can be opened with the right button of the mouse).

The configuration also has inserts “the Interfaces” and “the Rights” (they can be opened with “help” buttons that are situated at the bottom of the configuration windows). Besides, when a in the Action menu There are accessible menu-items "Global module", "the General tables" and "Library of pictures" if the configuration tree window is active. The main view of the configuration tree is shown in figure 4.4.

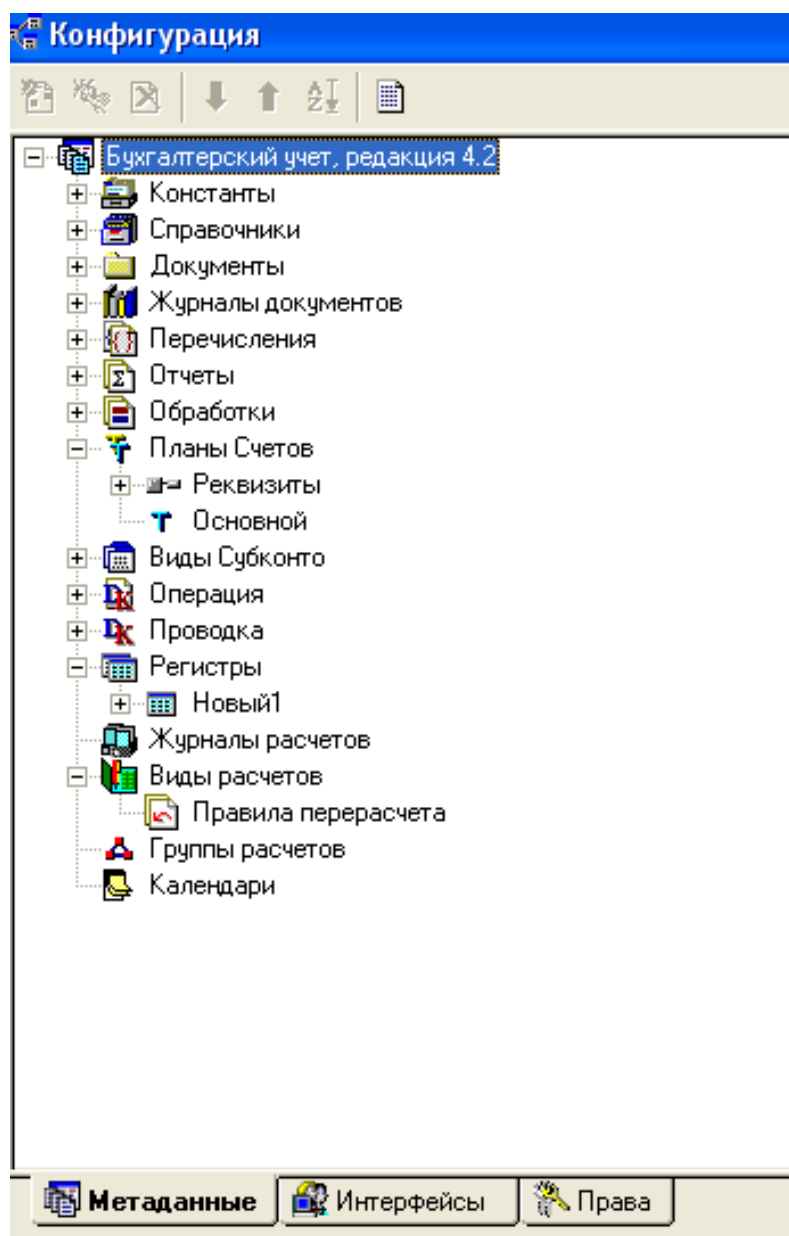


Figure 4.4 – The configuration tree window

Objects, attributes and methods

The most important idea of 1C is the "object". The object is an element of the real world. The Object can be anything you like: a computer, a person, a document etc. In office activity of the enterprise there are usually used the following objects: documents, reports, handbooks, procedures, accounts, posting. The program for 1C is represented as a set of objects interconnected between themselves (i.e. a configuration of objects).

Objects have some attributes (properties, requisites). For example, the object “employee” has a surname, a name, a patronymic, a salary, a clock number. The order has a number and a date. The object properties are set by the developer.

Objects also have certain methods (procedures and functions). For example, you can choose all employees with the help of the handbook method *Выбрать Элементы ()*, or you can save a document with the help the method *Записать ()*.

The built-in programming language

The behavior of the configuration objects is set in the built-in language. The programmer can write in the built-in language 1C his own modules consisting of procedures and functions. The built-in language allows working with handbooks, documents and other 1C objects. For example it is possible to choose all elements of handbook “Employees” to output into the report.

Modules, procedures and functions

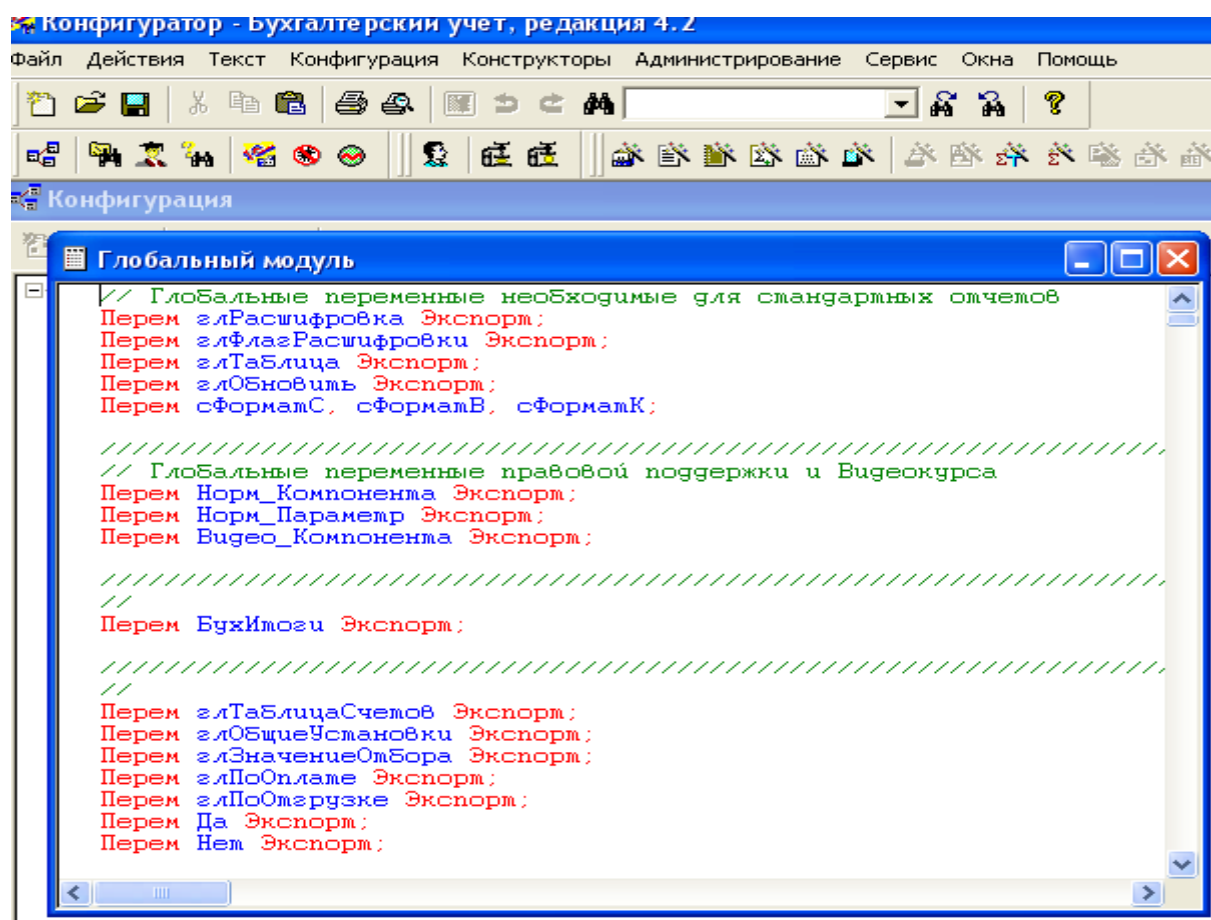
The configuration consists of modules. They can be modules of documents or modules of reports or other modules. Modules consist of procedures and functions.

Procedure is a small program for realization of a certain task. A Function differ from a procedure only in having a *result*. That means “a function returns a result”.

For example, the module "Order of employment" can have the following procedures of **ПроверитьПравильность()** and **НапечататьПриказ()**.

The global module

There is the so-called Global module in the system 1C. It refers to all configuration. The global module is necessary for creating procedures and functions that are accessible in any place of a program (in any other module). For this purpose there is used a special simple keyword **Export**. It is possible to create global variables which can be used in any place of the program. There shouldn't be a lot of global variables because it makes the modules more independent from each other. The global module is shown in figure 4.5.



The screenshot shows the 'Конфигуратор' (Configuration Editor) window for 'Бухгалтерский учет, редакция 4.2'. The main window displays the 'Глобальный модуль' (Global module) code. The code is written in a simple programming language and defines several global variables using the 'Перем' (Variable) keyword and the 'Экспорт' (Export) keyword. The variables are grouped into sections separated by slashes. The first section defines variables for standard reports: 'гРасшифровка', 'гФлажРасшифровки', 'гТаблица', 'гОбновить', and 'сформатС', 'сформатВ', 'сформатК'. The second section defines variables for legal support and video course: 'Норм_Компонента', 'Норм_Параметр', and 'Видео_Компонента'. The third section defines the 'БухИтого' variable. The fourth section defines variables for reports and settings: 'гТаблицаСчетов', 'гОбщиеУстановки', 'гЗначениеОтбора', 'гПоОплате', 'гПоОтгрузке', 'Да', and 'Нет'.

```
// Глобальные переменные необходимые для стандартных отчетов
Перем гРасшифровка Экспорт;
Перем гФлажРасшифровки Экспорт;
Перем гТаблица Экспорт;
Перем гОбновить Экспорт;
Перем сформатС, сформатВ, сформатК;

////////////////////////////////////
// Глобальные переменные правовой поддержки и Видеокурса
Перем Норм_Компонента Экспорт;
Перем Норм_Параметр Экспорт;
Перем Видео_Компонента Экспорт;

////////////////////////////////////
//
Перем БухИтого Экспорт;

////////////////////////////////////
//
Перем гТаблицаСчетов Экспорт;
Перем гОбщиеУстановки Экспорт;
Перем гЗначениеОтбора Экспорт;
Перем гПоОплате Экспорт;
Перем гПоОтгрузке Экспорт;
Перем Да Экспорт;
Перем Нет Экспорт;
```

Figure 4.5 – The global module

Accounting bases

The accounting represents the ordered system of gathering, registration and information generalization in money terms about property, obligations of the organizations and their movement in/over the solid, continuous and documentary account of all economic operations.

Objects of accounting are the property of the organization, its obligation and the business transactions which are carried out by the organization in the course of its activity. The main goals of accounting are:

- Formation of full and reliable information about the activity of the organization and its property status;
- Providing of the information which is necessary for internal and external users of the accounting reporting for control over the observance of the legislation of Ukraine at realization of business transactions and their expediency, presence and movement of property and obligations, usage of material, labor and financial resources according to the confirmed norms, specifications and estimates;
- Prevention of negative results of business transactions of the organization and revealing of intra-economic reserves of maintenance of its financial stability.
- *The basic requirements to spread sheeting;*
- Spread sheeting is realized only on the basis of the primary registration documents which are made at carrying out of business transactions. These documents should be made under the unified standard forms and have a number of obligatory requisites;
- There is Used the standard card of accounts for accounting (the organization can generate the working card of accounts on its basis itself);
- Checking and documentary confirmation of the accounting data and the reporting are realized by carrying out obligatory inventory;
- Conducting the account of property, obligations and business transactions of the organization;
- Compliance of the analytical account data to turns and the rests under accounts of the synthetic account.

Accounting is conducted in national currency. Records under currency accounts and operations in foreign currency are made in hryvnas with recalculation at the rate of national bank for the date of fulfillment of the operation. At the same time these records are made in currency of calculations and payments.

The elements of the accounting

1C is a software that makes it possible to lead any types of accounting. There are used the following elements of accounting.

Account and card of accounts

The account in 1C corresponds to the usual accounting record. The account can be considered as a folder in which money is stored. All accounting operations consist of remittance from the account into the account, depending on the operation type. Set of accounts forms a card of accounts. At the enterprise there can be applied the same card of accounts at the same time. The account has a code and a name. The length

and structure of the accounting record is set in a configuration, for example, ##. ##. The accounts set in the Configurator mode can't be edited in the user mode.

Subaccount

An account can have subaccounts. Subaccounts are some kind of a concrete definition of a special-purpose designation of money being on the account or spent with the account. For example, account 10 "Materials" can have subaccount 10.3 "Fuel". In system 1C it is possible to use subaccounts with a more difficult structure – a subaccount can have, in its turn, a "subsubaccount" and so on.

Analytic account (subconto and type of subconto)

The analytical account is intended for reception of the information of presence and movement of the enterprise means not only for accounts, but also in more detailed cuts.

The term subconto is used for a designation of the analytical account objects in the system 1C. The subconto makes it possible to have a more detailed information on the enterprise with the help of means that are accumulated on accounting records. For example, movement of concrete basic means.

Type of subconto. Type of subconto is set of the same objects of the analytical account. For one account can be possible to keep the analytical account by several types of subconto. So, for example, for account 10 can be defined the analytical account by two types of subconto "Materials" and "Warehouses".

Account divider

The system 1C: allows keeping accounting of the several enterprises in one information base. The account divider is used for this purpose. The account divider is a same value, for example "Firm" which is brought in each posting and allows receiving all accounting results on each such value separately. It allows having, actually, some independent balances.

Transaction and posting

For displayed the information about enterprise economic activities in accounting are used transaction. Each transaction can have one or several postings. The posting always belongs to one and only one transaction. Each of transaction, in turn, can have one or several correspondence. The postings are called difficult if it has a several correspondence. In really posting displays movement of means from one account on another.

Transaction has the following properties: transaction maintenance, its total sum, date, number, and also other requisites defined by the configuration.

Posting has the following properties: debit account, credit account, subconto of credit account, posting sum, currency, quantity, currency sum, and also other requisites defined by the configuration.

The register of transaction is used for viewing the accounting transaction list. Each transaction is displayed in it in one line that contains the most important information on transaction: date, document type, maintenance, sum of transaction and etc. There is a possibility of viewing the postings of the current transaction.

The *register* of postings is means of viewing the entered postings. Each transaction has one or several postings. Posting always belongs to one and only to one operation. In *register* of postings one can view postings that are reflected in different transactions.

The main working methods with system 1C

At first it is necessary to create the new catalog to place working base. The catalog can be created in any point of the file system. After catalog creation we start system configurator 1C and add a new database, as shown in figure 4.6.

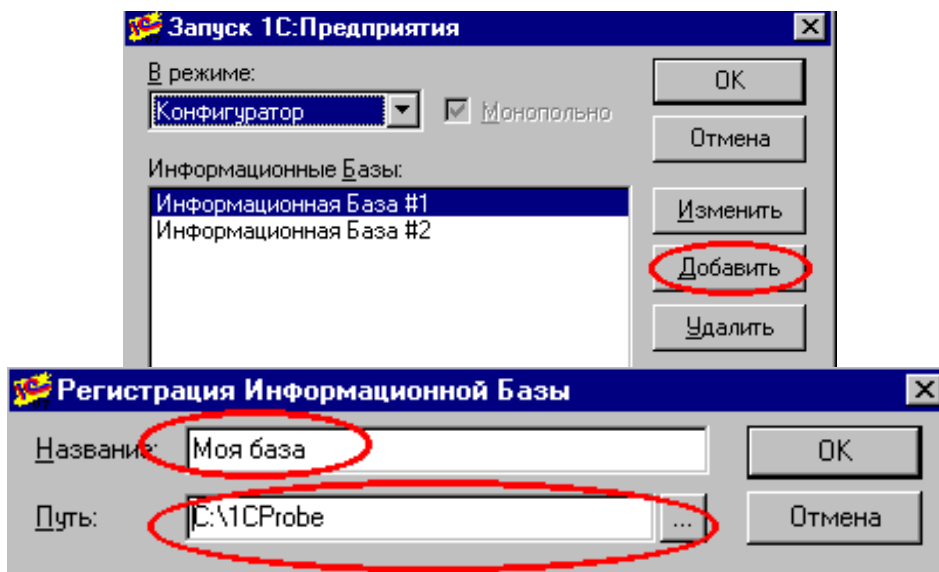


Figure 4.6 – Adding a new base

After the new database has been added it will be accessible to work with and this new database will be show in the selection window (see figure 4.7).

For data set editing it is necessary to start a configurator and to open a configuration tree. For this purpose it is necessary to make initial initialization. For this purpose in the Operation menu it is necessary to choose the submenu *Configuration*. After the window of configuration opens choose the menu File -> Save and save the initial data. It is necessary to answer all additional questions pressing *OK* or *Accept*. At the end there will be created an empty initialized database accessible for configuration.

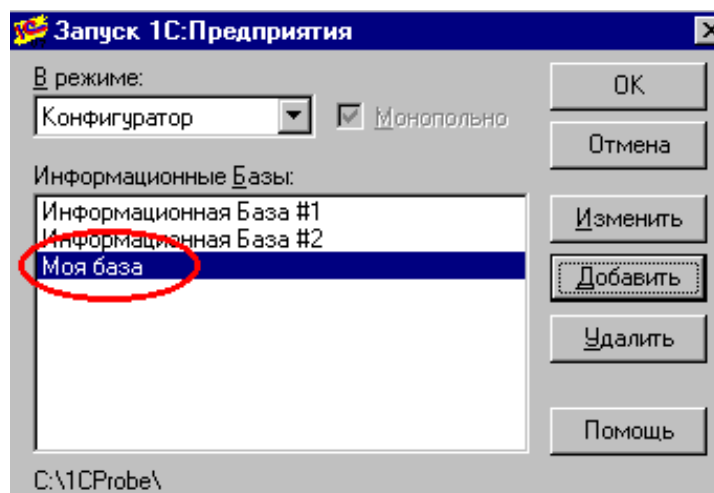


Figure 4.7 – The choice of work database

First of all it is necessary to create in the configuration such objects as constants, handbooks and accounts (card of accounts) for maintenance of working capacity of the system. We will consider creation of card of accounts.

For that it is necessary to start configurator with our base and we will choose the item of the menu Operation -> Configuration. There will open a panel, with a configuration tree in which there is an item Card of accounts (figure 4.8).

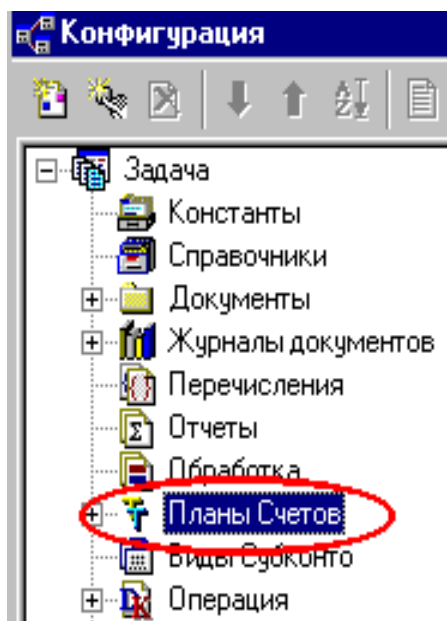


Figure 4.8 – The card of accounts

For creation of a new card of accounts it is necessary to click the right button of the mouse on the item Card of accounts and choose the menu item “New card of account”. There opens the window where you can create a new card of accounts. In the field *identifier* there is a possibility to give a name to card of accounts, for example NEW (see figure 4.9).

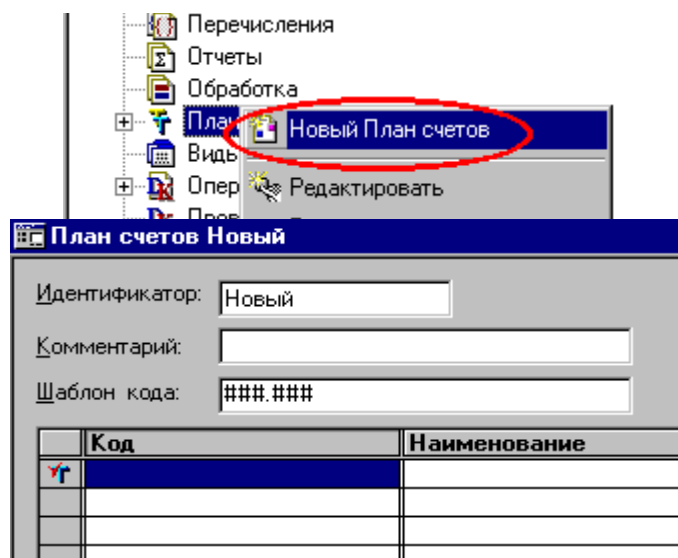


Figure 4.9 – Adding a new card of accounts

After each change of the data structure it is necessary to save these changes, it is done with the help of the menu File-> Save.

It is possible to create new accounts after the creation of the New card of accounts. For this it is necessary to click twice under the name of card of accounts. There will open an edit window of accounts (figure 4.10).

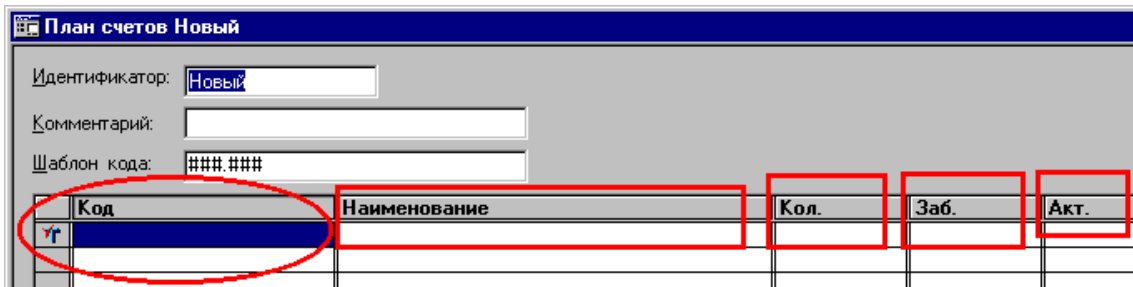
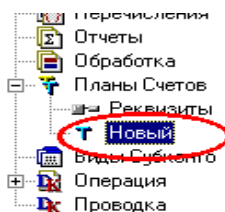


Figure 4.10 – The edit window of accounts

The fields *name (identifier)* and *comment* does not commit to anything, its parameters are defined for accouters. The field *code template* is necessary as it describes the general rules of creation of accounts codes. In this case it is specified that the number of account can consist of 3 symbols and the account can have one level subaccount with the number of three symbols too. If this field is changed change to *###. ###. ###* it will mean that the number of account consists of three symbols and there can be subaccounts of two levels with names consisting of three symbols.

To create an account it is necessary to click the right button of the mouse and to choose in the menu the item *new line* (figure 4.11).

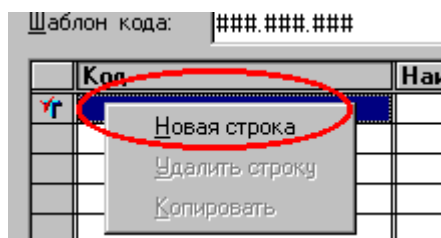


Figure 4.11 – Adding a new account

In the figure 4.12 there is showed the example of creating a new account with the number 50 and the name Test (Проверка). After you have written the name of account you have to press Enter and the system asks you - *Will the account have the subaccounts?*

Every account can have a set of additional attributes, for example it is possible to have quantitative accounting for account, and an account can be active or passive. The accounts can also be used for inside accounting that hasn't any influence on accounting. This accounts are the so called *off-balance accounts*. Figure 4.13 shows the accounts with different attributes of accounting.

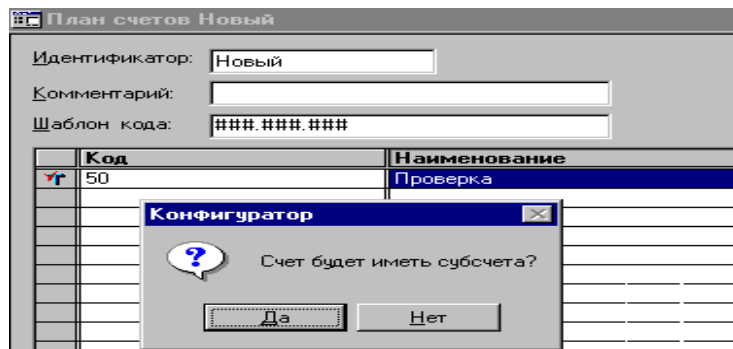


Figure 4.12 – The creation of a new account with the number 50 and the name Test

Код	Наименование	Кол.	Заб.	Акт.
50	Проверка			ΔП
51	Проверка кол учет	+		ΔП
52	Проверка заб		+	ΔП
53	Проверка А			А
54	Проверка П			П

Figure 4.13 – The card of accounts with different attributes of accounts

If you want to see what accounts there are it would be necessary to create the report which gives out the information on this question. To do that in the window *Configuration* it is necessary to choose the item *Reports*, to click on it with the right button of the mouse and to create a new report. In the opened dialogue window there is written the identifier of report and comment (figure 4.14).

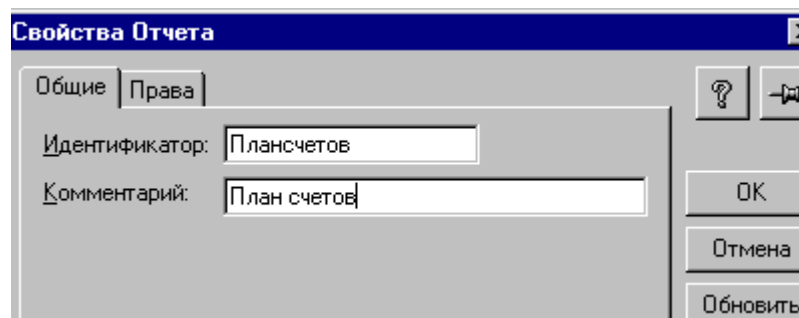
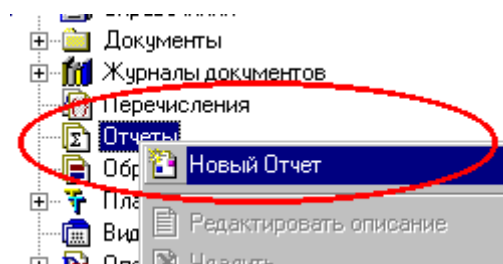


Figure 4.14 – The creation of a new report

There is a new element in configuration window. If you click on it two times it opens a window of adjustment of a dialogue window of the module and the report table (see figure 4.15).

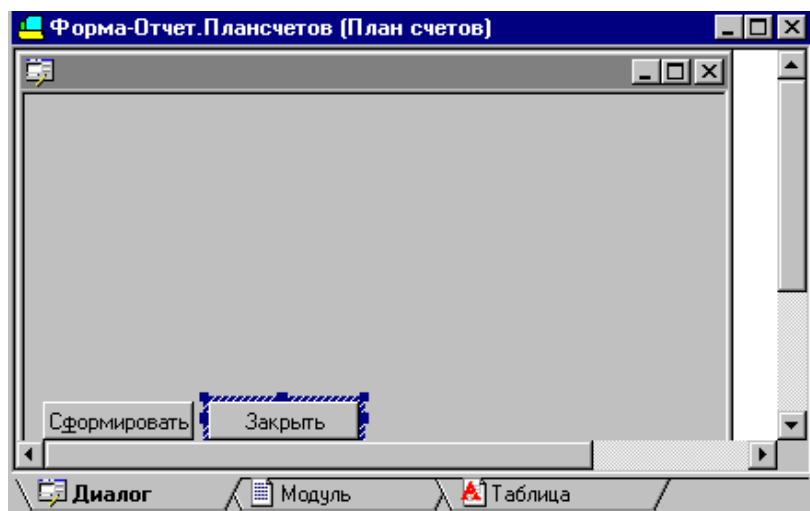


Figure 4.15 – The dialogue window of the adjustment report

In this window one makes adjustment of the report. If you double click on the button “Generate” (Сформировать) there opens the window of the adjustment button (see figure 4.16).

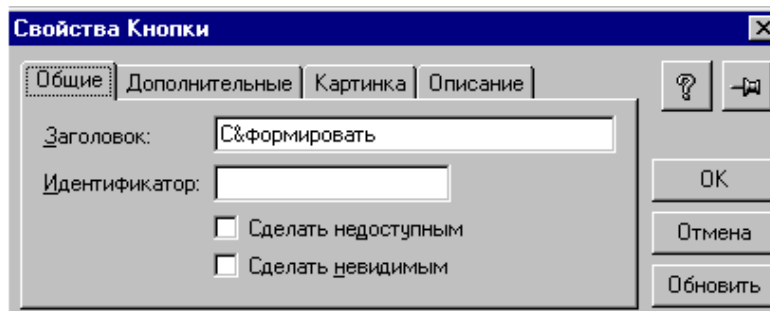


Figure 4.16 – The window of the adjustment button

In the field the identifier it is necessary to write the name of procedure which will be caused as a result of pressing this button. We will name the procedure "generate", if you switch to the module you will see that the report body has such a procedure (fig. 4.17).

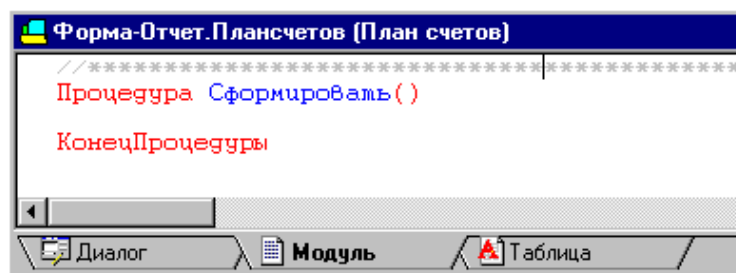


Figure 4.17 – The module of report

Just the report body is used for writing code for forming the report. For example you can write the following code (listing 1):

Listing 1

```

//*****

```

```

Процедура Сформировать()
    Переменная T;
    T = СоздатьОбъект("Таблица");
    T.ИсходнаяТаблица("Таблица");
    T.ВывестиСекцию("Секция_1");
    T.ТолькоПросмотр(1);
    T.Показать()
КонецПроцедуры

```

This code means the following, to create the object *table*, then the table is established and its parameters are specified and in the end it is set what sections of the table it is necessary to display. The table can be seen in the tab "table". Here is created the template for the data output. If it is necessary to create sections for the data output it is done through the menu the Table-> Include section (figure 4. 18).

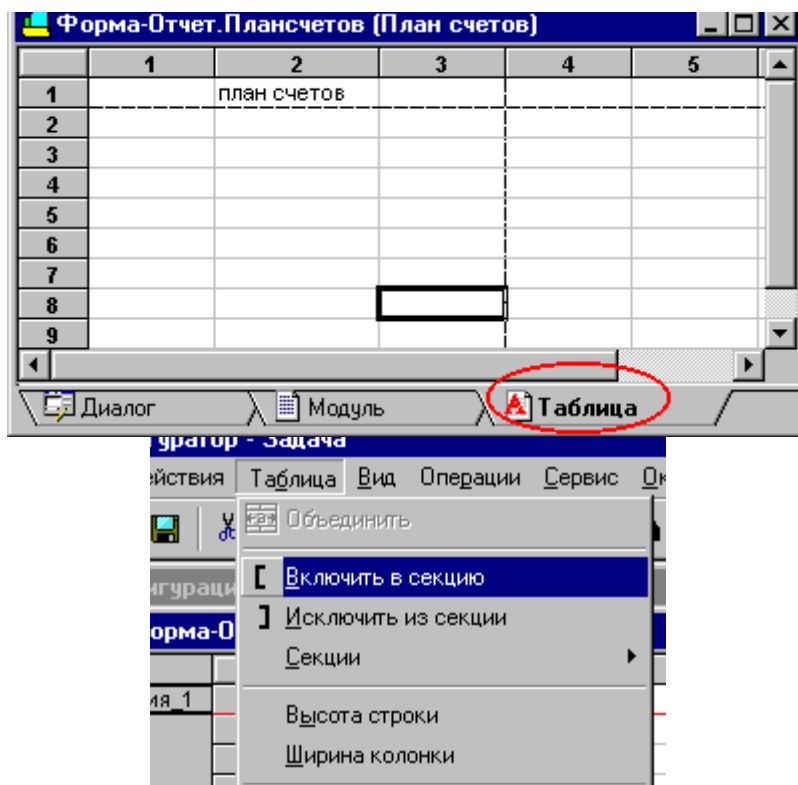


Figure 4.18 – The main view of the table

After the section has been turned on the system asks its name (for example section_1), and about its position: vertical or horizontal. After that it is necessary to fill in the section, it can be done in different ways, one of which is the use of variables. For this you have to open the program code of the module (listing 1) and add in the following changes (see listing 2).

Listing 2

```
/**
```

```
Процедура Сформировать()  
    Переменная Т;  
    Переменная Пр;  
    Т = СоздатьОбъект("Таблица");  
    Т.ИсходнаяТаблица("Таблица");  
    Т.ВывестиСекцию("Секция_1");  
    Пр=3;  
    Т.ВывестиСекцию("Секция_2");  
    Т.ТолькоПросмотр(1);  
    Т.Показать()
```

КонецПроцедуры

Let's create horizontal section with the name section_2in into the table and click the right button of the mouse on the cell, opening the properties of the cell. In the field *type* it is necessary to establish *value expression*, and enter the variable name into the bottom field. After that you should press the button OK and you will see that in the table there is the value section (figure 4. 19).

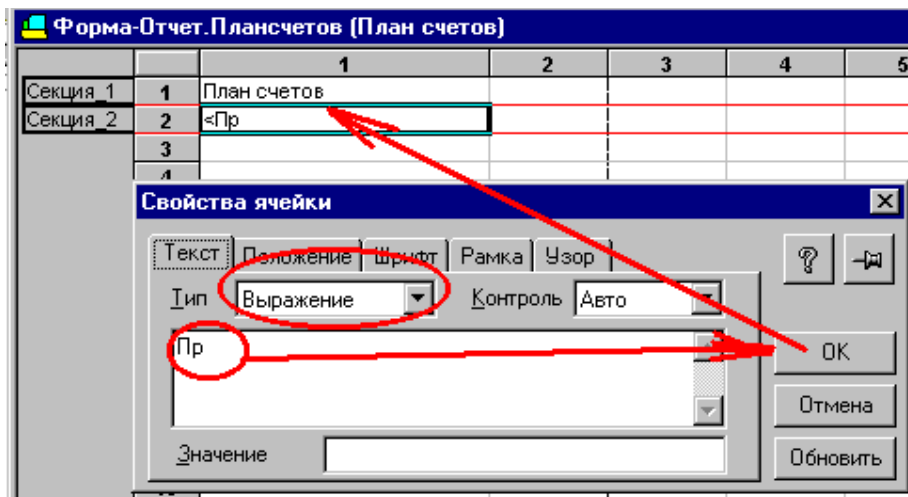


Figure 4.19 – The changed properties of the cell section

There is a possibility of syntax control of programming code in the system (see figure 4.20).

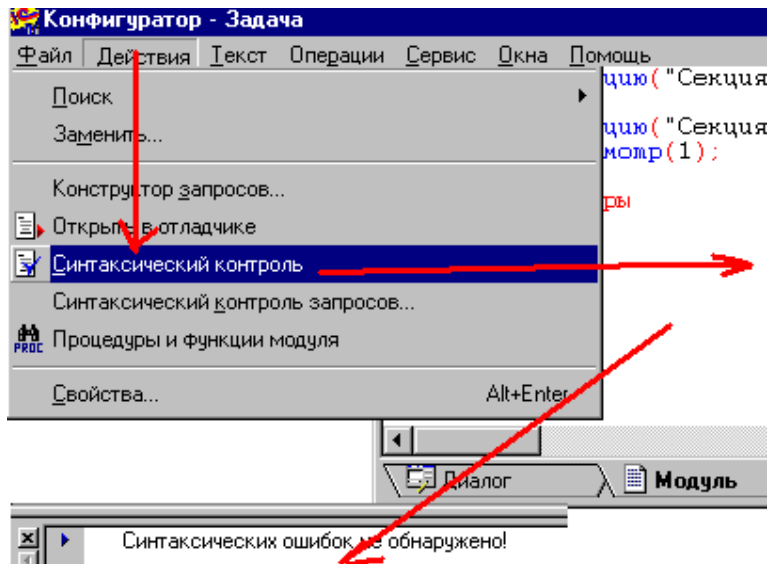


Figure 4.20 – Syntax control of programming code

You can start up 1C from Configurator and check the work results. If you want to start up 1C you should press a special button at the control panel (see figure 4.21).

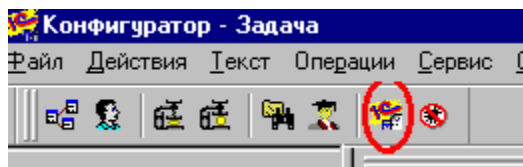


Figure 4.21 – The start up of 1C in User mode from the Configurator

1C is opening with the changed database. Select menu Operation -> Reports and you can see your report on Card of accounts. The result is showed in figure 4.22.

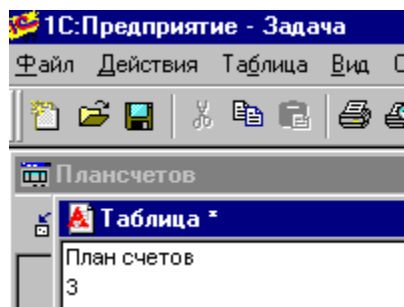


Figure 4.22 – The result of work report

You should modify the report so that it output the information on accounts which are included into our card of accounts. Thereto you can use some built-in functions of the system, notably **ВыбратьСчета()** and **ПолучитьСчет()**. Thereto you should do the following changes in listing 2 (see listing 3):

Listing 3

```

//*****
Процедура Сформировать()
Перем Т;
Перем Сч;

```

```

T = СоздатьОбъект("Таблица");
Сч = СоздатьОбъект("Счет");
T.ВывестиСекцию("Секция_1");
Сч.ВыбратьСчета();
Пока Сч.ПолучитьСчет() = 1 Цикл
    T.ВывестиСекцию("Секция_2");
КонецЦикла;
T.ТолькоПросмотр(1);
T.Показать()
КонецПроцедуры

```

In this listing we create a new object account and use its own functions **ВыбратьСчета()** and **ПолучитьСчет()**. After that we have to adapt the section to output the result (see figure 2.23).

Форма-Отчет. Плансчетов (План счетов)			
	1	2	3
Секция_1	1	План счетов	
Секция_2	2	<Сч.ТекущийСчет()>	
	3		
	4		

Figure 4.23 – The to adapt the section for output the result

Figure 4.24 shows the result of report work.

Плансчетов	
Таблица *	
План счетов	
50	
51	
52	
53	
54	

Figure 4.24 – The report card of accounts

3.3 KEY QUESTIONS

1. What is the system 1C:Enterprise?
2. Describe the structure of the system 1C:Enterprise.
3. Which components are there in the system 1C?
4. Where are metadata used?
5. What is an account? What types of accounts do you know?
6. Which requirements to the accounting there exist?
7. What is a subconto? Where is it used?
8. What modes can work in the system 1C?
9. Give the explanation of purpose of the Configurator in the system 1C.

4.4 The home task

1. Study the key points.
2. Prepare written answers to the key questions.
3. Then write programming code for creating the reports corresponding to the laboratory task.

4.5 The laboratory task

1. Install the 1C.
2. Create a new database
3. Create the accounting plan in the already existing database.
4. Provide three positions of numbers, each account is to have subaccounts with two levels of numbers with two positions. Create into the accounting plan 6 accounts with different accounting properties (active, passive, quantitative, etc.).
5. Create a report to view the accounting plan.
6. Check the workability of the created account and of the report in the working conditions.

4.6 Protocol requirements

1. Name of the laboratory work.
2. Purpose of the work.
3. Home task results.
4. Short report on the laboratory task.
5. Conclusions.
6. Date, signature of the student, visa of the teacher.

LABORATORY WORK № 5

Theme: Automation systems of accounting. Part 2.

5.1 Purpose of work: To research work principles of automation financial activity of the enterprise with the help of the automated accounting system 1C.

5.2 Key points

Accounting represents the arranged system of collection, registration and information generalization in money terms about property, obligations of the organization by the continuous solid documentary registration of all economic operations.

The main tasks of the accounting are:

- Formation of full and error-free information about the activity of the enterprise and its property status;
- Supply of necessary information for internal and external users of the accounting reporting for control over realization of economic operations by the organization, and also over the driving of property and obligations, the usage of material, over labor and financial resources;
- Prevention of the negative results of economic activities of the organization and support of its financial soundness.

The main requirements to the accounting

The spread sheeting is possible only on the basis of posting medium. The posting mediums have to be created on the basis of the uniformed standard forms that were stated by the state and to have a row of mandatory details.

For the spread sheeting there are used the following objects:

- Handbooks;
- Documents;
- Accounts;
- Postings.

Handbooks

The handbook is a modular data type, means for operation with lists of homogeneous data elements. The title and structure of each specific handbook is defined at its creation in a configurator. Any handbook has two details which are formed automatically – "Code" and "Name". Details of handbooks can be periodic, i.e. have the values connected to date. For each detail (attribute) of the handbook it is necessary to specify its data type, for example, "number", "line", "date" (in version 8.0 there is still a type Boolean - True or False). These are basic types, but it is also possible to specify difficult data types. For example, the attribute the Position has data type Position. In this case, values of this attribute will be selected from the handbook Position. So the elementary communication between handbooks when values of attributes of one handbook are selected from another handbook is implemented. The handbook is the list of possible values of this or that detail. Handbooks are used when it is necessary to eliminate ambiguous information input.

For example, so that the customer, the seller, the storekeeper, the director understood, what goods there are mentioned exactly, everyone should name them in the same way. And in this case the handbook is necessary. Normally in trade enterprise it looks like a price-list and if such handbook is stored in the computer there is brought the possible nomenclature of the goods which the trading firm works with.

The details of handbooks are edited in the windows of edit handbook (figure 5.1). There are used the “Form of element”, “Form of group” and “Form of list” for visualizing the face of the handbook.

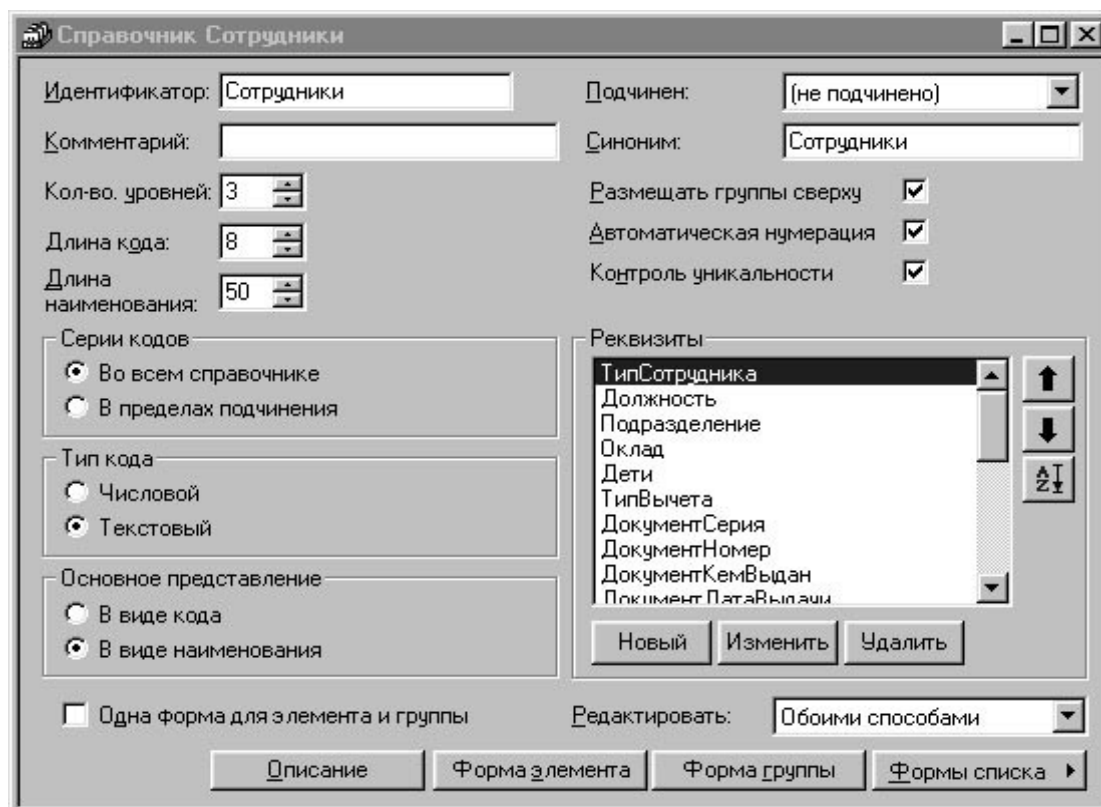


Figure 5.1 – The edit window of the handbook

Hierarchical handbooks

The handbook elements list in system 1C can be multi-level. In this case all the records of the handbook will be divided into 2 types: "simple" elements of the handbook and groups of the handbook. The number of levels of hierarchy is defined in the field «the Quantity of levels» in the edit window. For the hierarchy job the detail "Parent" defines what element is related to what group.

The most important functions are:

- ThisGroup () – returns 1, if a current element of the handbook is a group.
- BelongGroup (<the Group>) – returns 1 if the current element belongs to a group <Group>.
- Level () – returns the number of level current element.
- The Depth of an enclosure of groups is adjusted in a configurator and can't exceed 10 levels.

The subordinate handbooks

If one handbook is subordinated to another (it is set in the field "is subordinated" of the edit windows) each element of the subordinate handbook will correspond to a handbook -owner element. For this purpose there is a special detail "Owner" in which it is possible to find a handbook -owner element.

Documents

Documents are used for the storage of the main information about all events happening at the enterprise, and important from the point of view of economy. By means of document payments from the settlement account, both frame relocation, and motions on a warehouse, and other similar events are also reflected.

In system 1C the document is the main registration unit. Each document contains the information on specific economic operation and is characterized by the number, date and time. Documents in system 1C are used for input, review and editing of the information on the already carried out economic operations. Any document has three mandatory details "DataDoc", "TimeDoc", "NumberDoc". Date and time are the most important characteristics of documents as allowing installing strict temporal sequence of operation fulfillment. The document form is edited at clicking the button "Form" (figure 5.2).

The screenshot shows the 'Документ Поступление Товаров' window. It includes fields for 'Идентификатор' (PostuplenieTovarov), 'Журнал' (Товары), 'Комментарий', and 'Синоним' (Поступление товаров). There are two lists of fields: 'Реквизиты шапки' (Contract, Agreement, Date, Invoice, Storage, etc.) and 'Реквизиты табличной части' (Goods, Quantity, Price, Sum, VAT, etc.). Below these are sections for 'Номер' (Numbering) and 'Тип' (Number/Text). The bottom part contains checkboxes for document processing and accounting, and buttons for 'Ввод на основании...', 'Описание', 'Форма', and 'Модуль Документа'.

Figure 5.2 – The edit window of the document details

The structure of the document

The document has a screen form – Dialogue. It is shown to the user on the screen. Also the document normally has one or several paper forms – Tables. By

means of Tables the document is printed on paper. The behavior of the document is defined by means of the built-in language 1C. The language registers what the document does in system how it forms the paper form and how it looks on the screen.

The document normally has the printing form. The printing form of the document is actually the report formed from the form of the open document and containing the information from this document. The document can have some templates of printing forms. The Means of the built-in language set that special template of the printing form which will be used.

The details of the document

Each type of the document can have an unlimited number of details in a heading and in a multi records (table) part. For the document there is an entry form - screen dialogue.

The term "heading" is normally details of a header part of the document. In the most general case, any detail which is met in the document only once will be considered as the detail of a heading part. The table part of the document represents the list of the same records with the information. Besides the names, the table part of the document can also contain different additional information. In most cases the table part is used for formation of a total sum of the document. The structure of a 1C document can contain only one table part.

At developing the documents in the configurator there can be created the necessary numbers of the general details of documents. Such details, being created once, become accessible to all documents: the general details can be allocated in forms of documents, and it is possible to address to values of the general details with the help of the built-in 1C language.

Details of a heading of the document are set in the list «heading details». Details of a table part are set in the list «Detail of the table part».

Register of documents

All documents are stored in registers. The register of documents is an electronic analog of a normal paper journal. On the screen the register looks as a table the lines of which are documents. For example, you can create a register "Orders: staff" which will include such documents as "Orders on employment", "Order of dismissal" "Staff transfer". It is possible to create a separate register for banking documents which will include such documents as "Payment order" etc.

Register creates in a configurator. Each type of the document can be carried to certain register. The register of documents doesn't add the new data into the system, and it serves only as a preview player of the document list of one or several types. For the documents of different types it is possible to specify one register that allows grouping arbitrarily documents in registers. Column details of the documents entering into register are set in the form of the dialogue. The register assigned to documents can be changed.

The example of creating of handbooks and documents into 1C

As an example we will consider the process of creation of the new handbook in the system 1C. For this purpose it is necessary to start up the system 1C exclusively in the mode Configurator and to select the earlier created configuration.

It is necessary to have the handbook Contractors for spreadsheeting and the analytical accounting which contains the information about contractors of the

company (suppliers, clients, and partners). Values of this handbook are used for the extraction of posting medium (source documents).

For creation in system of the new handbook it is necessary to select from the configuration tree the object Handbooks to click on it with the right mouse button and to select the point the New Handbook (figure 5.3).

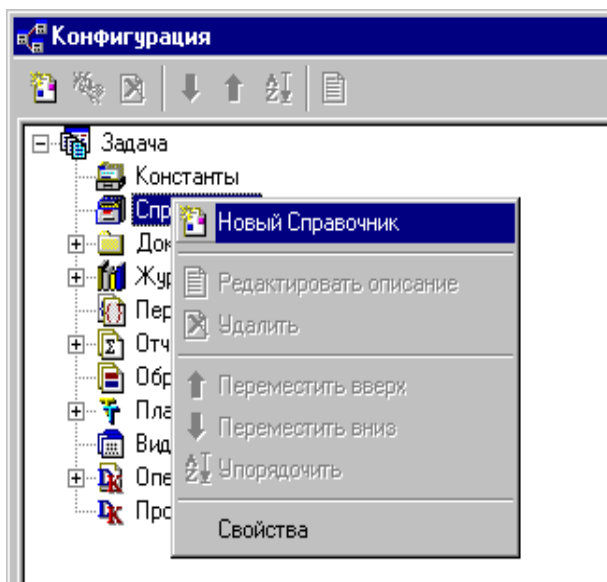


Figure 5.3 – The add new handbook

In the opening window you must write the identifier of the handbook Contractor and press the button “Ready”. The handbook will be created and the system opens the window of handbook details where you can enter its details (fig. 5.4).

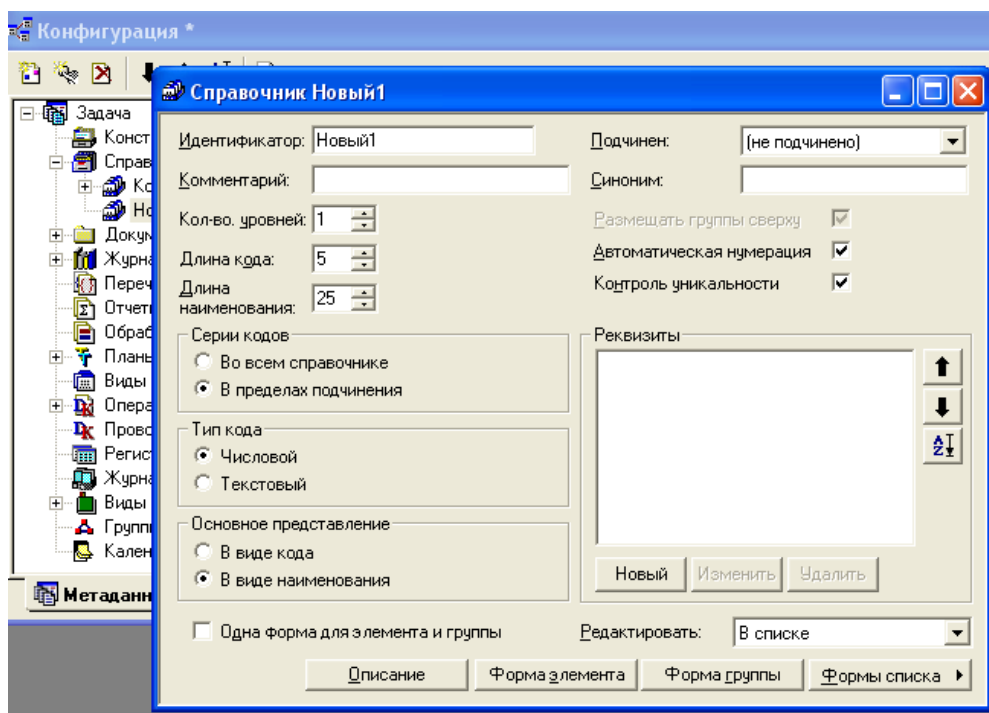


Figure 5.4 – The window of handbook details

The details will show that our handbook is hierarchical and has three levels and it isn't subordinated to other handbooks. In the same window there is written the

length of the fields *the Code* and *the Name*. In the same window it is possible to add new handbook details (figure 5.5). In our case we will add two details: the Address and the Phone. The method of editing of the handbook can be set in the list or in form of a dialogue. Editing with the help of the list is a simpler method (figure 5.6).

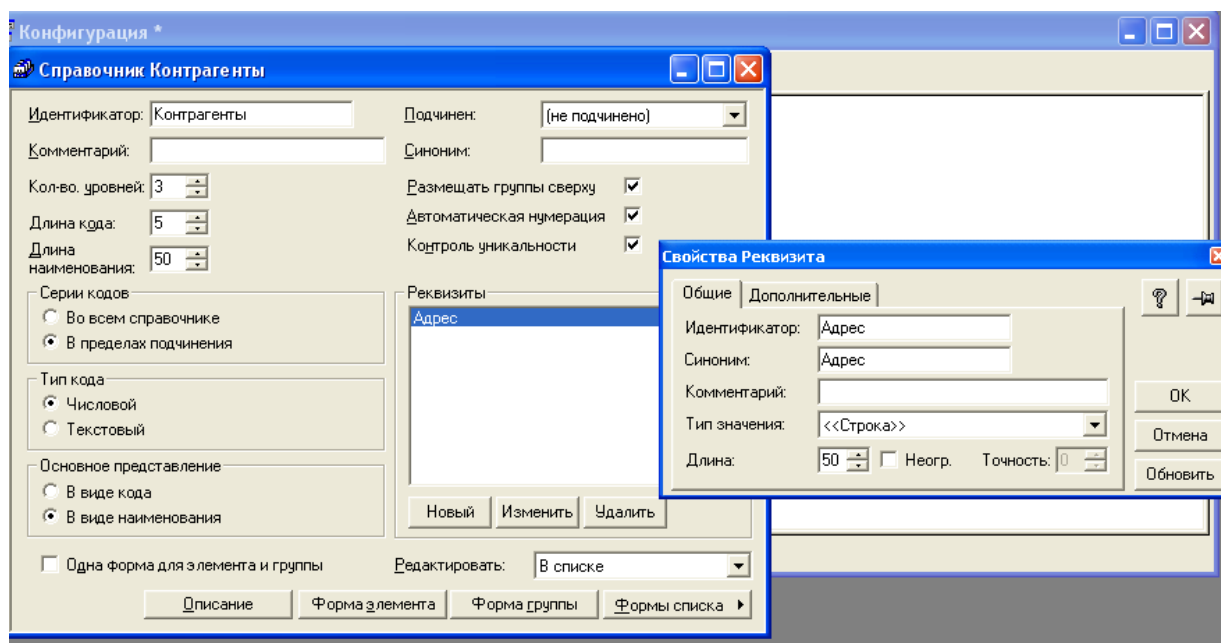


Figure 5.5 –Addition of a new detail

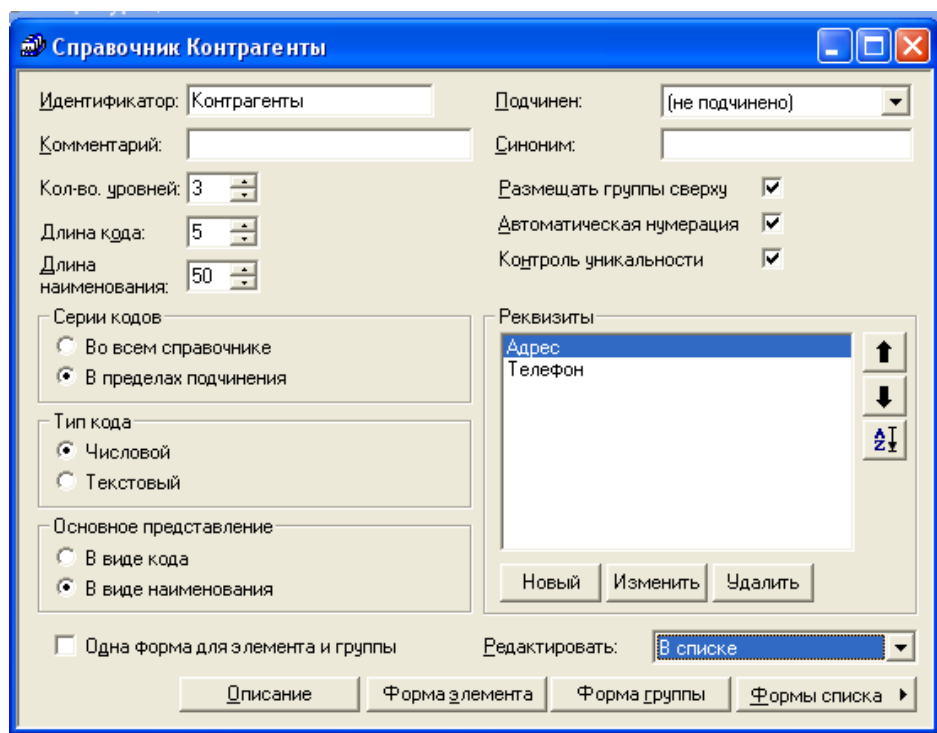


Figure 5.6 – The settings of the handbook Contractor

Now it is necessary to adjust the surface of the handbook, for this it is necessary to edit the “Form of the list” (figure 5.7). As the handbook has a hierarchical structure to make it simpler it is necessary to provide into the surface of

the handbook a Tree of groups which it is possible to set up in the edit window of the “Form of the list” (figure 5.8).

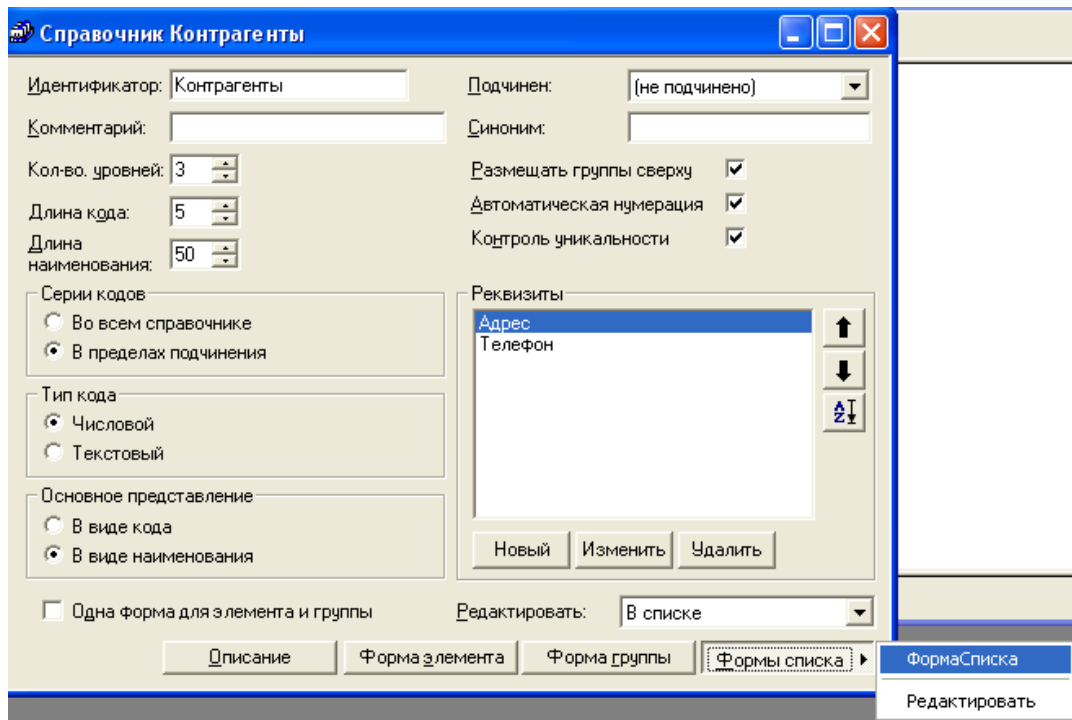


Figure 5.7 – The choice of the “Form of the list”

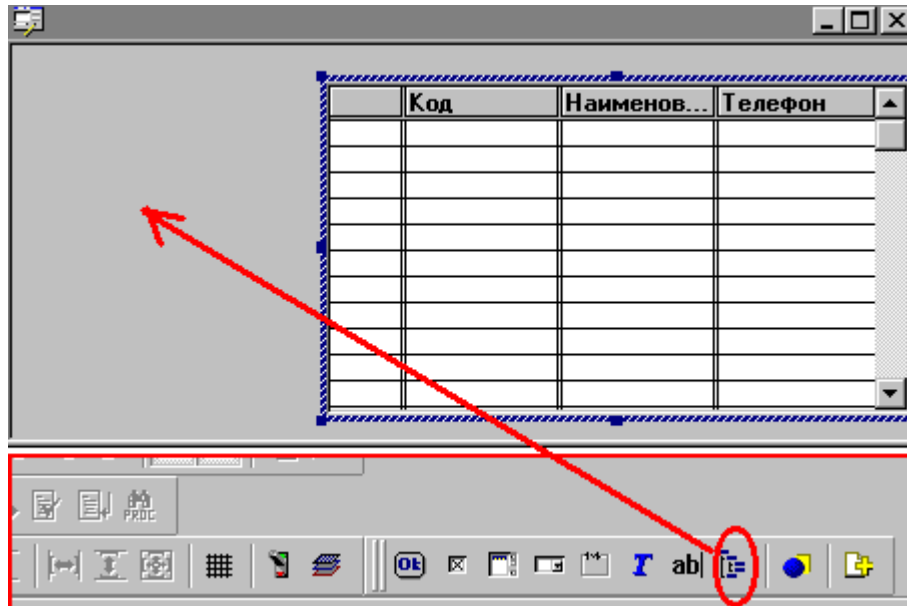


Figure 5.8 – The set up of the “Tree of groups”

As a result you can see the “Form of the list” as it is showed in the figure 5.9.

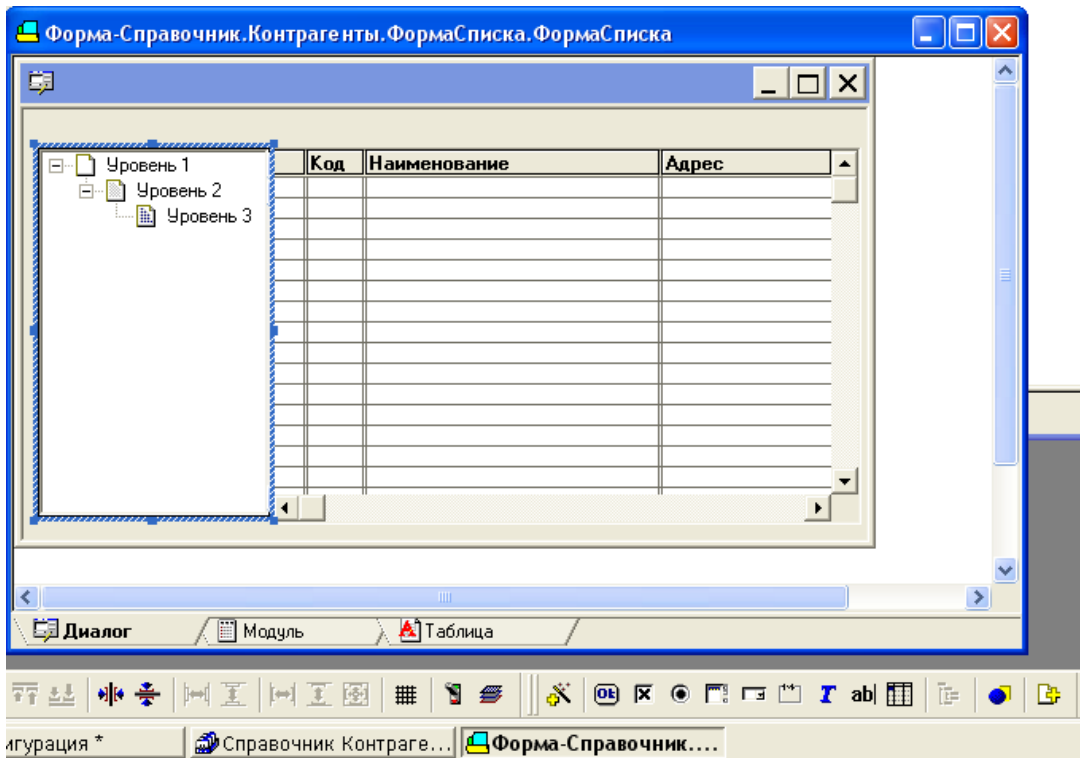


Figure 5.9 – The “Form of the list” of the handbook Contractor

Now we can use our handbook, for that it is necessary to save all the changes and to start up 1C in the user mode. In the menu handbooks there appears a new one, *Contractor* (figure 5.10).

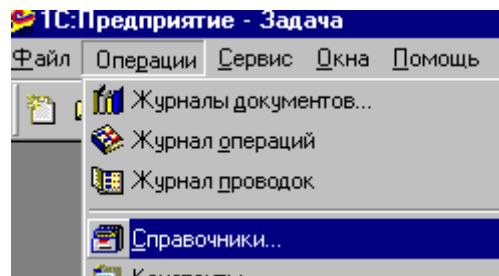




Figure 5.10 – The choice of a handbook

If you want to add a new group you have to press the button . If you want to add a new record into the group you have to press the button . For example we have created two groups into a handbook and several records into each group (figure 5.11).

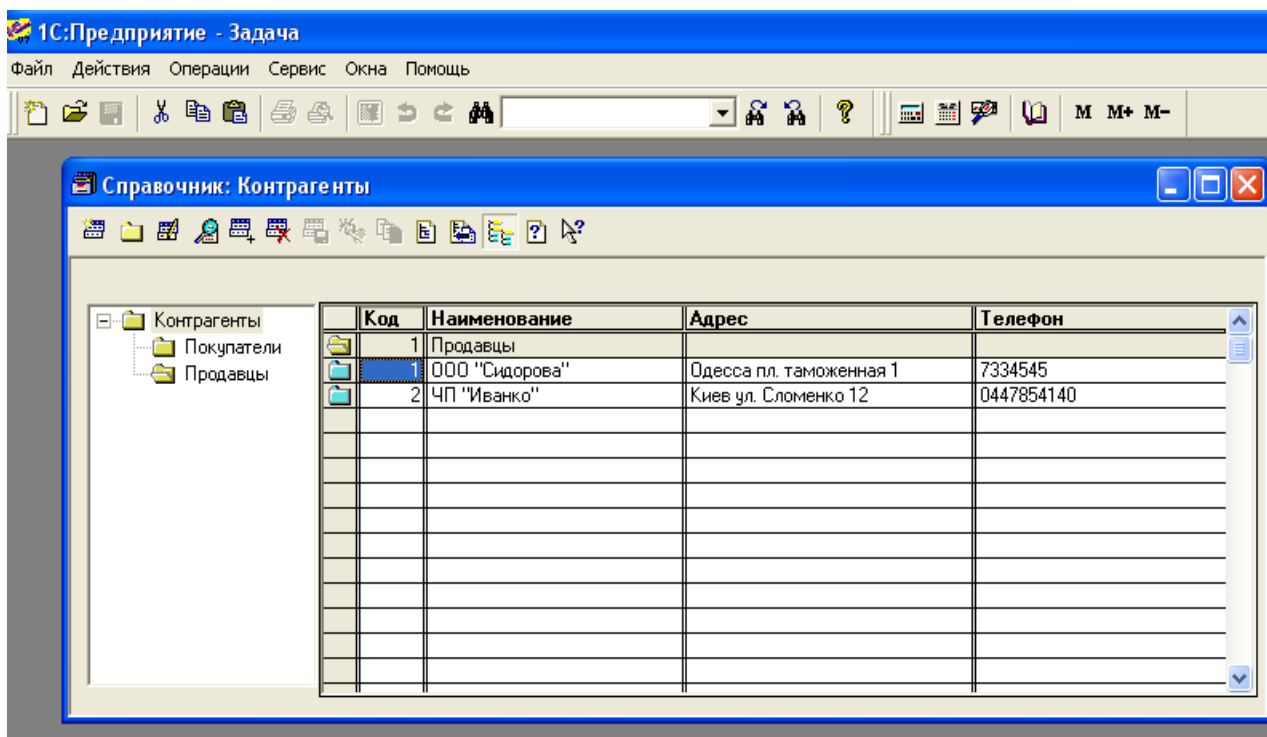


Figure 5.11 – The example of filling the handbook Contractor

There are large quantities of documents in a working process of a bookkeeper. Registers are applied to make the use and searching of the documents easier. As an example we will create a Register of account inventory holdings IH (ТМЦ). To do that it is necessary to select the point Registers in the configuration tree into the Configurator and to create a new Register and give it a name (figure 5.12)

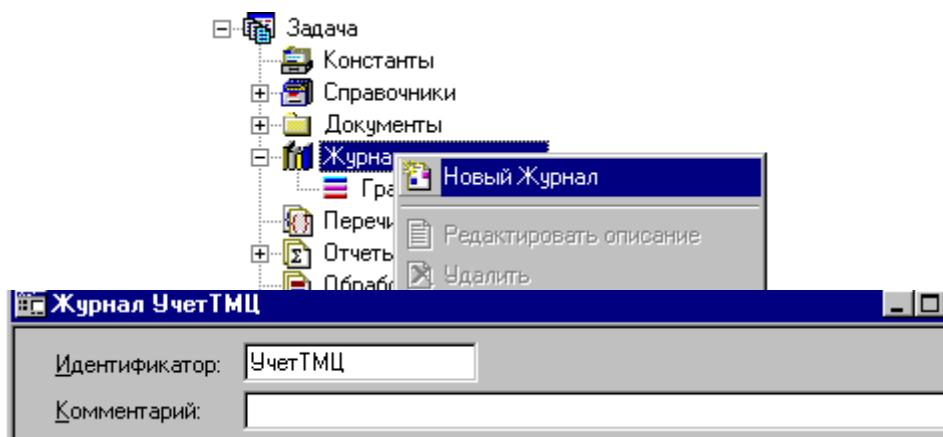


Figure 5.12 – The create a new Register

Let's save all the configuration changes and we will create a new document type for the Register. To do that it is necessary to select the point "documents" in the configuration tree and create a new document (figure 5.13).

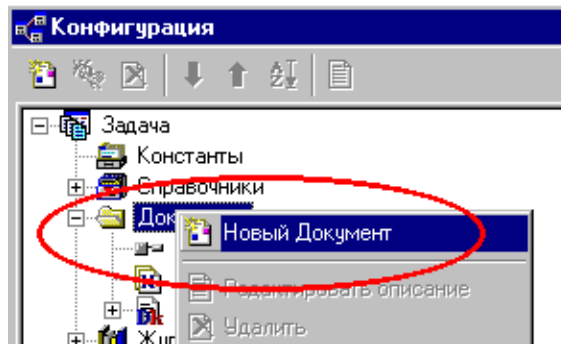


Figure 5.13 – The add a new document

You can use IncomingIN as an identifier. In the opened window of the document properties we must write the name of the Register to which this document will belong, and you can also add a new heading detail of the document for example the Supplier (figure 5.14). The Value of the detail Supplier should be filled from the earlier created handbook “Counterparts” (figure 5.15).

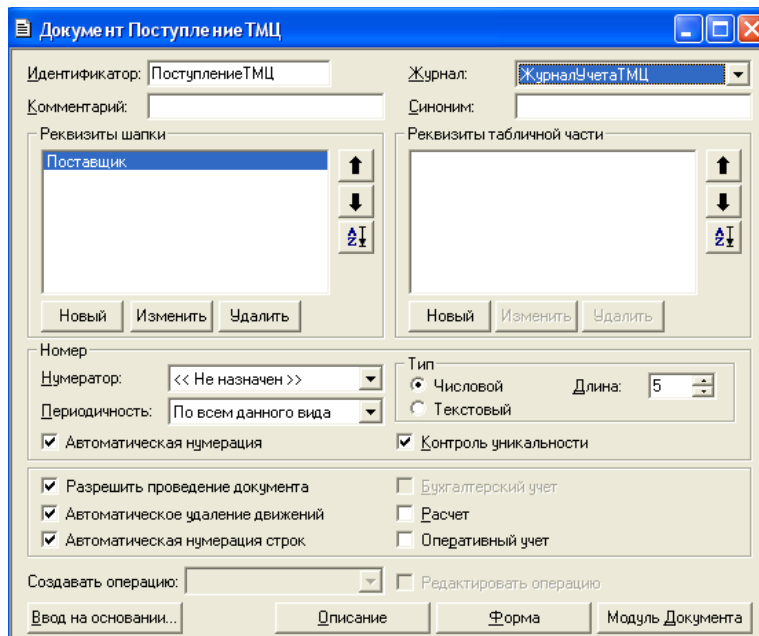


Figure 5.14 – The properties of a document

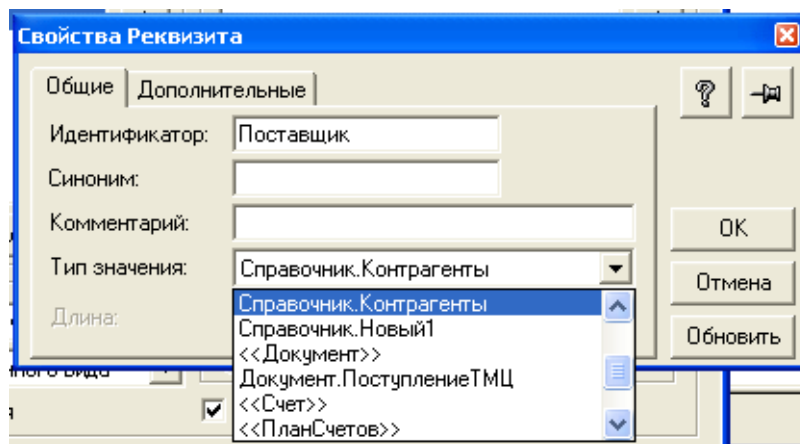


Figure 5.15 – The addition of a heading detail of the document

It is also necessary to edit the surface of the document. For this purpose there is applied the element “Form”. You can add an element into that if you press the corresponding button in a document properties window (figure 5.16).

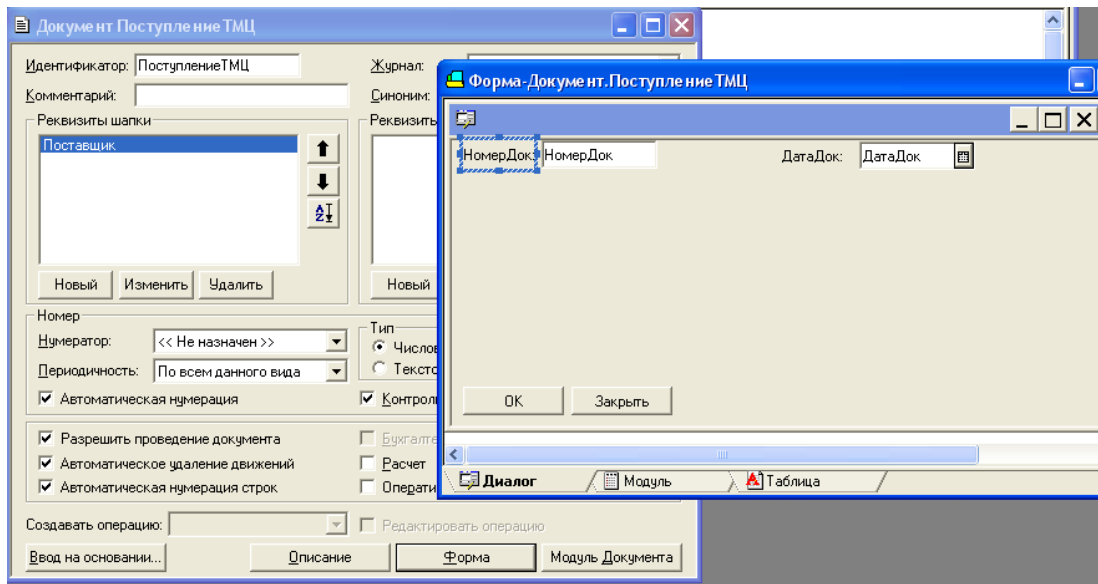


Figure 5.16 – The edit window of the document “Form”

In this case the “Form” displays only the number and the date of the document. Our document has one more detail “the supplier” that it is necessary to add into the form too. To do that it is necessary to select the button “Add a detail” on the editing panel and to select the details to add in the opening window (figure 5.17).

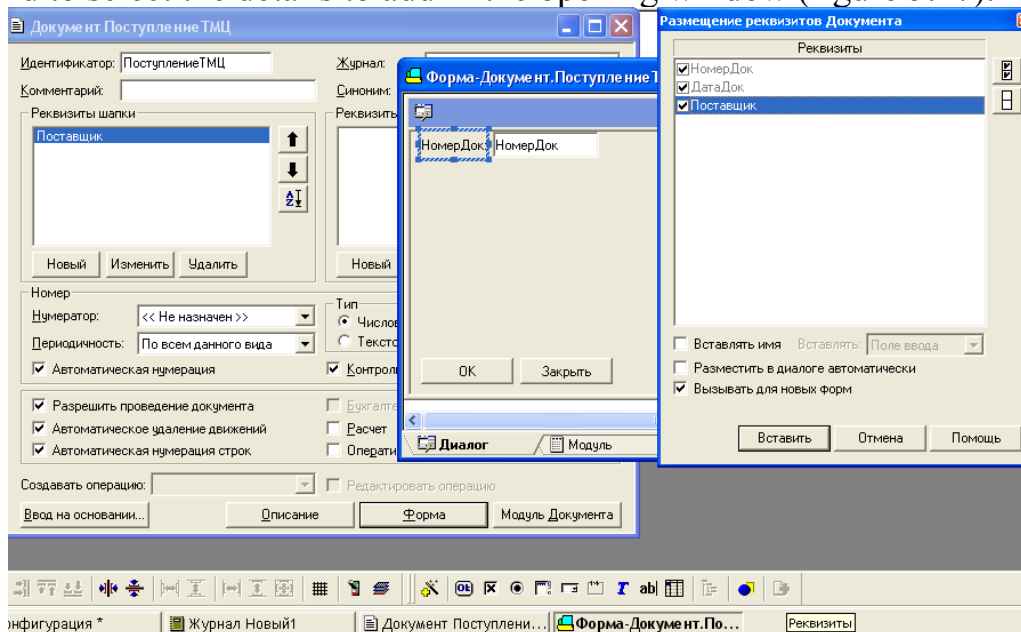


Figure 5.17 –Adding a new detail into the “Form” of the document

After that you should define the habitat for the chosen details (figure 5.18).

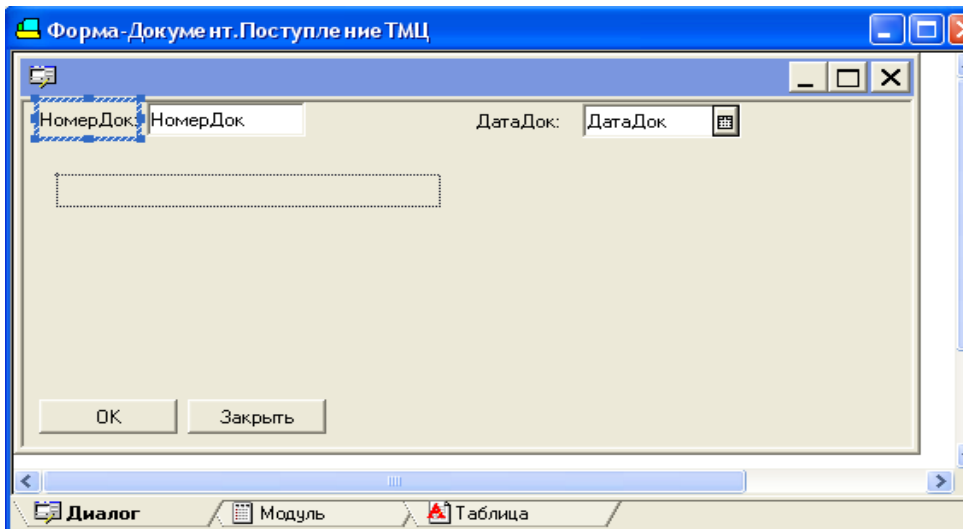


Figure 5.18 – The choice of habitat for the new details

The additional details the same as the document need to have the signature (headline). It is possible to add a headline with the help of the element “Text” (figure 5.19).

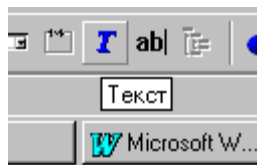


Figure 5.19 – The text edit tool

The result of adding the headlines is shown in the figure 5.20.

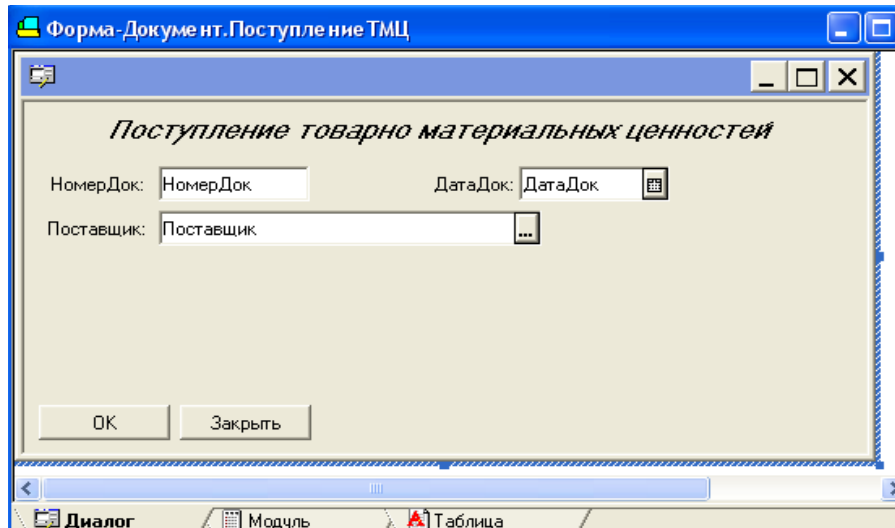


Figure 5.20 – The added headlines

Now you have to save all the changes and start up 1c in the user mode. In the figure 5.21 you can see the process of adding a new document.

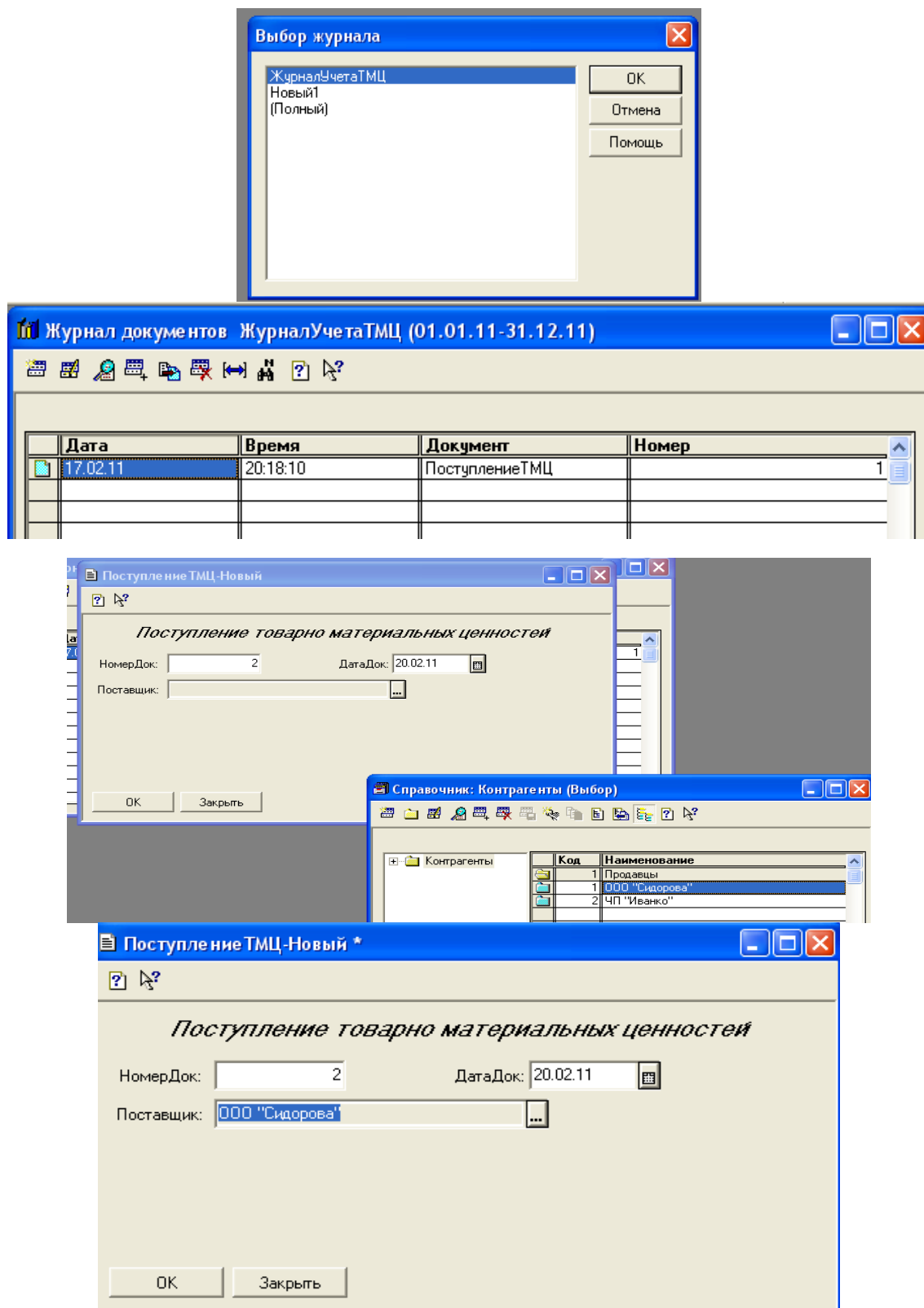


Figure 5.21 – The add a new document into system 1C

5.3 Key questions

1. What are the main requirements to the accounting system?
2. The aim of handbooks in the system 1C.
3. What types of handbooks can be created in the system 1C?
4. What is a document in the system 1C?

5. What is the aim of documents in 1C?
6. How is the access to the documents realized in the system 1C?
7. How many levels of hierarchy can be organised into one handbook?
8. What details can a document have?
9. In what case can a detail be related to the document heading?

5.4 The home task

1. Answer the questions in written form

5.5 The laboratory task

1. Create the handbook Contractors with 3 levels of hierarchy and the details “Address” and “Telephone”.
2. Create a handbook “Measure units”
3. Create the handbook “Goods” with 3 levels of hierarchy and details “measure units”, “Unit Price”. The detail “measure units” has to be filled with the help of the previously created handbook “Measure units”
4. Fill in the handbooks by 4 different positions.
5. Create the register to account the IH.
6. Create a new document “IH arrival” with the detail “Supplier”.
7. Connect the created document with the register of accounting the IH.
8. Edit the document form so that it included all the details, detail signatures and the document signature.
9. Check the work abilities of the created documents and create 2 documents “IH arrival”.
10. Save all the detail changes.

5.6 Protocol requirements

1. Name of the laboratory work.
2. Purpose of the work.
3. Home task results.
4. Short report on the laboratory task.
5. Conclusions.
6. Date, signature of the student, visa of the teacher.

LABORATORY WORK № 6

Theme: Automation systems of accounting. Part 3.

6.1 Purpose of work: to research the work principles of automation of the enterprise financial activity with the help of the automated accounting system 1C.

6.2 Key points

System 1C: Enterprise has the built-in programming language which is intended for the description of operation algorithms of the application task with the help of standard methods of object-oriented programming.

The software modules are used for the decision of various tasks. The software module is a "container" for the layout of the texts procedures and the functions that are the result of the system work in certain moments of time.

The software modules of the system 1C

Each separate module is perceived by the system as a unit, therefore all procedures and functions of the software module are fulfilled in one context. The context of execution of the software module can be of two types: a global context and a local context.

Global context:

1. Values of system attributes, functions and procedures for example, the function of ТекущееВремя() returns current system time and the function of ТекущаяДата () returns current date.
2. Values of the constants or enumerations set in a configurator.
3. Variables and procedures of global software module with a keyword "Export".

The local context is formed by the configuration task the decision of which this specific unit is intended.

There are the following software modules into the system 1C:

- Global software module;
- Module form of the list of handbook;
- Module form of the group;
- Module form of the element of handbook;
- Module form of the document;
- Module of the document;
- Module form of the register of documents;
- Module form of the list of accounts;
- Module form of the account;
- Module form of the register of accounting transaction;
- Module form of the accounting transaction;
- Module form of the register of posting;
- Module form of the report;
- Module form of the processing.

The text of software module includes operators and comments. A comment starts with the symbols “//”. The operator has the following format:

[~метка:] Оператор [(Параметры)] [ДобавочноеКлючевоеСлово];

The structure of the software module

In general, the software module has the following structure:

- Section of declaration of variables;
- Section of functions and procedures;
- Section of the main program.

Any sequence of letters, digits and the underlining signs, beginning with a letter or an underlining can be a name of a variable, a procedure or a function. The letter case isn't considered. Newly created names shouldn't coincide with the already existing names of variables. Typification of variables in built-in language is not rigid, i.e. the type of variable is defined by its value. A principal rule which has to be used at determination of a name of a variable, functions or procedures it that it is impossible to use the keywords already reserved by the system. To define, whether the word is reserved, it is necessary to set up the cursor on a checked word and simultaneously to push the keys CTRL+F1 if the word is reserved a window with the information on the given object will open. Using the same method it is possible to learn the syntax of the system procedure or function: an amount and assignment of parameters, values by default.

The structure of the software module is showed in listing 1.

Listing 1

```
// Определение переменных
    Переменная ЭтоПеременная;
    Переменная ЭтоВтораяПеременная;
// Процедуры и функции
Процедура ЭтоПроцедура()
    // текст процедуры
КонецПроцедуры
Функция ЭтоФункция()
    // текст функции
КонецФункции
// Раздел основной программы
    ЭтоПеременная = "123";
```

The procedures and functions of the software module have a special form of record (Listing 2):

Listing 2

```
Процедура <Имя>( <Парам1> , ... <ПарамN>) [Экспорт]
    // Объявления локальных переменных;
    // Операторы;
КонецПроцедуры
```

After the keyword "*КонецПроцедуры*" the semicolon isn't put. The keyword "*Парам*" defines what parameters the procedure or the function uses. The keyword "Export" makes sense only in the global module it also means that the procedure will be accessible in any software module. The function, unlike the procedure should return value.

The data types

The system supports the base and modular data types. The base data types include numbers, lines and dates. Modular data types are special data types intended for operation with objects of the system 1C. Modular data types are the following data types:

Constant – means of operation with constants (or conditionally constant) values. The information which doesn't change or changes rarely enough is stored in constants. For example, an organization title, the postal address.

The handbook – means for guiding the lists of homogeneous data elements.

Enumeration – means of operation with data elements, the list of possible values of which is rigidly set (for example, for listing of "*ФормаОплаты*" it is possible to set such possible values as the following: "Cash", "cashless"). Unlike handbooks, lists of values in enumeration are set in the process of their creation in a configurator and can't be changed at task performance.

The document – means for input of the primary information about economic operations.

Request – instrument which makes the access to documents, registers, handbooks and register calculations possible for the purpose of obtaining the summary information at formation of output reports.

The text – means of operation with text documents.

The table – means of operation with tables (reports). The table is created with the help of the system function "*СоздатьОбъект*".

ValueList – means of creation of the list of values of any data and possibility of further sorting and selection of the necessary values from the list. At adding into dialogue forms the fields of the type "List" or «Field with the list», the system automatically creates the objects of ValueList.

ValueTable – means of creation of the list of values of any data and the possibility further sorting and selection of the necessary values from the list.

Figure – means of operating with graphic files.

FS – means for operating with the disk files immediately from the built-in language of the system 1C.

XBase – means for operating with the files of database format DBF immediately from the built-in language of the system 1C.

The following data types are accessible only at presence of the component "Accounting":

CardOfAccounts is the auxiliary data type. It is intended for identification of the Card of accounts created in metadata. In general it is used for transmission as a parameter to various procedures and functions of a component "Accounting" and for the choice of card of accounts in forms.

TypeOfSubconto is the auxiliary data type. It is intended for identification the type of subconto created in metadata. In generally it is used for transmission as parameter to various procedures and functions of the component "Accounting" and for choosing the type of subconto in different forms.

AccountingTotals – means of access to accounting totals in various profiles, for the various periods and with a different level of detailing.

Each modular data type, as a rule, has a set of attributes and methods. Attributes inherently remind variables, i.e. they can appropriate or read their values. Methods are those actions which the modular data type can fulfill. Methods can return or not return the value.

The typical sequence of operation with object of modular data type looks as shown:

1. With the help of the function “СоздатьОбъект” there is created an object of modular data type, and any variable appropriates is linked to this object;
2. The object is positioned on the necessary data element;
3. There are made various manipulations with the object of modular data type through calls of methods and addresses to its attributes;
4. If the object of modular data type isn't needed any more, it can be disconnected from a variable by means of reassignment of a variable of any value of base type (for example, numbers 0).

Controlling operators of the built-in programming language

To control the logic of performance of the program there are used logical expressions and controlling operators. Logical expression are written with the help of comparing characters = (equal), <> (not equal), > (it is more), <it is (less), <= (it is less or equal), >= (it is more or equal), thus comparing is produced only over values of identical types (so it is impossible to compare, for example, a number and a line). It is possible to construct more difficult conditions of several comparing with the help of boolean operations "and", "or", "not". The order of comparing can be defined by means of parentheses.

Оператор ветвления

Если <Логическое_выражение> Тогда

...

ИначеЕсли <Логическое_выражение> Тогда

...

Иначе

...

КонецЕсли;

Циклы

Пока <Логическое_выражение> Цикл

...

[Прервать]

...

[Продолжить]

...

КонецЦикла;

Для <Имя_переменной> = <Выражение1> По <Выражение2> Цикл

...

[Прервать]

...

[Продолжить]

...

КонецЦикла;

Working with modular data types

At arrival of various material assets it is necessary to consider the fact that they have a price for unit and if there are arrived simultaneously several inventory holdings (IS) they have such concept as the total – the total price of arrived inventory holdings (IS). These parameters should be considered and stored. Therefore we need to create a place for storage and to organize filling of these forms.

For this purpose in a configurator it is necessary to open the document created by us and to create new detail in the table part of the document (figure 6.1).

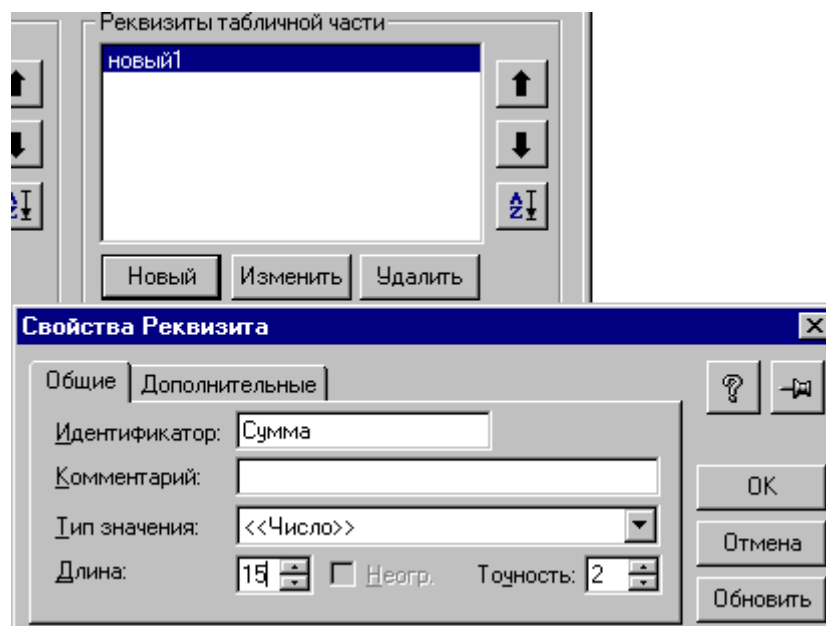


Figure 6.1 – Adding of a new detail into the table part

For the new details it is necessary to install the type “value number”, with the number of signs after comma and in the tab “additional” set up “the Total on a column”.

Let's add more details such as amount and price, (figure 6.2).

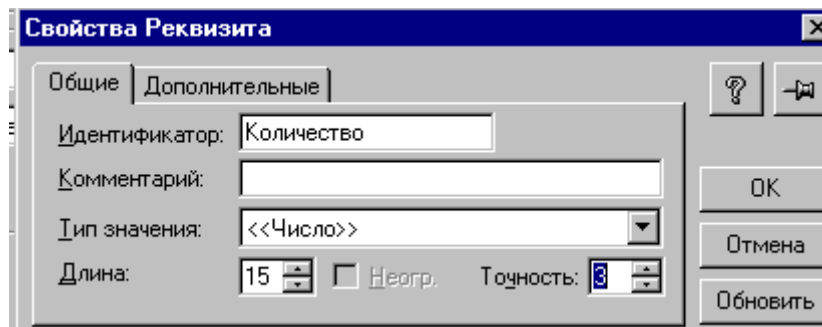


Figure 6.2 – Adding of a new detail “price”

After adding the details of a table part of the document it is necessary to allocate these details into the document form. Details are added in that order in which they are specified in the window of details of the table part and which it is possible to change (figure 6.3).

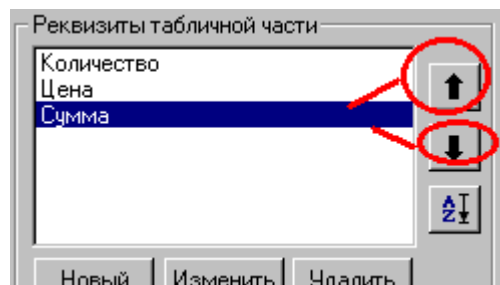


Figure 6.3 – The change of the order of details in the table part of the document

After adding the details the document form will get the interface shown in the figure 6.4.

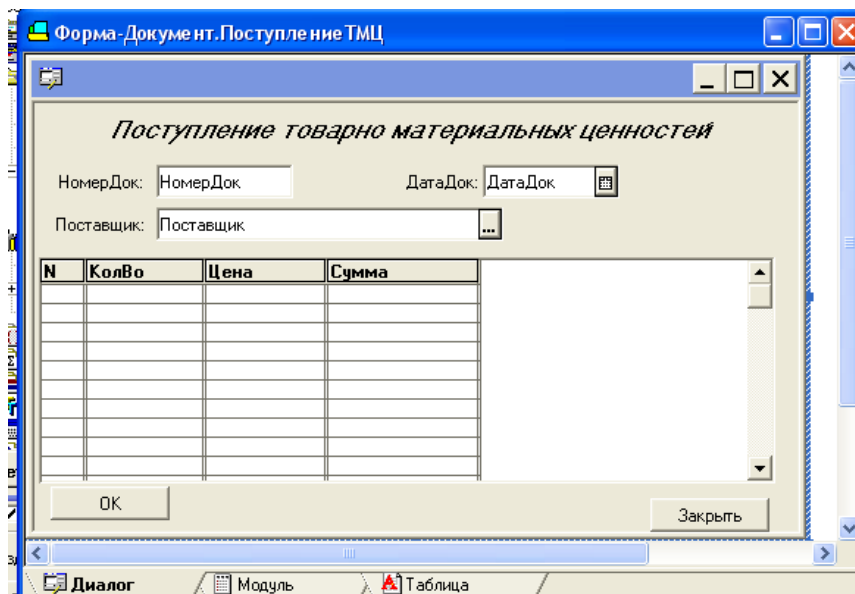


Figure 6.4 –The form of documents with the table part

To simplify the document retrieval in the register it is possible to add such parameters as the total and the supplier. For this purpose in the form of the register it is necessary to add a new column the total and to connect it to the necessary fields in the document. For example, we will create the column the Total (figure 6.5).

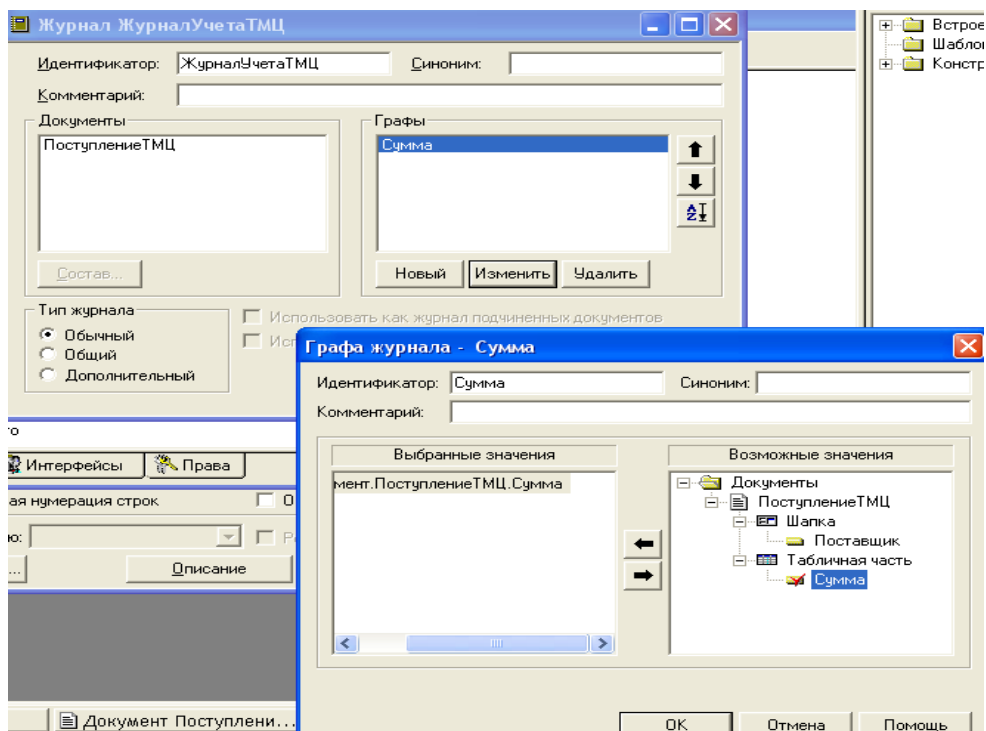


Figure 6.5 – Adding a new column in the document register

Now it is possible to add the total into the document, and the selected details are displayed in the register of registration documents of IS (figure 6.6).

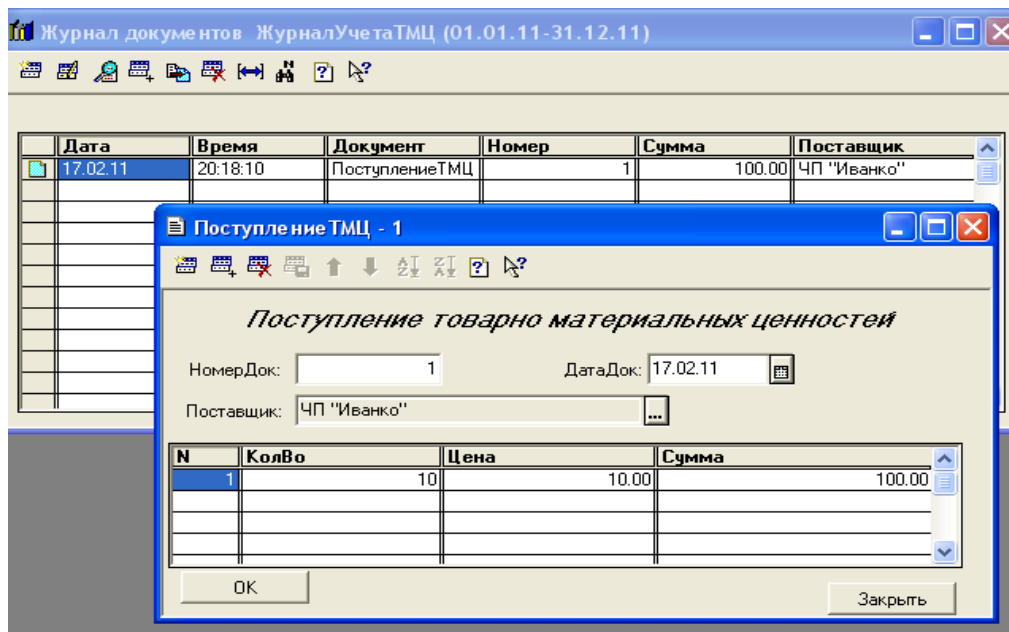


Figure 6.6 – The register of documents, the account IS.

In this case the document has a row of lacks. First, in the document there is no name of the IS and its units of measure. The given information is stored in the handbook the Goods and that for it to be displayed in the form of the document it is necessary to add appropriate details into the details of the table part and to change the interface of the form (figure 6.7).

As a result we have received a document (figure 6.8). However we still have a row of negative aspects –first, it is necessary to provide automatic substitution of a unit of measure and the price in appropriate fields (in the handbook the Goods they are defined and there is no necessity to enter them manually each time) at a choice of value for the field the Goods. Besides, the document should consider automatically the total under the document that is at putting down of an amount of the goods to multiply it automatically by the price and to fill an appropriate column. For this purpose it is necessary to write some procedures in the document unit.

Figure 6.7 – The form of the document with the new details

For example, in listing 3 there is indicated the procedure for automatic calculation of the total.

Листинг 3

Процедура *Расчет()*

*Сумма=КолВо*Цена;*

КонецПроцедуры

Процедура *ПриОткрытии()*

Форма.Цена.ВыполнятьФормулуТолькоПриИзменении(1);

Форма.Количество.ВыполнятьФормулуТолькоПриИзменении(1);

Форма.Сумма.ВыполнятьФормулуТолькоПриИзменении(1);

КонецПроцедуры

Procedure *Расчет ()* will clear, as it is, and procedure of *ПриОткрытии ()* is a standard function which will adjust the form of parameters. So that the procedure *Расчет ()* fulfilled it is necessary to specify for which detail the given procedure is called. The column is selected on the form, and its properties are caused. On a bookmark “Additional” there are set up properties which call the function. Changes in this column lead to calculation procedure call (figure 6.8).

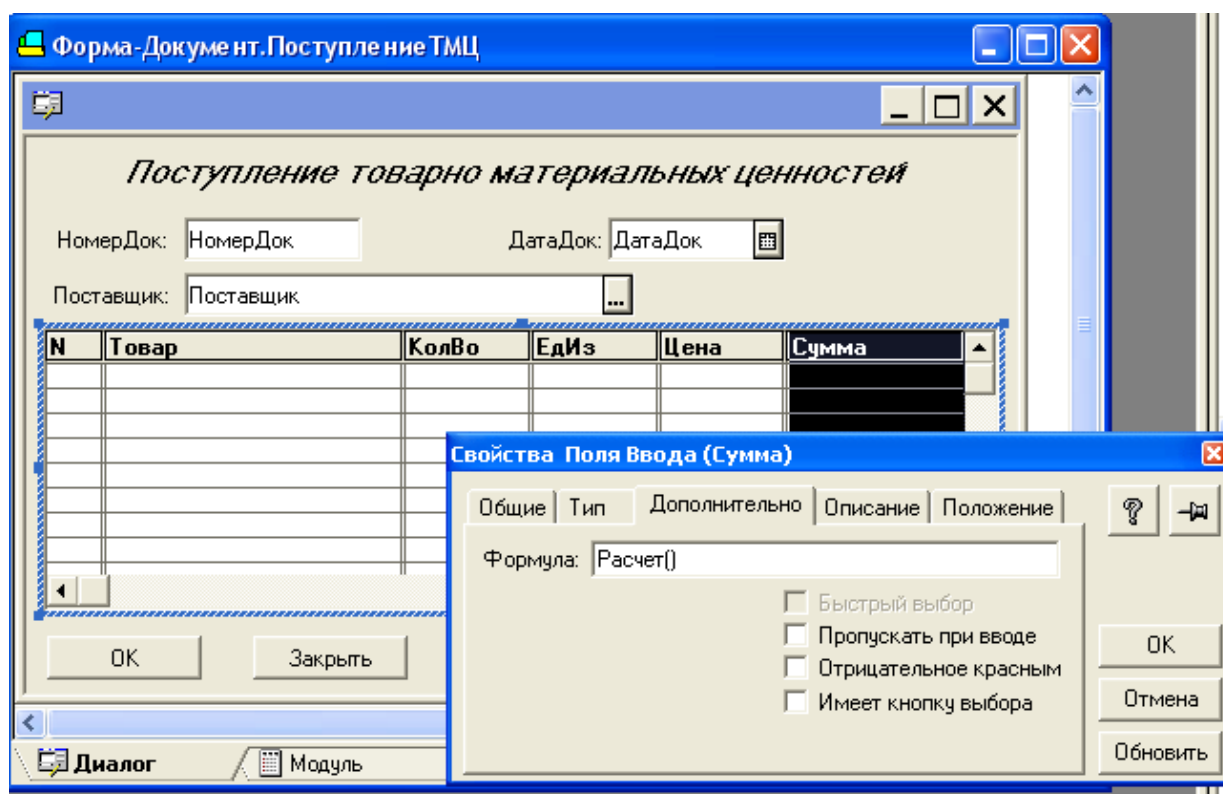


Figure 6.8 – The call of the procedure “*Расчет*”

In this case the document can already calculate the total in each position. Besides, in the register of documents “*IS Registration*” the total amount is calculated under the document. However in certain cases it is necessary that the total amount would be displayed and in the document. For this purpose we will add into the

document form a new detail of the heading “the Total of the Document” (Figure 6.9). We will also write the necessary procedure, as shown in listing 4.

Листинг 4

Процедура Расчет()

*Сумма=КолВо*Цена;*

КонецПроцедуры

Процедура ПриОткрытии()

Форма.Цена.ВыполнятьФормулуТолькоПриИзменении(1);

Форма.КолВо.ВыполнятьФормулуТолькоПриИзменении(1);

Форма.Сумма.ВыполнятьФормулуТолькоПриИзменении(1);

ПриЗаписиПерепроводить(1);

КонецПроцедуры

Процедура ПриЗаписи ()

Итого = Итог("Сумма");

КонецПроцедуры

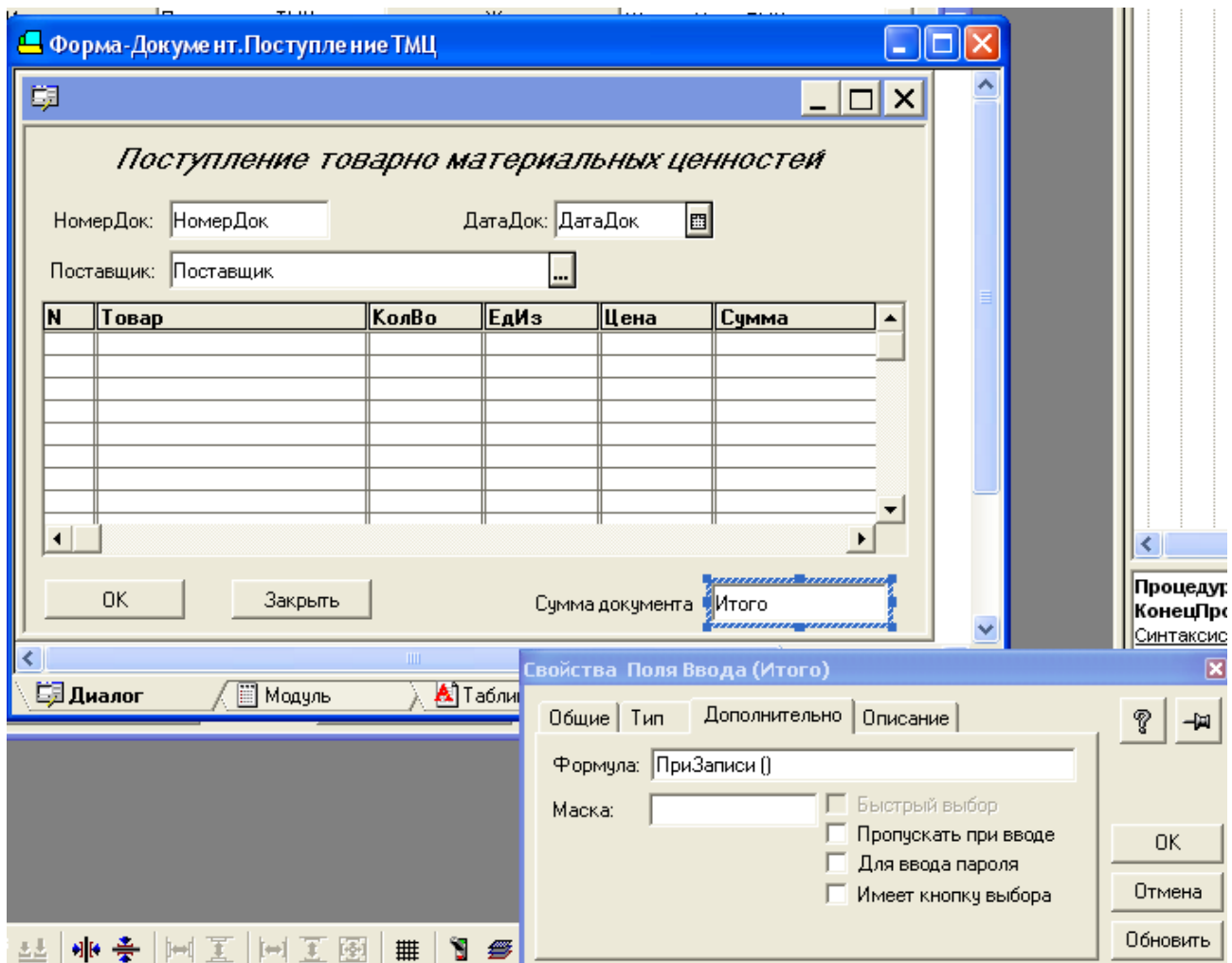


Figure 6.9 – Adding of the detail “the Total of the Document”

Now the document can consider and display the total on each position and the total amount under the document, however it still can't substitute automatically the value of the field "price". To solve this problem it is necessary to create a procedure which, at a choice of the Goods from the handbook IS would automatically put down the appropriate price and the unit of measure. The given procedure is formed similarly to the previous, but it is necessary to connect it to the event – the choice of goods from the handbook IS (figure 6.10).

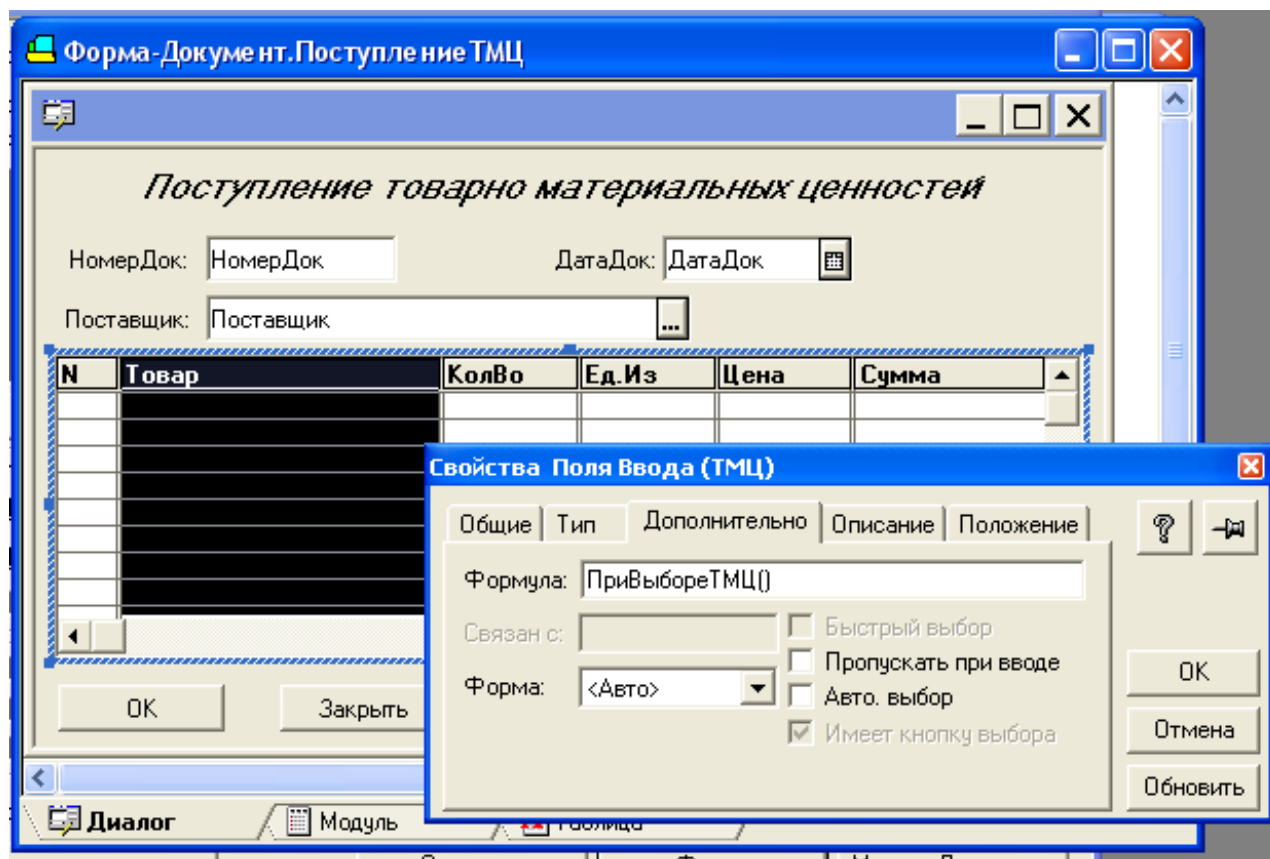


Figure 6.10 –The connection of the procedure of automatic price setting
At choosing the IS, there will be automatic price setting (figure 6.11).

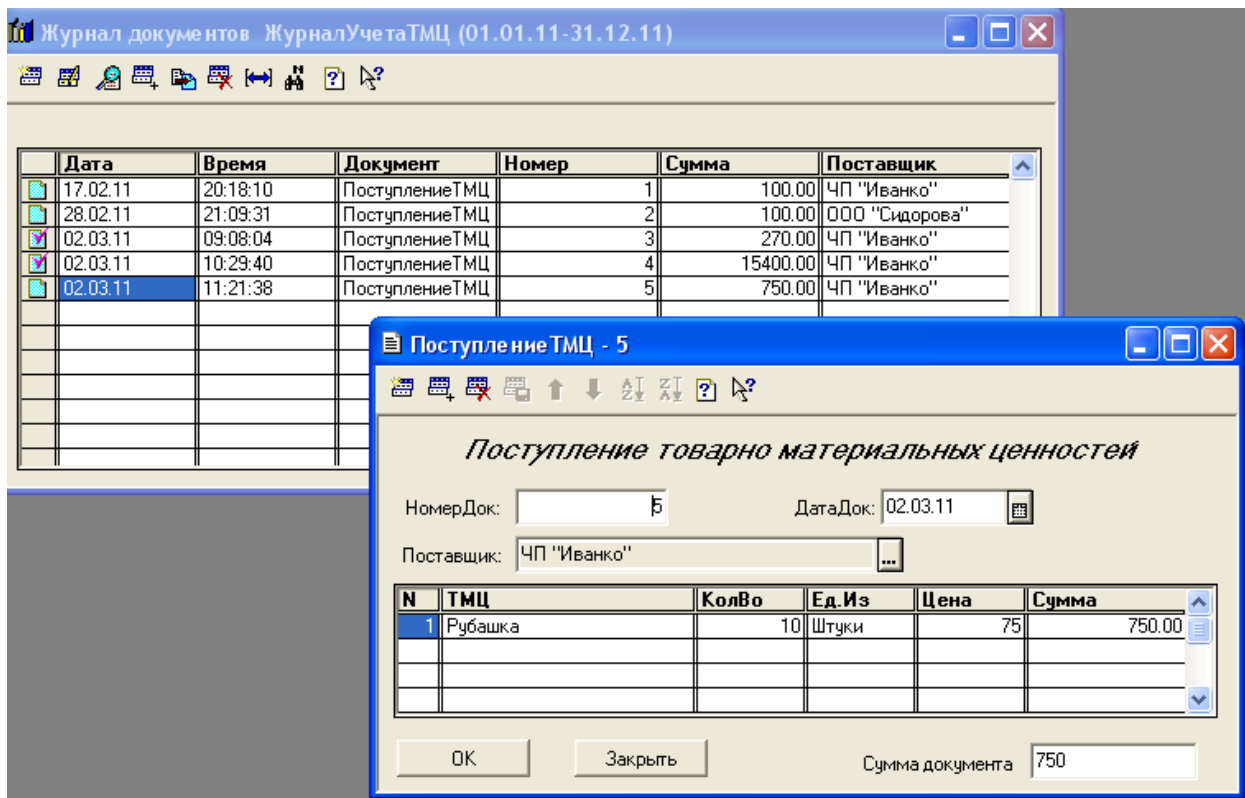


Figure 6.11 – A document with automatic price setting and total counting

6.3 Key questions

1. What is a procedure and a function?
2. What is the difference between a procedure and a function?
3. In which context is it possible to fulfill the software module of the 1C system?
4. Which types of data can be used in the system 1C?
5. Describe the modular data types.
6. What is a software module?

6.4 The home task

1. Answer the questions in written form.
2. Describe the structure of the software module 1C.

6.5 The laboratory task

1. Change the document "IS arrival" and add into table part of the document new details - Name IS, measure units, price, sum.
2. Change the form of document "IS arrival" thereby that it is shown new details;
3. The detail "Name IS" has to select from handbook "Goods", the detail "measure units" has to select from handbook "Measure units".
4. Organize calculation of totals under sum of the document and to provide total display in the register "Account the IH".

5. To create the additional detail in the heading of the document for support of display of “a total the document” into the document form.
6. To organize automatic calculation of the Total by a line of the document.
7. To organize automatic substitution of the price of goods at a selection of the Name IS.
8. To edit the document form so that it is contained all details of the document and made all necessary calculations.
9. Check the work abilities of the created objects.
10. Save all changes.

6.6 Protocol requirements

1. Name of the laboratory work.
2. Purpose of the work.
3. Home task results.
4. Short report on the laboratory task.
5. Conclusions.
6. Date, signature of the student, visa of the teacher.

LITERATURE

1. Manual on setting, to tuning and use of the system of automation of management the enterprise of «ИНФИН-УПРАВЛЕНИЕ».
2. Avison & Fitzgerald 1995, Information Systems Development: Methodologies, Techniques and Tools 2nd ed. McGraw Hill, Maidenhead.
3. Technical documentation to the system of the E-business «E-Diste».
4. Manual on setting, tuning and use of the CRM system «Terrasoft CRM».
5. Technical documentation of administrator to the system 1C:Enterprise 7.7.
6. User guide to the system 1C:Enterprise 7.7.

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