
’

’ . . .

VISUAL BASIC

”

”

8 09.03.04

2004

.....	4
<i>1</i>	5
2	13
3	21
4	29
Visual Basic	36
, Visual Basic	37
.....	38

I

:

Visual Basic.

1

1.1

Visual Basic

Visual Basic

- ,

-

.

Visual Basic

-

:

1

().

2

, .

3

.

4

,

-

.

-

.

-

(Form_Load),

(Click)

(

,

(DbClick)

-

,

-

,

).

-

Visual Basic,



← ;

← PictureBox, ;

← Label, – Caption ;

← TextBox, / – Text; ;

← Frame, ;

← CommandButton, ;

← CheckBox, ;

← OptionButton, ;

← ComboBox, ;

← ListBox, Text ;

← HScrollBar, ;

← VScrollBar, ;

← Timer, () ;

← DriveListBox, – ;

← DirListBox, (); ;

← FileListBox, ;

← Shape, : , , ;

← Line, ;

← Image, ;

← Data, .

Private Sub Command1_Click()

End Sub

Visual Basic

General (Declarations)



F5.

< > < >

< >: < >
< >

.frm

.bas.

Visual Basic.

1.2

Visual Basic

[LET] < ' > = < >

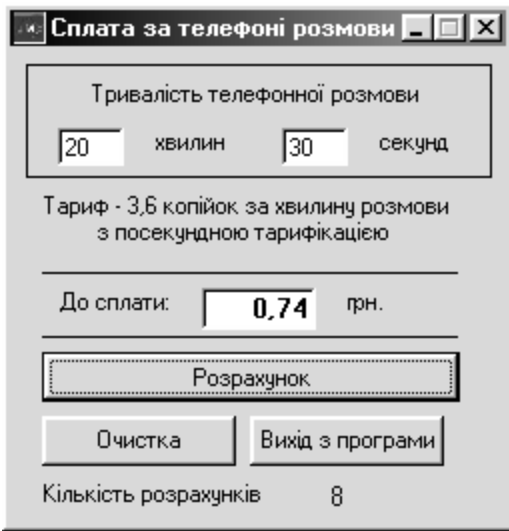
- 1) ^ - ;
- 2) () - ;
- 3) *, / - , ;
- 4) \ - (17\2 8);
- 5) MOD - (17 MOD 2 1);
- 6) +, - - , . (. 36).

REM

(:). : = 1 : = + 0.1.

1.3

Visual Basic



1.2 –

Label, Line
CommandButton.

(. 1.1)

TextBox,

: < >, Caption ().

(. 1.2):

TextBox

TextBox

TextBox

Label1 – Label7–

Caption

Lbl –

Cmd1 –

Cmd1

Cmd2 –

Cmd2

Cmd3 –

Cmd3

CommandButton Label

Caption.

Cmd1

“ ”

()

Integer,

Visual Basic,

(. . 37).


```

String,
Val(),
< > - ' < > = Val(< > .text),
Single, Long Double;
< > - ' < > - ' ;
text -

```

```

Dim i As Integer
Private Sub Form_Load()
    i = 0
    lbl1.Caption = i
    A.Text = ""
    B.Text = ""
    C.Text = ""
End Sub
Private Sub Cmd1_Click()
    Dim Sec, Minut, CC As Single
    Minut = Val(A.Text)
    Sec = Val(B.Text)
    CC = (Sec / 60 + Min) * 0.036
    C.Text = Round(CC, 2)
    i = i + 1
    lbl1.Caption = i
End Sub
Private Sub Cmd2_Click()
    A.Text = "" : B.Text = "" : C.Text = ""
End Sub
Private Sub Cmd3_Click()
    End
End Sub

```

2

```

1 Visual Basic?
2 Visual Basic.
3
4 Visual Basic.
5 ?
6
7 String.
8

```

3

(*)
 ,
 :
 ;
 ;
 .

4

1
 $S = p(p - a)(p - b)(p - c), \quad p = (a + b + c)/2; a, b, c$

$(x_1, y_1), (x_2, y_2)$

$$\sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}.$$

2
 $v = 1/L$, $T = 2\pi\sqrt{LC}$

3
 $S = 1/2ah, a, h$

4

5
 $(\dots 1)$, a, b, c

6
 $22 - 4y - 20z - 45 = 0$

$$3x - y + 5z + 1 = 0,$$

$$\rho = \frac{|ax_0 + y_0 + cz_0 + d|}{\sqrt{a^2 + b^2 + c^2}}.$$

7
 $n = 1000$
 $\lambda = 0,03$, $\tau = 3 \cdot 10^{-7}$
 $W_1 = P_1 \tau$, $k = c\tau/\lambda, c = 30$

8
 $ax^2 + bx + c = 0$, $a \neq 0$, $a = 2, b = -8, c = -10$

9	$a, b.$	a, b	$2x/a + b - 12 = 0$	-
10				-
11	$t.$	t	$S = t^3 - \sqrt{t}.$	$($
12				$)$
13	R_3	$Z = (V_1 + V_2 + V_3)/3,$	$V_1, V_2, V_3 -$	$R_1, R_2,$
14				$V = 4/3 \pi R^3.$
15		$L = 0,04$		$= 10^{-6},$
16			$I = U \sqrt{\frac{C}{L}};$	$U = 100$
17	$n = 2$			$W = \frac{LI^2}{2}.$
18		$($	a	$0,5 \sqrt{2b^2 + 2c^2 - a^2}.$
19		a, b, c		
20			$W_1 = \frac{\Delta W}{n^2 - 1}$	$L = 0,5,$
				$\Delta W = 3$
				$I_1 = \sqrt{\frac{2W_1}{L}}.$
			$\frac{1}{b+c} \sqrt{bc(a+b+c)(b+c-a)}.$	a, b, c
				a
		$Z = (R_1 + R_2 + R_3)/3,$	$R_1, R_2, R_3 -$	
		V_1, V_2, V_3		$R = \sqrt[3]{3V/4\pi}.$

21 x

$$\operatorname{sh}(x) \cdot \operatorname{tg}(x+1) - \operatorname{tg}^2(2 + \operatorname{sh}(x-1)), \quad \operatorname{sh}(x) = \frac{e^x - e^{-x}}{2}. \quad x$$

22 a, b, c

$$0,5 \sqrt{2b^2 + 2c^2 - a^2}.$$

23 (t/T) u/U_{\max} n

$$\frac{u}{U_{\max}} = \sqrt{\frac{n}{n+1}}; \quad \frac{t}{T} = \frac{\arccos \sqrt{\frac{n}{n+1}}}{2\pi}.$$

24 $b, V = h(S_1 + \sqrt{S_1 S_2} + S_2)/3; S_1, S_2 -$ a, b, h $h -$

25 $=$ $/$ $\cdot 100 \%$ 2%

26 $p = 120 \left(\ln \frac{2\lambda}{\pi d} - 0.577 \right); \lambda = (3 + 0.1n).$ n, d

27 n, a

$$a. R = \frac{a}{2 \sin(\pi/n)}, \quad r = \frac{a}{\operatorname{tg}(\pi/n)}.$$

28 $V = h(S_1 + \sqrt{S_1 S_2} + S_2)/3; S_1, S_2 -$ R, r, h $R, r.$ $h -$

29 $(x, y).$

$$(\rho, \varphi), \quad \rho = \sqrt{x^2 + y^2}, \quad \operatorname{tg}(\varphi) = y/x.$$

30 $S = t^3 - 3t^2 + 2.$ $t.$ t $($

2

:

Visual Basic.

1

, ()

.

➤ : ;

➤ (;

➤);

➤ ,

1.1

Visual Basic

: If, Elseif, Select Case.

1.1.1

If / Then / Else:

If

IF < > THEN < 1> [ELSE < 2>]

1.1.2

If < > Then ... Else ... End If:

If <	>	Then			
<		1,	,	()>	
	[Else				
<		2,	,	()>]	
	End if				

Else

Then End if

(False).

1.1.3

If /Then /ElseIf /EndIf:

```

If < 1 > Then
< , 1 >
ElseIf < 2 > Then
< , , 2 >
[ElseIf < 3 > Then
< , , 3 >]
[Else
< , >]
End if
    
```

1.1.4.

Select Case:

```

Select Case < >
Case < 1 >
< 1 >
Case < 2 >
< 2 >
[Case Else
< N >]
End Select
    
```

Select Case

Case.

To,

: 10 To 20;

Is,

: Is > 200.

1.2

OptionButton

Value:

< ' _ >.Value = True (False)

CheckBox

< ' _ >.Value = 0 (1 2)

0 – ; 1 – ; 2 – (-

ComboBox

(,):

<List>

1)

2)

```

AddItem:
< ' _ComboBox>.AddItem [< >]
Dan(5)
    
```

```

cbo 1.Clear
For i=1 To 5
cbo 1.AddItem Dan(i)
Next i
    
```

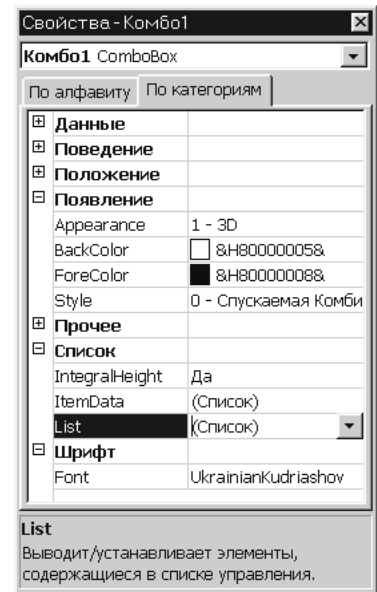
3)

```

cboN.Clear
For i=1 To 5
    cbo 1.List(i-1) = Dan(i)
Next i
Sorted
True False.
    
```

<Ctrl>+<Enter>.

<List>.



1.3

Visual Basic

For, While Do.

1.3.1

For...Next

<pre> For < > = < 1> To < 2> [Step < >] Next < > </pre>

1, . Next

2 , ,

[Step < >]

Next.

1).

Next

For...Next (

For...Next

).

1.3.2.

For Each...Next

```

For Each <          > In <          >
    <          >
Next <          >
    
```

For Each...Next

Next.

Variant
For Each...Next,

1.3.3.

While...Wend

```

While <          >
    <          >
Wend
    
```

True.

< > - , True False.
Null, False.
< > - ,
True, While -

False.

While...Wend

1 100

```

Dim Sum, i As Integer
Sum = 0
i = 2
While i <= 100
    sum = sum + i
    i = i + 2
Wend
    
```

1.3.4

Do...Loop

, 2)

: While Until.

: 1)

1	2	3	4
Do While < > < > Loop	Do Until < > < > Loop	Do < > Loop While < >	Do < > Loop Until < >

1. While () .

(True).
(False),

2. Until () .

() .

3 4.

1.4

1.4.1

Goto:

GOTO < >

aaa: x=x+1

...
GOTO aaa

1.4.2

Exit :

EXIT < >

Exit For
If...Then).

Next.

1.5

ComboBox

Rnd.

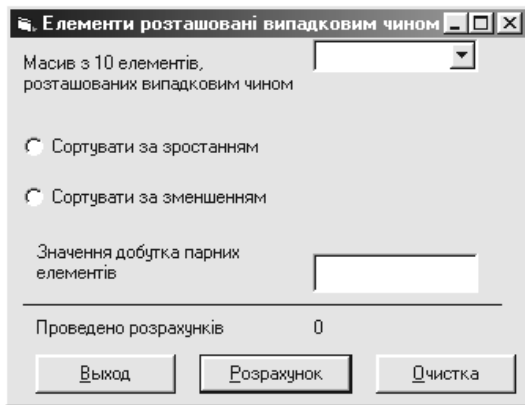
0 1,

100,

Int,

0 100.

”
’ lbl_i (. 2.1).



2.1 –

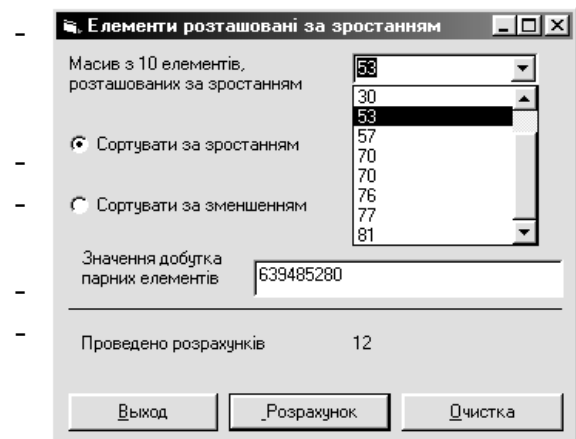
```
Dim i, j, n, k As Integer
Private Sub Form_Load()
    n = 10
    For i = 1 To n
        .List(i - 1) = Int (Rnd * (100))
    Next i
    k = 0
    lbl_i.Caption = k
    A = ""
    = ""
    = ""
End Sub
```

Option1,

ComboBox

(. 2.2).

```
Private Sub Option1_Click()
    Dim z As Integer
    Lbl5.Caption = " " & n & " "
    ,
    Formal.Caption = " "
    For i = 0 To n - 2
        For j = i + 1 To n - 1
            If Val( .List(i)) > Val( .List(j)) Then
                z = .List(i)
                .List(i) = .List(j)
                .List(j) = z
            End If
        Next j
    Next i
End Sub
```



2.2 –

2.

1
2
3
4
5
6

?

?

?

3

(*.exe)

ComboBox

AddItem

List (. 2.1, 2.2).

(. 2.1)

TextBox.

-
-
-

TextBox

ComboBox;

2.1 –

1	15	
2	10	
3	8	
4	12	
5	14	
6	18	8 ,
7	11	
8	14	
9	16	,
10	19	, 6

2.1

11	17	
12	9	7 ,
13	15	,
14	10	,
15	8	
16	12	,
17	20	
18	18	, -
19	11	,
20	9	, -
21	16	
22	19	
23	17	,
24	8	,
25	7	, -
26	18	,
27	11	,
28	10	,
29	16	
30	9	
31	17	, -

: Visual Basic

1

1.1

Visual Basic

MouseDown (), MouseUp () MouseMove ()

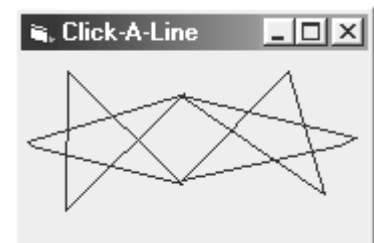
MouseDown - ;
MouseUp - - ;
MouseMove -

Button - , ,

Shift - , Shift, Ctrl Alt;

Line

MouseDown



3.1 -

1

(,):

```
Private Sub Form_MouseDown (Button As Integer, Shift As Integer,X As Single, Y As Single)
    Line -(X, Y)
End Sub
```



3.2 -

2

2.

Line

MouseMove

MouseMove

```
Private Sub Form_MouseMove (Button As Integer, _
    Shift As Integer, X As Single, Y As Single)
```

Line -(X, Y)

End Sub

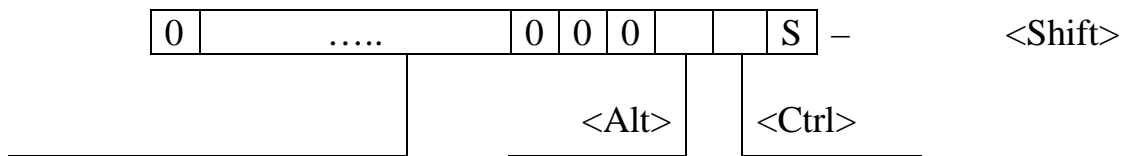
3 (011).

7 (111).

MouseMove

```
Private Sub Form_MouseMove(Button As Integer, Shift As Integer, X As Single, Y As Single)
    If Button = 1 Then Print " "
    If Button = 2 Then Print " "
    If Button = 3 Then Print " "
End Sub
```

Shift, <Shift>, <Ctrl> - 2, <Ctrl> - 4, <Shift> <Alt>, <Alt>.



```
Private Sub Form_MouseDown(button As Integer, shift As Integer, x As Single, y As Single)
    shiftTest = shift And 7
    Select Case shiftTest
        Case 1 'vbShiftMask
            Print "You're pressed the shift key."
        Case 2 'vbCtrlMask
            Print "You're pressed the Ctrl key."
        Case 3
            Print "You're pressed both shift and Ctrl key."
        Case 4 'vbAltMask
            Print "You're pressed the Alt key."
        Case 5
            Print "You're pressed both shift and Alt key."
        Case 6
            Print "You're pressed both Ctrl and Alt key."
        Case 7
            Print "You're pressing the all three key."
    End Select
End Sub
```

1.2

1.2.1

Line

Line [Step] (X1, Y1) - [Step] (X2, Y2), [color], [] [F]

X1 Y1, - X2, Y2

Line (X1, Y1) - (X2, Y2)

Step **Line**

ForeColor

color, **Line** **Circle** (

, **Line** (100, 10) - (100, 410), RGB(255, 0, 0) ‘
Line (200, 10) - (200, 410), RGB(255, 255, 255) ‘
 Clr# = RGB(0, 255,0)
Line (300, 10) - (300, 410), Clr# ‘

DrawWidth, - **DrawStyle**

(. 3.1).

DrawStyle 1...4

0.

3.1 –

DrawStyle

vbSolid	0	()
vbDash	1	
vbDot	2	
vbDashDot	3	-
vbDashDotDot	4	- -
vbInvisible	5	
vbInsideSolid	6	

Form1:

```
Private Sub Form1_Click()  
Hstep = Form1.ScaleHeight / 6
```

1/6

```
For i% = 1 to 6
```

```
Form1.DrawStyle = i% - 1
```

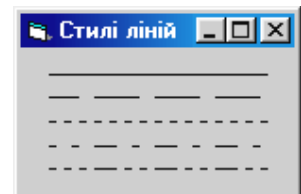
```
Form1.Line (0.1 * Form1.ScaleWidth, Hstep * i%) -(0.9 * Form1.ScaleWidth, Hstep * i%)
```

```
Step 0.1 0.9
```

1/10

```
Next
```

```
End Sub
```



100 300, (100, 400),
Line (100, 400) - (200, 400) ’
Line (200, 400) - (200, 700) ’ Y
Line (200, 700) - (100, 700) ’ X
Line (100, 700) - (100, 400) ’

Line (x,y) - **Step** (100, 0)
Line - **Step**(0,300)
Line - **Step**(-100,0)
Line - **Step**(0,-300)

, Visual Basic

Line (Box –).

(**Step**)
Line (100,400) - (200,700), ,
color ,

Visual Basic

“ ”
F (Fill –)
: () **BF** () ()
F)
FillColor.

FillStyle.

FillStyle (. 3.2).

3.2 –

FillStyle

vbFSSolid	0	
vbFSTransparent	1	()
vbHoriwntallLine	2	()
vbVerticalLine	3	
vbUpwardDiagonal	4	
vbDownwardDiagonal	5	
vbCross	6	
vbDiagonalCross	7	

1.2.2

Circle

Circle:

Circle [Step] (X, Y), radius, [color], [start], [end], [aspect]

Y – , a **radius** – .
R : **Circle (X, Y), R**

Circle(Form1.ScaleWidth / 2, Form1.ScaleHeight / 2),Form1.ScaleHeight / 3

Line,
Step.

. Aspect **Circle** – **aspect**
aspect 1, **1,**

Circle (x, y), r, 255, , , 1.5

i# = RGB(0, 155, 0)

r% = 0

D2 = False

While r% < 1000

Circle (x, y), r%, i#, , , 0.5

i# = i# + 10

r% = r% + 10

Wend

Circle

start **end**

:

360

, 2π

D

2πD/360.

2

1
2
3
4
5

?

Button.
Shift.
Line.
Circle.

3

-

Shift

Button.

3.3

Shift

Line

Circle.

3.3 –

		<Shift>	<Ctrl>	<Alt>		<Shift>	<Ctrl>	<Alt>
1	2				5			
2	3				1			
3	4				2			
4	5				1			
5	6				2			
6	7				2			
7	8				3			
8	7				5			
9	6				1			
10	5				2			
11	4				1			
12	3				2			

3.3

		<Shift>	<Ctrl>	<Alt>		<Shift>	<Ctrl>	<Alt>
13	2				5			
14	1				3			
15	2				5			
16	3				1			
17	4				2			
18	5				1			
19	6				2			
20	7				5			
21	8				3			
22	9				1			
23	8				2			
24	7				1			
25	6				2			
26	5				2			
27	4				3			
28	3				5			
29	2				5			
30	1				3			
31	2				5			

4

: Visual Basic -

1

1.1

(keyboard handler).

()

Visual Basic

KeyPress KeyDown KeyUp	, ASCII-

KeyDown **KeyPress,** **KeyUp,**

KeyPress **KeyDown,**

KeyUp.

KeyPress

ASCII:

<Enter>, < b> <Backspace>.

KeyPress

KeyPress,

ASCII.

KeyDown **KeyUp,**


```

        <F5>
        .
        Shift
        ,
        Shift
        ,
        <Shift>, <Ctrl>
        KeyDown
        :
        <Alt>.
        KeyUp,
        .
        2
        KeyUp,
        <F5>, <F6>, <F7>, <F8>
        Text1.
        <F5>
        Date,
        -
        <F6> -
        Time.
        <F7>
        -
        <F8>
        ,
        .

```

```

Private Sub Text1_KeyUp(KeyCode As Integer, Shift As Integer)
Const DateKey = vbKeyF5, TimeKey = vbKeyF6
Const SpecKey1 = vbKeyF7, SpecKey2 = vbKeyF8
Select Case KeyCode:
Case DateKey: Text1.SelText = Date
Case TimeKey: Text1.SelText = Time
Case SpecKey1: Text1.SelText = "Vishual Basic 6.0"
Case SpecKey2: Text1.SelText = " <F8>"
End Select
End Sub

```

```

3
A:
Shift
,
-

```

```

Private Sub Text1_KeyDown(KeyCode As Integer, Shift As Integer)
If KeyCode = vbKeyA And Shift = 1 Then MsgBox "You pressed the A key."
End Sub

```

1.2

```

        KeyDown    KeyUp
        ,
        ,
        KeyPreview
True.           KeyPress,
KeyUp    KeyDown
        ,
        .
        KeyPreview    True
        <
        >
Form_Load:
Private Sub Form_Load
Form1.Keypreview = True
End Sub

```

```

True, <Enter> Default, lick, True
Cancel, <Esc>
Click
KeyAscii KeyCode
0. <Tab>
TabStop False.

```

1.3

Visual Basic

```

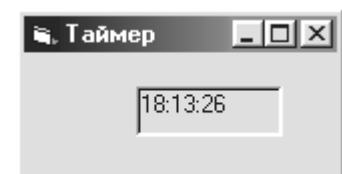
) Interval - 0 64 767 ( 0 64,8 ).
Enabled - TRUE,
( ). False
Timer
Interval
4 Times1,

```

```

Private Sub Times1_Timer()
L b 11.BorderStyle = 1
L b 11.Caption = Time
End Sub

```



_____ 5 _____

```

Dim T1 As Double
Private Sub Form_Load()
T1 = Time
LblTimer.Caption = 100
End Sub

```

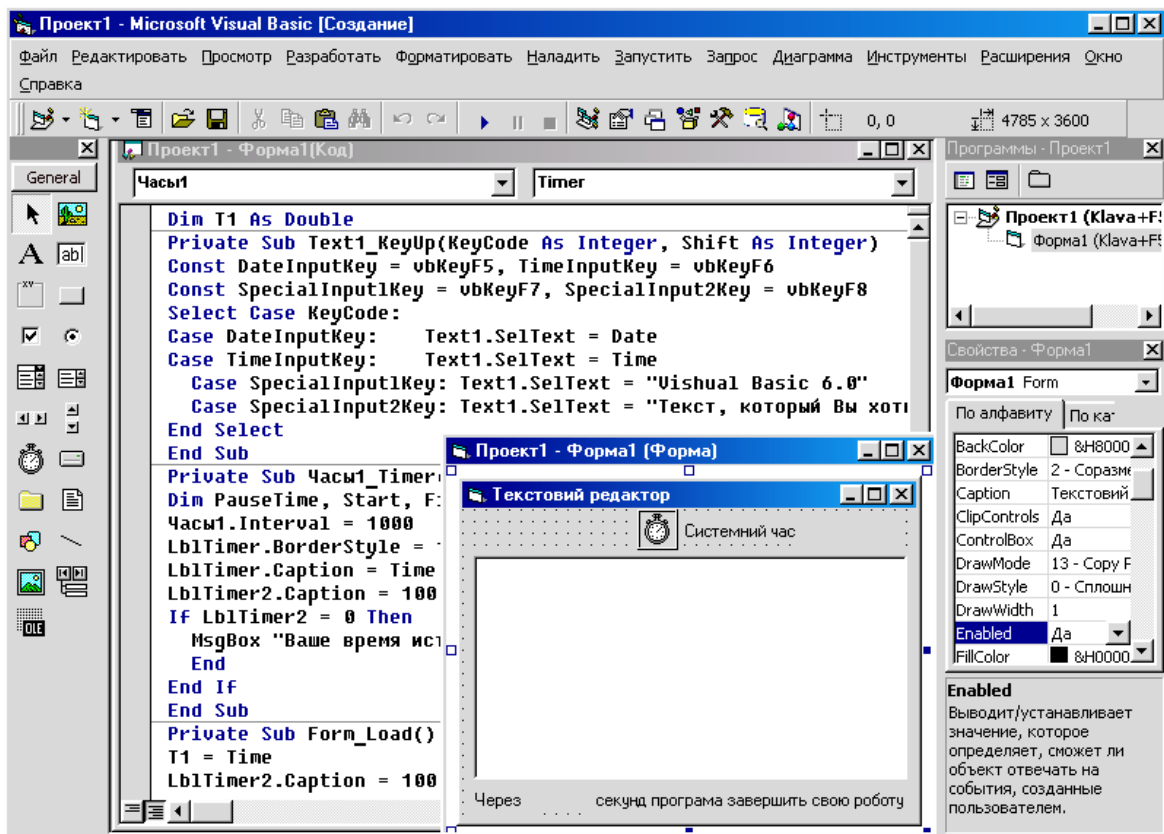


```

Private Sub Timer1_Timer()
    Times1.Interval = 1000 ' - 1
    LblTimer.Caption = 100 - ((Second(Time) + Minute(Time) * 60) -
        (Second(T1) + Minute(T1) * 60))

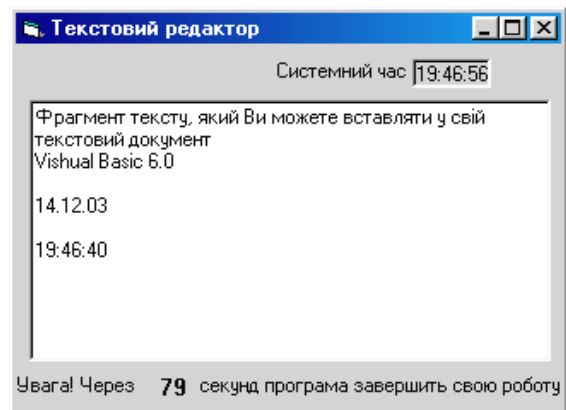
    If LblTimer = 0 Then
        MsgBox " " ' "
    End If
End Sub
End Sub

. 4.1
2, 4 5, . 4.2.
    
```



4.1 –

- 2
 - 1
 - 2
 - 3
 - 4
- ? KeyCode. Shift.



4.2 –

4.1

1	2	3	4	5
21	, - ,	F9	Microsoft Excel	<Alt>+O
22		F10		<Shift>+P
23		F11	!	<Ctrl>+R
24		F12		<Alt>+S
25		F1		<Shift>+T
26		F2		<Ctrl>+U
27		F3	!	<Alt>+V
28		F4		<Shift>+W
29		F5	Windows XP	<Ctrl>+X
30		F6		<Alt>+Y
31		F7		<Shift>+Z

Visual Basic

	Abs()	
	Sqr()	
	Exp()	
	Log()	
	Cos()	.
	Sin()	.
	Tan()	.
	Atn()	.
	Rnd	0 1
	Str()	
	Val(str)	
	Asc(s)	ASCII-
	Chr(int)	, ASCII-
	Lcase(str)	, - ,
	Ucase(str)	, - ,
	Len(str)	
	Right(str,int)	int str
	Left(str,int)	int str
	Cbool()	Boolean
	Cbyte()	Byte
	Ccur()	Currency
	Cdate()	Date
	CDbl()	Double
	Cint()	Integer
	CLng()	Long
	CSng()	Single
	CStr()	String
	Cvar()	Variant

Visual BASIC

Byte ()	1	0 255	
Boolean ()	2	True False	
Integer ()	2	-32 768 32 767	%
Long ()	4	-2 147 483 648 2 147 483 647	&
Single ()	4	-3,40282E38 -1,4013E-45 1,4013E-45 3,40282E38	!
Double ()	8	-1,797E308 -4,94E-324 4,94-324 1,797E308	#
Currency ()	8	-922 337 203 685 477,5808 922 337 203 685 477,5807	@
Date ()	8	1 100 . 31 9999 .	
Object (')	4	- ,	
String ()	10 +	0 2 .	\$
Variant (-)	16	-	Double
(-)	22 + -	(String)	

- 1 . Visual Basic 6. : 2 .-
- 2 .: V, 2000. Visual Basic 6. - : -
- 3 - " , 2000. - 624 .
- 4 . Microsoft Visual Basic, Scripting Editing . -
- 5 : , 1997. - 448 .
- 6 Visual Basic 6: . .
- 7 - .- .- .: , 1999. - 832 .
- 8 : , : .
- 9 . / . . . - .: , 2001. -
- 10 696 .
- 11 **Visual Basic 6:** . .- : - - , 2003. - 992 .

”

”

VISUAL BASIC

. . .

— , . . .

. . .

,

. . .