МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ

Державний Університет Інфомаційно-комунікаційних технологій

Кафедра Англійської мови

“English for IT Specialties”

з іноземної мови (англійської) професійного спрямування

для студентів

навчально-наукового інституту телекомунікацій

Навчальний посібник

2023

УДК 811.111:004(075.8)
З-38

Англійська мова в сфері комп'ютерних технологій [Електронний ресурс] : навч. посіб. для студ. спеціальності 121 «Інженерія програмного забезпечення», 126 «Інформаційні системи та технології» / ДУІКТ; уклад.: А. А. Захаржевська, Н. А. Глуховська. – Київ : ДУІКТ, 2023. – 52 с.

АНГЛІЙСЬКА МОВА В СФЕРІ ІНФОРМАЦІЙНИХ ТЕХНОЛОГІЙ

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Навчальний посібник призначений для навчання англійської мови студентів ІТ спеціальностей закладів вищої освіти.

Мета посібника розширити коло актуальних тем, та урізноманітнити комплекс вправ основного курсу англійської мови, які складають основу розвитку навичок професійноорієнтованої комунікації.

Навчальний посібник призначено для практичних занять та складається з 7 розділів, у кожному з яких подано текст та вправи до нього; вправи на удосконалення навичок вправи на закріплення лексичного матеріалу, завдання для розвитку усного та писемного мовлення.

CONTENTS **PAGE**

ПЕРЕДМОВА

Основною метою навчання англійської мови студентів технічних спеціальностей є володіння іноземною мовою в обсязі, необхідному для ефективного ділового спілкування англійською мовою та з метою отримання англомовної інформації в контексті глобалізації та діджиталізації.

В процесі досягнення цієї мети студенти мають одержати достатній рівень комунікативної компетенції, яку складають мовленнєві вміння, сформовані на основі мовних, комунікативно-пізнавальних, мовленнєвих навичок загальнотехнічного характеру, включаючи навички реферування та анотування загальнотехнічних текстів, а також підготовку до подальшої самостійної роботи з мовним матеріалом для забезпечення освітніх запитів і гармонійного поєднання навчального процесу та наукової діяльності.

Загальні положення

Навчальний посібник складено згідно з вимогами Робочої Програми навчальної дисципліни «Іноземна мова» (англійська) для студентів ІТ спеціальностей І Бакалаврського рівня і охоплює розширений діапазон специфічної лексики, термінологію та широкий спектр актуальних тем, що пов’язані з навчанням та майбутньою професією.

Основна мета посібника – розвиток англомовної комунікативної компетентності.

Навчальний матеріал дібрано з метою розширити коло актуальних тем та урізноманітнити комплекс вправ основного курсу англійської мови, які складають основу розвитку навичок професійно-орієнтованої комунікації.

Посібник побудовано за тематичним принципом та складається з семи розділів.

Розділи ідентичні в структурному відношенні та містять тексти, які дають змогу опанувати основи загальнотехнічної термінології профільних дисциплін та отримати навички анотування та реферування; вправи до тексту, які спрямовані на розвиток усного та писемного мовлення.

Висновки

У кінці кожного розділу пропонуються творчі завдання за темою, спрямовані на закріплення вивченого матеріалу.

Навчальний посібник призначено для аудиторного та позааудиторного вивчення навчального матеріалу.

Посібник є додатковим матеріалом, опрацювавши який, студенти зможуть покращити усі навички мовленнєвої діяльності. Зокрема, широкий спектр вправ та творчих завдань у вигляді монологів, діалогів, полілогів допоможуть удосконалити навички професійно-орієнтованої комунікації.

UNIT 1: DIGITAL FOOTPRINT

Lead in

Task 1

Think on the questions:

Work in pairs.

What places or organizations do often watch people movements? Give your reasons.

Do you believe that so-called 'digital footprints' can impact on your future greatly?

How much do you know about your digital footprint? Make a list your favorite digital activities (apps, websites, images, texting, posting, researching etc.) for work, research and study.

Task 2

Work in pairs. Look at the title of the text and predicted what is about?

Every time you do anything on the internet, you leave a trail behind you. Do you know how to take care of your digital footprint?

Task 3

Before you read the text, match the words with similar meanings and write a–h next to the numbers 1–8. Share your ideas and results with your groupmates.

1. suitable	a. a track
2. a trail	b. to show
3. details	c. to leave
4. to abandon	d. complicated
5. to reveal	e. a purpose
6. a function	f. information
7. complex	g. an employer
8. a recruiter	h. appropriate

Task 4

You are going to read about digital footprint. Think about top tips for taking care of your digital footprint when reading. Skim the text to find the answers.

Your digital footprint

Every time you go online, you leave a trail. This is just like a real footprint. It reveals where you've been, how long you stayed and what you've been doing there. Every time you register for an online service, send an email, download a video or upload a photo, the information can be accessed and your digital footprint can be revealed. This shouldn't necessarily be worrying but it is advisable to be aware of your digital footprint and to be cautious and sensible when you are online.

Six top tips for taking care of your digital footprint

Don't forget to log off when you leave a website, especially if you are using a shared computer. If you don't, someone can easily pretend to be you!

Don't tell anyone your passwords and don't write them down in an obvious place. Make them more complex by using a combination of letters, numbers and punctuation marks.

Tell an adult if you come across anything online that makes you upset, anxious or concerned. There are ways to report inappropriate or abusive content and in most cases web managers respond rapidly.

Remember your favourite websites by using the history button and the bookmark function on your computer or mobile device. This is a way that your digital footprint can work in your favour, but remember to clear your browser history regularly.

If you want to post comments online, you don't have to 5 use your own name. Invent a nickname to use instead. You can also use a picture instead of a real photo.

Protect your identity online. Be careful about who you 6 share personal information with and always think twice before sharing details like your email, home address, school or phone number with someone.

Think about the future

All kinds of people are interested in your digital footprint. It's now quite common for colleges, universities and employers to check out the online profiles of possible candidates as part of their application process. There are cases of people having missed out on jobs and places in college because their digital footprint didn't impress the recruiters. So, remember: keep safe, don't put too much personal information online and always think carefully before you post something. Ask yourself, 'Would I be happy for absolutely everyone to see this?"

<u>Task 5</u>. Write the tips in the correct group.

Write your password in a place where you can find it easily	Keep quiet about inappropriate content that you come across.	Use a picture instead of a photo of yourself.	Use punctuation marks in your password.
Use the history button to find a favourite website.	Log off when you leave a website.	Forget to erase your browser history.	Use your name when you post comments online.

Do …	Don't …

<u>Task 6.</u> Circle the best answer to these questions.

1. When you go online, you …

a. can choose what information is recorded about you.

b. leave a trail showing where you've been and what you've been doing.

c. send information to recruiters.

2. If people search for information about you, they can find your …

a. bookmarked websites.

b. passwords.

c. digital footprint.

3. Someone could pretend to be you if you don’t log off when …

a. abandoning a site.

b. posting a comment.

c. sharing a photo.

4. You should make your passwords difficult to guess by …

a. using all capital letters.

b. making them complex.

c. including a symbol.

5. If a user reports inappropriate content …

a. web managers usually react immediately.

b. recruiters often respond.

c. other users want to read what they’ve said.

6. You should report abusive remarks on the internet …

a. if you think they are really serious.

b. in all cases.

c. if you can find the contact and have time.

7. To remember your favourite websites, you can use the …

a. browser.

b. bookmark function.

c. mobile device.

8. Think carefully before …

a. sharing your favourite website online.

b. sharing your comments online.

c. sharing personal information online.

SPEAKING

Task 7

Imagine that you are preparing for the presentation on the topic "digital footprint".

Digital footprint, e-reputation, digital literacy, plagiarism, copyright infringement, computer ethics, cyberbullying, digital wellbeing.

Task 8

Analyse your digital footprint: what was your first impression of your digital footprint? What surprised you?

Task 9

Speak on pros and cons of digital footprint.

UNIT 2. CYBER SECURITY

Lead in

Task 1

Match each concept (1–8) with its image (A–H). Some images may be matched more than once.

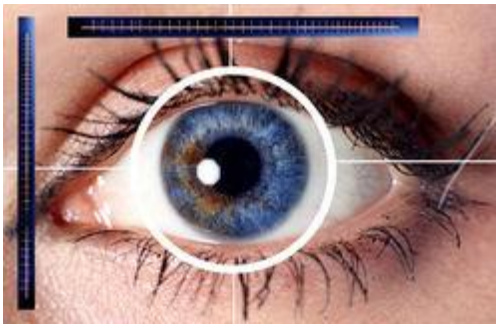
1. Cyber Crime Security
2. Binary Security Lock
3. Cyber Theft
4. Cyber Security Leak
5. Access Key Security
6. Digital Data Security
7. Scan Cyber Eye for Security
8. Hacker Attack

A

B

C

D



E

F

G 

H 

Task 2

Comment on the pictures and say what you know about information security breach.

A 

B 

Task 3

How many words can you think of dealing with cybersecurity? You have three minutes to brainstorm and make notes. Then share your ideas with your groupmates.

Nouns	Verbs	Adjectives	Other

Task 4

Before you read, think on the answers of the following questions. Share your ideas with your groupmates.

What are some possible dangers of surfing the Internet?

What can people do to protect themselves from these dangers?

Task 5

Work in pairs. Look at the title of the text and predict what it is about?

Cyber security and its origin

Cyber security is the practice of defending computers, servers, mobile devices, electronic systems, networks, and data from malicious attacks. It's also known as information technology security or electronic information security. The term applies in a variety of contexts, from business to mobile computing, and can be divided into a few common categories.

• Network security is the practice of securing a computer network from intruders, whether targeted attackers or opportunistic malware.

• Application security focuses on keeping software and devices free of threats. A compromised application could provide access to the data its designed to protect. Successful security begins in the design stage, well before a program or device is deployed.

• Information security protects the integrity and privacy of data, both in storage and in transit.

• Operational security includes the processes and decisions for handling and protecting data assets. The permissions users have when accessing a network and the procedures that determine how and where data may be stored or shared all fall under this umbrella.

• Disaster recovery and business continuity define how an organization responds to a cyber-security incident or any other event that causes the loss of operations or data. Disaster recovery policies dictate how the organization restores its operations and information to return to the same operating capacity as before the event. Business continuity is the plan the organization falls back on while trying to operate without certain resources.

• End-user education addresses the most unpredictable cyber-security factor: people. Anyone can accidentally introduce a virus to an otherwise secure system by failing to follow good security practices. Teaching users to delete suspicious email attachments, not plug in unidentified USB drives, and various other important lessons is vital for the security of any organization.

The global cyber threat continues to evolve at a rapid pace, with a rising number of data breaches each year

Medical services, retailers and public entities experienced the most breaches, with malicious criminals responsible for most incidents. Some of these sectors are more appealing to cybercriminals because they collect financial and medical data, but all businesses that use networks can be targeted for customer data, corporate espionage, or customer attacks.

Governments across the globe have responded to the rising cyber threat with guidance to help organizations implement effective cyber-security practices.

To combat the proliferation of malicious code and aid in early detection, the framework recommends continuous, real-time monitoring of all electronic resources.

The importance of system monitoring is echoed in the “10 steps to cyber security”, guidance provided by the U.K. government’s National Cyber Security

Centre. In Australia, The Australian Cyber Security Centre (ACSC) regularly publishes guidance on how organizations can counter the latest cyber-security threats. The threats commonly countered by cyber-security are three-fold:
1. Cybercrime includes single actors or groups targeting systems for financial gain or to cause disruption.
2. Cyber-attack often involves politically motivated information gathering.
3. Cyberterrorism is intended to undermine electronic systems to cause panic or fear.

Task 6

Mark the following sentences as True or False. Find given information in the text

1. Cybersecurity is the practice of protecting data from malware.	**True**	**False**
2. Information technology security and cybersecurity are the same terms.	**True**	**False**
3. Network security is the practice of securing WANs.	**True**	**False**
4. Successful security begins well before a program or device is released.	**True**	**False**
5. Information security focuses on keeping stored data in private.	**True**	**False**
6. The permissions users must have when accessing a network is related to the operational type of security.	**True**	**False**
7. To combat the spread of malicious code, it recommends regular monitoring of all electronic devices.	**True**	**False**
8. The global cyber threat is developing rapidly.	**True**	**False**

Task 7

Answer the questions and complete the chart. Then skim the text and compare your ideas and information given in the article.

Cyber security can be divided into a few common categories:	
Your ideas	Text
What is the purpose of cybercrimes, cyber-attacks, cyberterrorism?	
Your ideas	Text

Task 8

Comment on the difference of technical terms and complete the sentences.

Cybersecurity vs Cybersafety

Cybersecurity protects the technology infrastructure, such as networks, computers, cloud applications, and data from cyberattacks.
Cybersafety uses technology to protect the physical and emotional well being of users.
Fundamentally, cybersafety focuses on people while cybersecurity involves information.

from Concise Oxford English Dictionary

1. _____ addresses the ability to act in a safe and responsible manner on the Internet.
2. _____ solutions help organizations protect sensitive information, such as social security numbers, from hackers.
3. Children have to be educated about online threats and _____.
4. Universities need to _____ protect important data like personally identifiable information from malware and phishing schemes, or even accidental sharing of information.
5. _____ is just as important for adults as it is for children and teens - from privacy concerns to identity theft and cyberstalking, there are plenty of hazards on the web

Task 9

Match the words to make collocation and make up your own sentences using it.

solutions, security corporate, design real-time, actors, customer, detection, access, threat

1. network _____
2. to provide _____
3. _____stage
4. cyber _____
5. _____ data
6. _____ espionage
7. security _____
8. early _____
9. _____ monitoring
10. single _____

SPEAKING

Task 10

Imagine that you are composing a cybersecurity leaflet for internet users.

Defacing, spoofing, cyberstalking, cyberattack, phishing, social engineering, PUPS (Potentially Unwanted Programs), online scams, cyber-security incident

Task 11

Imagine yourself to be a successful cyber security specialist.

Think on the online threat patterns and models. Speak on existing technological solutions of Internet threat prediction and prevention.

Task 12

Discuss with your partner what you should do to keep your information safe?

Task 13

Work in pairs.

Choose one of the categories below and make a poster presenting cybersafety or cybersecurity tips for it:

1. Adults	5. Educational institutions
2. Juveniles	6. Governmental organizations
3. Travelers	7. Big businesses
4. Small private entrepreneurs	

UNIT 3. DATA SECURITY

Lead in

Task 1

Think on the given question.

What do you do to protect your data?
How can you protect your data when you work online?
How can you be sure that your data are safe online?
What it's used for and what we can do to protect data online?

Task 2

Before you read the text, match the words with definitions and write a–h next to the numbers 1–8. Share your ideas and results with your groupmates.

1. …… data	a. directed at a particular person or group
2. …… to be aware of	b. permission to do something
3. …… consent	c. to risk having a harmful effect on something
4. …… to keep track / to track	d. to control an activity or process, especially with rules
5. …… a scandal	e. information, especially facts or numbers, that is collected for a future purpose
6. …… targeted	f. to study or record someone's behaviour over time
7. …… to regulate	g. to have noticed or know about something
8. …… to compromise	h. a public feeling of shock and disapproval

Task 3

Read the text and mark the key concepts and words. Compare your notes with your partner.

STAY YOUR DATA ONLINE SAFE

As the internet and digital technology become a bigger part of our lives, more of our data becomes publicly accessible, leading to questions about privacy. So, how do we interact with the growing digital world without compromising the security of our information and our right to privacy? Imagine that you want to learn a new language. You search 'Is German a difficult language?' on your phone. You click on a link and read an article with advice for learning German. There's a search function to find German courses, so you enter your city name. It asks you to activate location services to find courses near you. You click 'accept'. You then message a German friend to ask for her advice. When you look her up on social media, an advertisement for a book and an app called German for Beginners

instantly pops up. Later the same day, while you're sending an email, you see an advert offering you a discount at a local language school. How did they know? The simple answer is online data. At all stages of your search, your devices, websites and applications were collecting data on your preferences and tracking your behaviour online. 'They' have been following you past; it was easy for people to keep track of their personal information. Like their possessions, people's information existed mostly in physical form: on paper, kept in a folder, locked in a cupboard or an office. Today, our personal information can be collected and stored online, and it's accessible to more people than ever before. Many of us share our physical location, our travel plans, our political opinions, our shopping interests and our family photos online – as key services like ordering a takeaway meal, booking a plane, taking part in a poll or buying new clothes now take place online and require us to give out our data. Every search you make, service you use, message you send and item you buy is part of your 'digital footprint'.
Companies and online platforms use this 'footprint' to track exactly what we are doing, from what links we click on to how much time we spend on a website.
Based on your online activity, they can guess what you are interested in and what things you might want to buy. Knowing so much about you gives online platforms and companies a lot of power and a lot of money.
By selling your data or providing targeted content, companies can turn your online activity into profit. This is the foundation of the growing industry of digital marketing.
Some of the time our personal data is shared online with our consent. We post our birthday, our photographs and even our opinions online on social media. We know that this information is publicly accessible. However, our data often travels further than we realise, and can be used in ways that we did not intend. Certain news scandals about data breaches, where personal data has been lost, leaked or shared without consent, have recently made people much more aware of the potential dangers of sharing information online.
So, can we do anything to protect our data? Or should we just accept that in fact nothing is 'free' and sharing our data is the price we have to pay for using many online services? As people are increasingly aware of and worried about data protection, governments and organizations are taking a more active role in protecting privacy.
As internet users, we should all have a say in how our data is used. It is important that we pay more attention to how data is acquired, where it is stored and how it is used. As the ways in which we use the internet continue to grow and change, we will need to stay informed and keep demanding new laws and regulations, and better information about how to protect ourselves.

Task 4

Mark the following sentences as True or False. Find in the text the lines/ paragraphs proving your choices.

1. Information about you is collected when you look at websites True False
2. Using different devices (for example, your phone and your laptop) True False makes it impossible for companies to track you.
3. The train of information you leave online is called True False your 'digital footprint'.
4. Companies use your digital footprint to make money. True False
5. This issue has not been in the news, so most people are completely True False unaware of it.
6. European law on the protection of online data has changed. True False
7. The writer thinks the new law has solved the problem. True False
8. The article concludes by saying individuals should stay up to date True False and know how their information is used.

Task 5

Fill in the gap with missing words from the box.

aware, compromise, consent, regulates, data, scandal, targeted, track

1. Our devices, websites and applications collect …… about our online behaviour.
2. Until recently, many people were not …… of how much of their personal information was collected and shared.
3. Information about products you are interested in is used to create …… advertising.
4. The news of how certain applications used people's private information caused a ……
5. People felt their information had been used for purposes that they had not agreed to, without their …… .
6. The General Data Protection Law …… how personal data is collected online.
7. When private information was stored physically, on paper, it was easier to keep …… of where your data went.
8. If you want to use many online apps and services, you still have to …… your right.

Task 6

Read *the text and fill in the gaps with the technical terms from the box.*

Asymmetric key encryption, encryption**,** digital signatures, public key encryption, encryption key, symmetric key encryption, encryption algorithm, decryption

Data security

The primary method of maintaining the security of data, both on internal systems and transmitted data is by encrypting the data. _____is the process of altering data so that unauthorized users cannot view it. _____is the process of converting encrypted data back to its original state. Data stored in files or a database on hard drives or other storage devices can be encrypted to protect it against theft. Data sent across a network can be encrypted to prevent eavesdropping or theft during transmission. A thief or eavesdropper who steals or intercepts encrypted data receives a meaningless group of bits that are difficult or impossible to convert back into the original data.

An _____ _____is a complex mathematical transformation that encrypts or decrypts binary data. An encryption key is a binary input to the encryption algorithm—typically a long string of bits. The encryption algorithm varies the data transformation based on the _____ _____so that data can be decrypted only with the same key or a compatible decryption key.

A significant problem with _____ _____ _____ is that both sender and receiver use the same key, which must be created and shared in a secure manner. Security is compromised if the key is transmitted over the same channel as messages encrypted with the key. Also, sharing a key among many users increases the possibility of key theft.

_____ _____ _____ uses different but compatible keys to encrypt and decrypt data. _____ is a form of asymmetric key encryption that uses a public key for encryption and a private key for decryption. The two keys are like a matched pair. After information is encrypted with the public key, it can be decrypted only with the private key. It cannot be decrypted with the same public key that encrypted it. Organizations that use this technique broadcast their public key so that it is freely available to anybody who wants it.

Some asymmetric encryption methods can encrypt and decrypt messages in both directions. That is, in addition to encrypting a message with the public key that can be decrypted with the private key, an organization can also encrypt a message with the private key and decrypt it with the public key. Notice that both keys must still work as a pair, but the message can go forward or backward through the encryption/decryption pair. This second technique is the basis for _____ _____and certificates.

Task 7

Read the text carefully once again and fill in the necessary words from the text. Then check your notes with your partner.

Nouns	Verbs	Adjectives	Other
encryption	*to decrypt*		
		transmitted	
security	*to protect*		
		transformed	
conversion			

Task 8

Explain the meaning of the following phrasal verbs and then make up your own story with them.

Look over smb's shoulder, look at the message, look for the hacker, look through the journal; keep unauthorized users out, keep track of, keep the lights on, keep to the path.

Task 9

Imagine that you are composing a leaflet for Internet Safety Foundation. Make a list of data security measures using the following phrasal verbs above

Task 10

Imagine that you are explaining the key concepts of data security to the partners, using the following terms. Prove that.

the security of data, a private key, digital signatures, public key encryption, encryption key, symmetric key encryption, encryption algorithm, decryption

UNIT 4.

FUTURE OF THE COMPUTER SCIENCE

LEAD-IN

Task 1

Look at the pictures and discuss the influence of these devices on human lives in our century.

A 

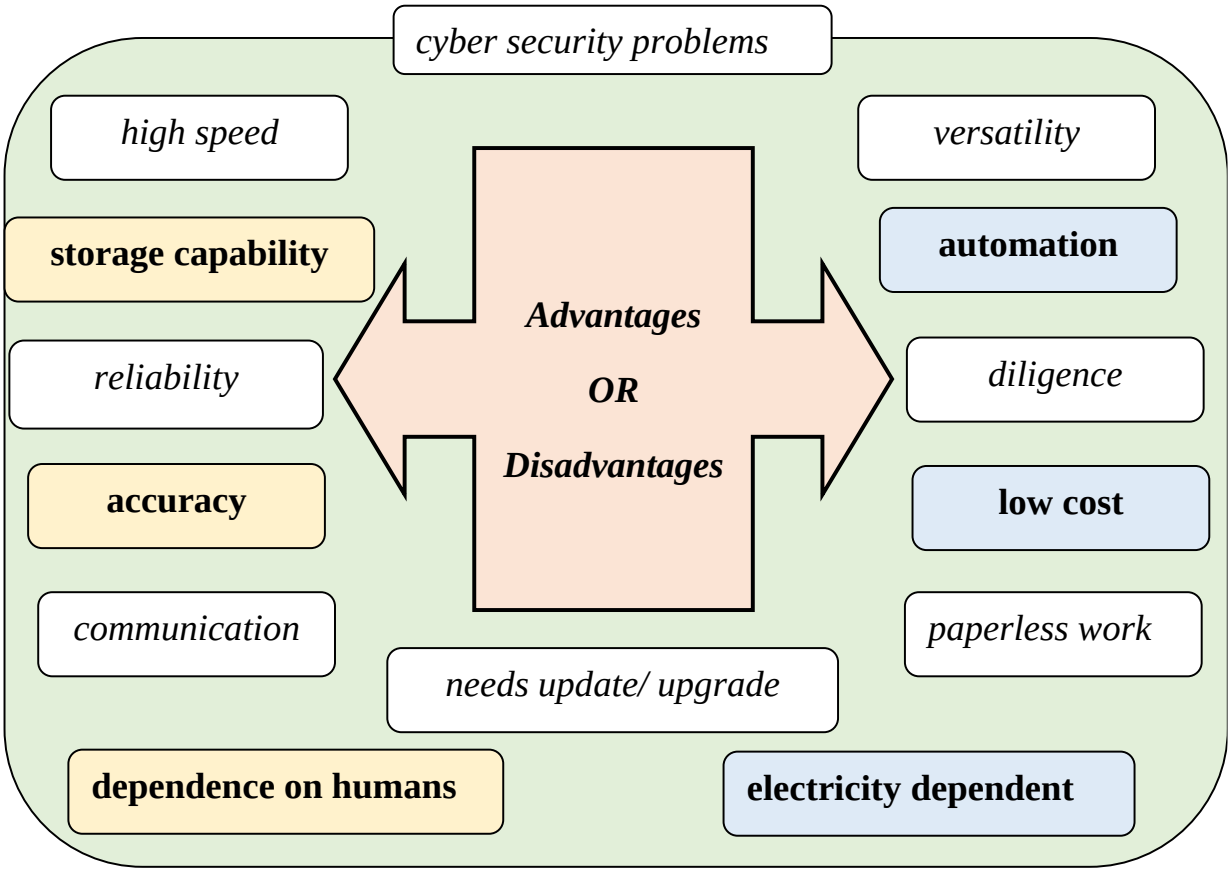
B 

Task 2

Think of as many words as possible related to the topic “Future of computer science”.

Task 3

What are advantages and disadvantages of using computer technologies in modern society? How can technological innovations influence on human lives?



READING

Task 4

Before you read the text, do you know what technologies can make our human lives far smarter? Try to imagine and give 5 predictions or five innovations that will change the way we live in the nearest 50 years.

Task 5

Look through the text carefully and match headings A-C to paragraphs 1-3.

1._____. The rapid digitization of the education industry and the emergence of cognitive systems are currently happening in parallel.

Over the next five years, the two concepts will link, and personalized classrooms will motivate and engage learners at all levels.

The future cloud-based cognitive systems will collect and analyse all data and create student records that would give teachers the information they need to provide personalized learning experiences for their students.

These systems would also help teachers identify students who are most at risk, also couple a student's goals and interests with data on their learning styles so that teachers can determine what type of content to give the student, and the best way to present it. The teacher would use this cognitive system to find out the students' learning style and develop a plan that addresses their knowledge gaps.

2._____. Projections indicate that more than half the world's population will be living in cities by 2030, the towns and cities of the developing world will make up 80 percent of urban humanity. Insights from crowdsourcing, mobile applications, sensors and analytics on the cloud will allow cities to listen, interact and respond better to citizen needs. This will give rise to new cities that can respond in real-time, predict problems before they occur, and deliver tailored services to make city life desirable for everyone. Cognitive systems will learn to understand what people need, like, and do, and how they move from place to place – so the managers of the city can respond better to their needs. By 2017, the number of smart phones in the world is expected to top three billion – this will let people have a digital key to the city right at their fingertips. Information will be delivered to their phone and about what is happening in the city, what experiences are relevant to them and how to get there. Mobile apps will become the new norm for reporting and tracking pot holes, broken street lights and inaccessible sidewalks.

For example, researchers are working on a crowdsourcing tool, that allows users to report accessibility problems to help people with disabilities better navigate challenges in urban streets.

3._____"Bank accounts hacked! –

Credit card numbers compromised! – Social media network passwords stolen!"
These headlines are the norm on the news ticker
these days. And if your identity has ever been stolen, you know exactly how difficult it is to recoup and rebuild your digital self.
Over the next five years, the guardian of big data will analyse and learn from your online behavior patterns, going back months and years to know what to protect. And when it detects a possible breach, you will be the first to know.
This cognitive system is currently tracking several different security anomalies. It also incorporates security measure such as fingerprint and facial recognition.
So, as it understands what and how you secure, it can even make decisions for you, per your instructions.
Not trying to buy a jetpack because you're afraid of heights?
Your digital guardian will know this, and won't let this daredevil with your credit card buy it either.
Thus, the fascinating world of cognitive systems promises to
penetrate complexity and assist people and organizations in better decision making. They can help doctors evaluate and treat patients, augment the ways we see, anticipate major weather events, and contribute to smarter urban planning.

A. Digital guardian will protect you online.
B. The classroom will learn you
C. The city will help you live in it.

Task 6

Read the suggestions from the article again. Complete the responses.

For each one, you should first agree, and then disagree. In each case you need to give a reason. Suggestions Possible responses "+" "–". Prove that

Suggestions	Possible responses		Your reasons
	"+"	"-"	
1. The classroom will learn you.	Yes, it's a great idea, because…	I don't think so, because …	Well, if we're going to…
2. The city will help you live in it.			
3. Digital guardian will protect you online.			
4. The guardian of big data will analyse and learn from your online behaviour patterns.			
5. Social media network passwords stolen!"			

SPEAKING

Task 7

Imagine that you are a participant of a student scientific conference. Using the following information and comment on the list of the top 9 new technology trends below, play the role of the speaker and listeners asking questions.

What are the new computer technologies?

Technology today is evolving at such a rapid pace, enabling faster change and progress, causing an acceleration of the rate of change, until eventually, it will become exponential. However, it is not only technology trends and top technologies that are evolving, a lot more has changed this year due to the outbreak of COVID-19 making IT professionals realize that their role will not stay the same in the contactless world tomorrow. And an IT professional in 2020-21 will constantly be learning, unlearning, and relearning (out of necessity if not desire). What does this mean for you? It means staying current with new technology trends. And it means keeping your eyes on the future to know which skills you'll need to know to secure a safe job tomorrow and even learn how to get there. All

bows to the worldwide pandemic, most of the global IT population is sitting back, working from home. And if you wish to make the most of your time at home, here are the top 9 new technology trends you should watch for and make an attempt at in 2021, and possibly secure one of the jobs that will be created by these new technology trends.

Here is the list of the top 9 new technology trends:

- Artificial Intelligence (AI) and Machine Learning
- Robotic Process Automation (RPA)
- Edge Computing
- Quantum Computing
- Virtual Reality and Augmented Reality
- Blockchain
- Internet of Things (IoT)
- 5G
- Cyber Security

Task 8

Using the information from the text "The Future of Computer Science" and the Internet resources, create your own predictions for computer technologies for the next 10 years and discuss in groups.

The Future of Computer Science

Internet of Things

In the last couple of years, the concept of the Internet of Things, or IoT, has caught a new wind. The idea of controlling almost everything with the touch of a simple button has brought a new meaning to the word "Comfort."

What IoT means is that almost all of your possessions are linked to the internet, and you can control them with simple commands sent over the web irrespective of where you are. The idea of switching lights off as soon as you leave the house or to have the AC turned on precisely 10 minutes before you step into the room are amazing features of IoT. The field is still growing to include more and more convenience for the users.

Artificial Intelligence

AI or Artificial Intelligence has been the most prestigious and most awaited thing in the world of tech currently. To develop a machine or a program that is self-reliant and completely self-aware is still a pipe dream, the advancements made in the field are a great testament to how great the future of AI can be. Not only will it be able to make more personalized and effective suggestions, but it will also save lives in the future.

Augmented Reality and Virtual Reality

AR and VR already exist in the current world as the technology of the next generation. Though they are limited to gaming and simpler applications at the moment, the future of AR and VR holds great potential for both these great innovations of computing power. While both AR and VR can be great for training, they are also set to transform the world of entertainment, commerce, and security as well.

Blockchain

The word blockchain might sound similar to most of you if you followed the ups and downs of the cryptocurrency. However, blockchain technology has applications that go far and beyond the simplicity of that. Blockchain can not only record transactions at micro and macro levels but is a rather important tool in setting up checkpoints in the journey of almost anything, valuable or simple. This can help in tracking, security, and quality assurance of many things.

Cloud Computing

Storing data on the cloud has been an existing technology for almost a decade now, with most of our settings and preferences already fed into the system and accessible over a range of devices. Cloud computing can take the experience of browsing for information and using apps to a whole new level as it reduces wait times, makes results more personalised, and remember your preferences no matter where you are.

Automation and Machine Learning

Automation of processes is going to be the next industrial revolution, where the machine learns on its own about the next step. Machine learning makes for a big part of the automation of processes. This is why it is important to make machine learning an important part of computer science curriculums across the world today. These fields will be taking a newer and bigger role in the next decade, as technology keeps getting better and innovators keep finding better ways to do things. Tomorrow’s tech experts are attending college right now, which is why as the top engineering college in Jaipur, Poornima College of Engineering lays an important amount of stress on the importance of keeping the future in mind. For a brighter future and brilliant career in the field of computer science, get in touch with our experts for admission today.

Task 9

Speaking

Give your consideration to the idea of what technologies should be remarkably improved in future.

Task 10

Speaking

You are suggested to participate in the International Survey on the Awareness about Science and Technology. Each pair is given a common set of eleven questions regarding science and technology.

First, answer True of False, compare your answers with those of your partner, then discuss the most controversial issues in groups.

UNIT 5
PROGRAMMING LANGUAGES

LEAD-IN

Task 1

Read one of famous quotes by eminent writers and politicians about technology and computers and comment on it: «The real danger is not that computers will begin to think like men, but that man will begin to think like computers».
(Sydney Harris)

Task 2

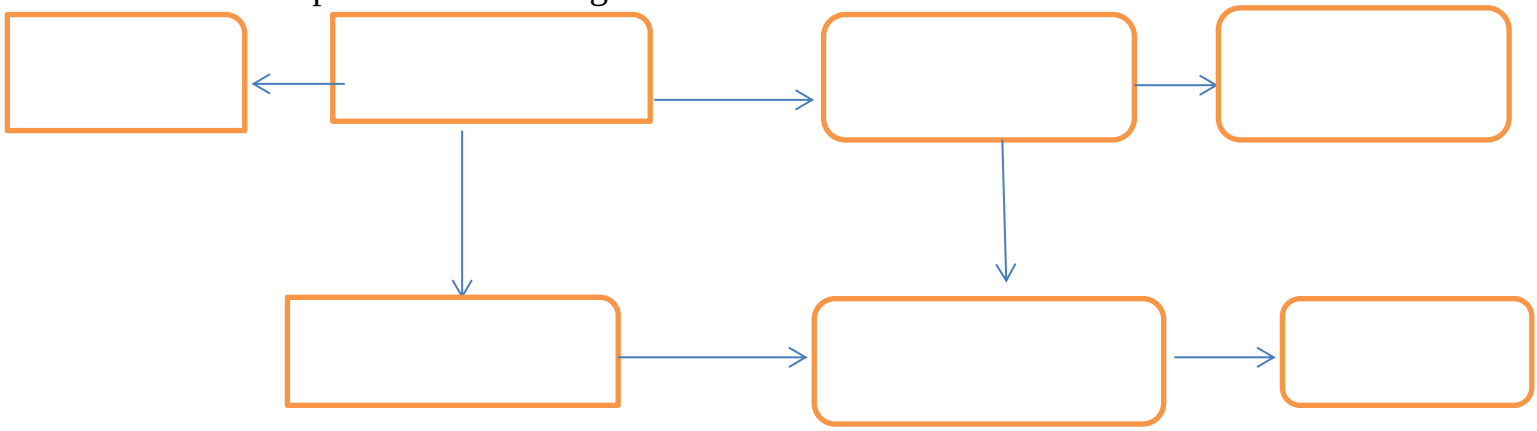
Discuss these questions, using the following phrases:

– Can you explain what you think programming is?
– Look at the definition of programming in the Glossary. Is it similar to yours?
– What knowledge and skills are necessary for programming?
– Can you name any programming languages?

- In my opinion, …
- As far as I am concerned, …
- I should say that, …
- I rather think that …
- I dont think that, …
- I suppose that, …
- As a matter of fact, …

Task 3

Think of the words related to the topic. Draw your own variant of a concept map and complete it. Do not forget to add new words.



Task 4

Look at the text. What do you think the text is about? How many high-level computer languages are mentioned?
Reading the text, find answers in it, discuss whether you were right.

Unfortunately for us, computers can't understand spoken English or any other natural language. The only language they can understand directly is machine code, which consists of 1s and 0s (binary code). Machine code is too difficult to write. For this reason, we use symbolic languages to communicate instructions to the computer. For example, assembly languages use abbreviations such as ADD, SUB, MPY to represent instructions. The program is then translated into machine code by a piece of software called an assembler. Machine code and assembly languages are called low-level languages because they are closer to the hardware. They are quite complex and restricted to particular machines. To make the programs easier to write, and to overcome the problem of intercommunication between different types of computer, software developers designed high-level languages, which are closer to the English language. Here are some examples:
FORTRAN was developed by IBM in 1954 and is still used for scientific and engineering applications.
COBOL (Common Business Oriented Language) was developed in 1959 and is mainly used for business applications.
BASIC was developed in the 1960s and was widely used in microcomputer programming because it was easy to learn. Visual BASIC is a modern version of the old BASIC language, used to build graphical elements such as buttons and windows in Windows programs.
PASCAL was created in 1971. It is used in universities to teach the fundamentals of programming.
C was developed in the 1980s at AT&T, it is used to write system software, graphics and commercial applications. C++ is a version of C which incorporates object-oriented programming: the programmer concentrates on particular things (a piece of text, a graphic or a table, etc.) and gives each object functions which can be altered without changing the entire program. For example, to add a new graphics format, the programmer needs to rework just the graphics object. This makes programs easier to modify.
Java was designed by Sun in 1995 to run on the Web. Java applets provide animation and interactive features on web pages.
Programs written in high-level languages must be translated into machine code by a compiler or an interpreter. A compiler translate the source code into object code – that is, it converts the entire program into machine code in one go. On the other hand, an interpreter translates the source code line by line as the program is running.

It is important not to confuse programming languages with markup languages, used to create web documents. Markup languages use instructions, known as markup tags, to format and link text files. Some examples include:
HTML, which allows us to describe how information will be displayed on web pages.
XML, which stands for EXtensible Markup Language. While HTML uses pre-defined tags, XML enables us to define our own tags; it is not limited by a fixed set of tags.
VoiceXML, which makes Web content accessible via voice and phone. VoiceXML is used to create voice applications that run on the phone, whereas HTML is used to create visual applications (for example, web pages).

Task 5.

Look through the text carefully again and find the following:

1) the preferred language of the information systems community;
2) the language for developing real-time or embedded computer systems
3) the language of the scientists and engineers;
4) the language of the systems programmers;
5) low-level languages;
6) high-level languages.

Task 6.

Answer the questions:

1. Do computers understand human languages? Why? Why not?
2. What is the function of an assembler?
3. Why did software developers design high-level languages?
4. Which language is used to teach programming techniques?
5. What is the difference between a compiler and an interpreter?
6. Why are HTML and VoiceXML called markup languages?

Task 7.

Complete the sentences with a computer language from the text.

1._____ allows us to create our own tags to describe our data better.

We aren't constrainer by a pre-defined set of tags the way we are with HTML.

2. IBM developed in the l 950s. It was the first high-level language in _____.

3. _____applets are small programs that run automatically on web pages and let you watch animated characters, play games, etc.

4. _____is the HTML of the voice web. Instead of using a web browser and a keyboard, interact with a voice browser by listening to prerecorded audio output and sending, audio input through a telephone.
5. This language is widely used in the business community. For example, the statement ADDVAT NET-PRICE could be used in a_____program.

Task8.

Complete the sentences with words from the boxes.

Program	**programmers**	**programming**	**programmable**

1._____ is the process of venting a program using a computer language.
2. A computer_____ is a set of instructions that tells the computer how to do a specific task.

3. Most computer_____ make a plan of the program before they write it.
4. A _____keyboard allows the user to configure the layout and meaning of the keys

Compile	**compiler**	**compilation**

_____
5. Programs written in a high-level language require that is, translation into machine cone, the language understood by the processor.
6. A source program is converted into machine code by software called a_____
7. Programmers usually _____ then programs to generate an object program and diagnose possible errors.

Bug	**debug**	**debugging**	**debugger**

8. Any error or malfunction of a computer program is known as a_____.
9. A_____ is a program used to test and _____ other programs.
10. The process of going through the code to identify the cause of errors and fixing them is called_____.

Task9.

Match the words (1 – 7) with the words (a – h) to make technical terms and make sentences with them.

1) software	a) programmer
2) general purpose	b) primitive
3) systems	c) counterparts
4) high-level	d) abstraction
5) built-in	f) language
6) procedural	g) assembler
7) mathematical	h) engineer

Task10.

SPEAKING

Your friend has difficulties in writing Java applications. Explain to your partner the peculiarities of this language.

Task11

SPEAKING

Working in pairs discuss the following issues:

- the use of low-level languages;
- the use of high-level languages;
- the programming languages you have already used, their advantages and disadvantages.

UNIT 6

APPLICATION SOFTWARE

LEAD-IN

Task 1

Work in pairs. Think on the questions and share your ideas with groupmates. Make a list of an application software. How important are application software in software engineering?

Task 2

Think of the words related to the topic. Make a list of words and do not forget to add new words.

Task 3

Match the words (1 – 10) with the words (a – j) to make technical terms and make sentences with them.

1) productivity	a) graphics;
2) complete	b) enable the user;
3) word	c) tasks;
4) designing	d) options;
5) video	e) spacing;
6) create	f) software;
7) line	g) the needs;
8) suit	h) suite;
9) formatting	i) processing;
10) software suite	j) a document.

Task 4

Look through the text. What do you think the text is about? What examples of application software are mentioned?
Read the text, find answers in it and discuss whether you were right.

Applications software, or simply applications, are often called productivity programs or end-user programs because they enable the user to complete tasks, such as creating documents, spreadsheets, databases and publications, doing online research, sending email, designing graphics, running businesses.

Application software is specific to the task it is designed for and can be as simple as a calculator application or as complex as a word processing application.

Microsoft Word is a popular word-processing application that is included in the software suite of applications called Microsoft Office. A software suite is a group of software applications with related functionality. For example, office software suites might include word processing, spreadsheet, database, presentation, and email applications. Graphics suites such as Adobe Creative Suite include applications for creating and editing images.

A Web browser or simply browser is an application specifically designed to locate, retrieve, and display content found on the Internet.

By clicking a hyperlink or by typing the URL of a website, the user is able to view websites consisting of one or more Web pages. Browser such as Internet Explorer, Google Chrome, and Safari are just a few of the many available to choose from.

Word processing, database, spreadsheet and presentation software are productivity software, which simplifies the process of preparing documents for the workplace or study.

Word processing is the most common application for a personal computer.

Most word processing software programs allow us to create, edit, and save documents, along with changing the position of the text in a document, inserting new information in the middle of the text, or removing words and sections no longer needed.

One of the primary functions of the first mainframe computers was to store and calculate volumes of financial data for banks and large businesses.

Nowadays, a personal computer is capable of handling the accounting and finances of almost any small to medium-sized business.

Many different programs are available for plotting financial trends and performing everyday bookkeeping functions. One of the most popular financial tools is called a spreadsheet. An electronic spreadsheet is a software program, which performs mathematical calculations and solve financial and statistical problems, spreadsheets can display line graphics, bar chats, and scatter plot diagrams.

Task 5
Discuss the following issues mentioned in the text.

1) Software can be thought of as the variable part of a computer.

2) The software family is categorized into two broad branches –

system software and application software.

3) Application software is software designed to specifically perform

a particular user function or application.

Task 6
Find words in the text that mean the following.

1) the programs used to direct the operation of a computer, as well

as documentation giving instructions on how to use them;

2) a type of software that offers the user a visual display of a simulated

multicolumn worksheet and the means of using it especially for

financial plans and budgets;

3) a comprehensive collection of related data organized for convenient

access, generally in a computer;

4) a software program that allows the user to find and read encoded

documents in a form suitable for display, especially such a program

for use on the World Wide Web;

5) substantive information or creative material viewed in contrast

to its actual or potential manner of presentation

6) the act or process of calculating; computation;

7) the act of solving a problem, question, etc.

8) diligent and systematic inquiry or investigation into a subject

in order to discover or revise facts, theories, applications, etc.

Task 7. Think of as many words as possible related to the topic "Computer Aided Design in Engineering". What are some advantages of CAD over traditional drafting?

Task 8. Before reading the text, try to imagine and describe the future of CAD system development and improvement in the nearest 20 years.

Task 9. R*ead the e-mail. Then, choose the correct answers.*

To: franklin@gmail.com
From: linda.henderson@gmail.com
Subject: new CAD program

Hello Dr. Franklin,

The design department really needs a new **CAD** program. Our current program does not work for some of our **drafting**. For example, its 2-D technical drawings are excellent. However, the technology supports very limited 3-D design. In addition, it is not compatible with some types of files.

I did some research on current CAD options. I recommend a program called Think Creator 3.0. Unlike our current program, it supports both PDES and IGES. It also has the capability to create exploded views of machinery and parts. This would help us explain assembly much more easily.

We could show clients early design ideas with B-rep and CSG. The program's excellent photorealistic rendering will provide an accurate sense of the final product.

The program makes it easy to turn designs into models. Our current program does not do this at all. We could easily generate detailed manifold models and non-manifold models. Clients will be impressed.

Currently, we must create prototypes to get realistic models of our designs. This takes a lot of time. In addition, it requires us to spend money on materials. With CAD, we could determine whether a design is functional before we manufacture it. I know Think Creator 3.0 is expensive to purchase, but it will save money overall.

1. What is the purpose of the e-mail?

A to explain how a particular project appears on a new CAD program

B to request more information about a new CAD program

C to give instructions for using a new CAD program

D to recommend the purchase of a new CAD program

2. What is true about the company's current design program?

A It allows advanced 3-D design.

B It supports PDES and IGES.

C It produces good 2-D images.

D It converts designs into models.

3. Which is NOT a benefit of the new design program?

A It is compatible with different types of files.

B It generates models of designs.

C It gives accurate 2-D images of designs.

D It is more expensive to purchase than other programs.

Speaking

Task 10.

The company asks you to "Turn Your Ideas into Reality". Prepare a short technical instruction or presentation on operating CAD (100-140 words) and try to make your own design of any object you like.

Use the following words and phrases:

Computer Aided Design, computer-based technology, designer, to draw engineering details, computer screen, design process via a computer network, to be stored digitally in computer memory, engineering graphics, drawing standards, drawing skill, moving up from 2D to 3D drawing, CAD stands for design, CAD programs, calculating, CAD software, CAD techniques, manufacturing instructions, application, acceptable low-cost CAD platforms, highly effective software packages, 3D models are fashioned automatically, high-speed microprocessors, operating systems, 2D and 3D CAD software packages, provide professional results, rapid prototyping, traditional methods, prototyping techniques.

Task 11. You are looking for a new part-time job, you have found an advertisement in the newspaper. Be ready for an interview using the following questions.

1.What does CAD stand for?

2.What is CAD system?

3.What is geometric modelling?

4.What are the geometric modelling techniques?

5.What is 2D vs 3D?

6.What are the advantages of CAD?

7.What are CAD applications?

8.What is CAD software package?

UNIT 7

COMPUTER NETWORKS

LEAD-IN

Task 1

Work in pairs. Make the list of the essential basic network components. Think about how you use networks. Discuss with your groupmates about the biggest advantage and the biggest disadvantage of networks for you. Give reasons. Why/Why not?

Task 2

Make the list of the reasons for using networks in order of importance. Explain your answer.

Task 3.

Before reading the text, discuss the difference between wired and wireless networks.

COMMUNICATION MEDIA

Computer network refers to a group of two or more computing devices that are connected by a communication medium allowing the computers to communicate electronically. A computing device on a network is usually referred to as a node, being connected to one another, it allows nodes to exchange data with one another using a connection media between them. The links can be established either over cable media such as wires or via a wireless media such as Wi-Fi.

Everything, from the World Wide Web to online banking to multiplayer computer games, depends on the ability of computers to communicate. However, it is not just computers that communicate with each other; computer and telecommunication networks also connect people. Whether this is through video calls on a smartphone, emails from your computer, instant messaging services or social networks, computer networks allow people from across the world to easily communicate with one another.

Task 4

Choose a term/concept from COLUMN B that matches a description in COLUMN A. Write only the letter next to the question number (e.g. 1– A) and make sentences with them.

COLUMN A	COLUMN B
1. A group of two or more computing devices that are connected allowing the computers to communicate electronically is called a _____	A. centralisation B. allowing people to collaborate more easily. C. self-improvement D. computer network E. resources F. can be addictive and waste large amounts of time G. share files H. entertainment.
2. Data and information, printers and scanners, software, labour and money are examples of _____ that can be shared over a network.	
3. Placing the files on a NAS or file server is one of the ways to _____ on a network.	
4. Computer networks also help people to work together to organise information by recording it in a central location. This is called the _____ of data.	
5. Productivity can be increased using networks by _____	
6. Networks also allow people to get access to _____	
7. One of the disadvantages of a network _____	
8. An advantage of networks is that it can increase opportunities for ____	

Task 5

Match to make collocations. Then make your own story with given words.

Management, organizational, traffic control, network (x2), bits, memorable, organization, public, transmission

1. network_____

2. _____ labels

3. _____mechanism

4. sequence of _____

5. a single_____

6. _____ intent

7. to constitute a_____

8. _____medium

SPEAKING

Task 6

Imagine that you are explaining the key concepts of networking to the amateurs. Explain the following terms. Use the following words and phrases to explain concepts.

Wireless network, router, server, protocol, sharing, shared data, hub, switch, clients, transmission media.

Task 7

Decide which communication medium would benefit for each situation and prove your answer:

- air traffic controller
- a gamer
- an office with several employees working at fixed workstations
- watching TV

Task 8

Your university is hosting a large conference on cybersecurity with four different universities participating. A large outdoor screen will provide updated scientific research and other announcements. Describe how using a network will be beneficial for each of the following:

- inputting the university position and performance as they come in from the various events.
- being able to display university results in real time on the big screen
- proving results that can be used to update the social media platforms of the four universities.

Task 9

In teams or groups, list all the advantages or disadvantages of a network. Then together consider how the disadvantages can be minimized

Team 1 Advantages:	Team 2 Disadvantages:
Possible solutions to minimize disadvantages:	
Conclusions	

Task 10

5G wireless network technology is expected to change the way people live and work. However, it scares some people. Agree or disagree with them. Give reasons. Why/Why not?

Task 11

Prepare a two-minute speech for your groupmates summarizing the information about current networking trends.

Task 12

Work in teams. Create a short presentation on the topic "Network technologies" to give it in a class.

In your presentation, you should:

- present one of the network technologies;
- outline its pros and cons;
- mention some interesting facts;

THE FINAL TEST

1. She asked Steve … her urgently.

a) calling

b) call

c) to call

2. I told her … me back.

a) call

b) to call

c) called

3. I told the boy … it again.

a) to say

b) say

c) saying

4. She taught us … the rules.

a) follow

b) to follow

c) following

5. The man ordered them … there.

a) staying

b) to stay

c) waiting

6. I advised Marry … smoking.

a) stop

b) stopped

c) to stop

7. He asked me … him.

a) helps

b) help

c) to help

8. They asked us … to their party.

a) to come

b) come

c) came

9. They invited me … to the medical conference.

a) come

b) to come

c) came

10. She told him … to her.

a) listen

b) listening

c) to listen

11. She recommends us ... this information.

a) check

b) to check

c) checking

12. They finished … on time.

a) working

b) work

c) to work

13. Bob dislikes … there.

a) travel

b) to travel

c) travelling

14. I suggest … English more regularly.

a) learn

b) will learn

c) learning

15. I suggest … to the cinema.

a) going

b) go

c) to go

16. I recommend … her advice.

a) follow

b) following

c) to follow

17. I recommend … that place.

a) visit

b) to visit

c) visiting

18. I recommend you … his advice.

a) to follow

b) following

c) will follow

19. Choose the correct answer:

a) It is currently monitored.

b) It is currently being monitored.

c) It has currently been monitored.

20. This answer … chosen.

a) is never

b) has never

c) won’t never be

21. Very poor conditions … there.

a) provide

b) is provided

c) are provided

22. It … checked now.

a) is

b) is being

c) has being

23. Choose the correct answer:

a) They are always being thanked.

b) They are always thanked.

c) They have always being thanked.

24. … these days?

a) Are they being watched

b) Are they watched

c) Have they watched

25. Choose the correct answer:

a) It was already said.

b) It has already been said.

c) It had already been said.

26. The message … yet.

a) wasn’t written

b) hadn’t been written

c) hasn’t been written

27. It … discussed since last week.

a) has been

b) was

c) had been

28. These things ... discussed yet.

a) weren’t

b) have

c) haven’t been

29. If I were you, I … choose another way.

a) would

b) will

c) can

30. If I knew English better, I … find a better job.

a) can

b) will

c) could

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