

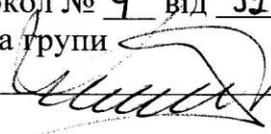
**МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ**  
**ОДЕСЬКИЙ ДЕРЖАВНИЙ ЕКОЛОГІЧНИЙ УНІВЕРСИТЕТ**

**МЕТОДИЧНІ ВКАЗІВКИ**  
**до практичних занять з навчальної дисципліни**  
**"Іноземна мова за професійним спрямуванням"**  
**(англійська мова)**

для студентів III курсу  
денної форми навчання  
Спеціальність: 122 Комп'ютерні науки

Затверджено  
на засіданні групи забезпечення спеціальності  
Протокол № 4 від 31.08 2021 р.

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П'янова І.Ю.

Одеса – 2021

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**Одеса – 2021**

МЕТОДИЧНІ ВКАЗІВКИ для СРС та навчальний матеріал з англійської мови для студентів III курсу денної форми навчання.  
Напрямок підготовки – комп'ютерні науки

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# ЗМІСТ

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## 1. ПЕРЕДМОВА

Нормативна дисципліна "Англійська мова" відноситься до гуманітарного циклу освітньо-кваліфікаційного рівня бакалавр і є складовою частиною загальноосвітньої підготовки студентів ОДЕКУ. Практичне володіння англійською мовою є невід'ємним органічним компонентом сучасної підготовки спеціалістів вищими навчальними закладами. Іноземна мова у вищому навчальному закладі являє собою самостійний курс, який має свій зміст та структуру. Загальний обсяг навчального часу для III курсу за фахом «комп'ютерні науки» визначається відповідним робочим навчальним планом.

Мета вивчення іноземної мови у немовному вузі – підготувати студента до читання літератури за фахом, спілкування англійською мовою в різних видах мовної діяльності, можливості її використання у практичних цілях.

Загальноосвітнє значення вивчення англійської мови визначається тим, що:

1. порівняння двох мовних систем - рідної та іноземної мови - поглиблює філологічні знання студента, змушує більш вдумливо ставитись до явищ рідної мови;
2. вивчення іноземної мови сприяє розвитку пізнавальної та розумової активності студента;
3. отримана іноземною мовою інформація містить різноманітні факти наукового суспільно-політичного та країнознавчого характеру, що допомагає студентові розширювати кругозір.

Загальноосвітня цінність вивчення іноземної мови усвідомлюється студентами за умови правильної організації зв'язків між курсом іноземної мови та спеціальними дисциплінами. У процесі навчання іноземної мови усі види мовної діяльності (читання, мовлення, аудіювання) тісно пов'язані між собою, хоча їх співвідношення на різних етапах навчання різне, що зумовлено метою та умовами навчання, а також відносною складністю видів мовної діяльності, що виконується.

Практична значимість вивчення англійської мови у вищому навчальному закладі полягає в тому, що володіння англійською мовою є:

- ознакою високого професійного та інтелектуального рівня фахівця;
- можливістю проходження виробничої практики за кордоном;
- можливістю навчання та стажування у закордонних вищих навчальних закладах;
- пріоритетним працевлаштуванням;
- необхідністю користування Internet

В результаті вивчення дисципліни "Англійська мова" студенти повинні знати особливості фонетичної, граматичної, морфологічної,

синтаксичної структури англійської мови, відповідну спеціальну лексику за фахом.

Після вивчення дисципліни „Англійська мова” студент має *вміти*:

- читати, перекладати та реферувати оригінальну літературу за фахом для отримання необхідної інформації;
- брати участь в усному спілкуванні іноземною мовою в обсягу матеріалу, передбаченого програмою.

У процесі досягнення практичної мети здійснюються освітні та виховні завдання навчання іноземної мови.

Контроль поточних знань виконується на базі кредитно-модульної системи організації навчання. Підсумковим контролем є екзамен.

## 2. ЗМІСТ

### Вступ

В умовах значного розширення міжнародних зв'язків України знання іноземних мов спеціалістами різних галузей науки набувають особливого значення. Одне з головних завдань яке ставиться перед студентами вищих закладів освіти України є практично - комунікативне володіння іноземною мовою на професійному та побутовому рівнях. В процесі практичного володіння іноземною мовою основний наголос робиться на усне мовлення як основну виховну форму мовленнєвої діяльності. Письмове мовлення — читанням і письмом студенти оволодівають вже на базі засвоєного усного мовлення. Усне мовлення є не тільки метою навчання, але є засобом досягнення цієї мети.

Навчання усім видам мовленнєвої діяльності ведеться комплексно. Усі відомості теоретичного характеру з фонетики\* техніки читання та перекладу, граматики даються в процесі практичної роботи в об'ємі потрібному для набування студентами відповідних умінь і навичок.

Значна увага в навчальному процесі впродовж всього курсу приділяється в постановці вимови, особливо інтонації.

Граматична система іноземної мови засвоюється студентами за допомогою граматичних структур усного і письмового мовлення. Порядок подання граматичних структур визначається послідовністю поступового ускладнення матеріалу і залежності його від попереднього матеріалу.

Лексика - слова, словосполучення і вирази засвоюються в мовленні в їх природному матеріалі.

Вільне спілкування іноземною мовою можливо лише коли студенти будуть мислити цією мовою. Тому розвиток мислення іноземною мовою є важливим завданням практичного курсу, що забезпечується численними, різноманітними мовними оригінальними вправами і створення мовної атмосфери на заняттях поза аудиторний час.

### **Знання:**

- вимови усіх звуків англійської мови на рівні комунікативної достатності (рівень розбірливості для усного спілкування) та основними інтонаційними моделями;
- закономірностей англійської мови у співставленні її з діловою українською мовою;
- фонетичного, граматичного, лексичного, морфологічного, синтаксичного мінімуму передбаченого програмою кафедри іноземних мов ОДЕКУ з англійської мови.

### **Вміння:**

- вести бесіду на основі типових ситуацій ділового спілкування, у зв'язку з прочитаним або прослуханим;
- робити повідомлення на основі типових ситуацій ділового спілкування, а також висловлюватися з приводу прочитаного або прослуханого;
- самостійно читати (зі словником) суспільно-політичні, науково-популярні тексти, а також за фахову літературу;
- сприймати на слух при безпосередньому спілкуванні та у звукозапису тексти побудовані в основному на засвоєному мовному матеріалі.

## **3. ОРГАНІЗАЦІЯ ПРАКТИЧНИХ ЗАНЯТЬ**

Після практичних модулів студенти повинні оволодіти наступними базовими вміннями та знаннями:

- охарактеризувати умовний спосіб в англійській мові;
- пояснити структуру та особливості вживання трьох типів речень в умовному способі;
- пояснити вживання інфінітива та його форм в англійській мові;
- пояснити вживання дієприкметникових зворотів в англійській мові;
- читати, перекладати та переказувати тексти суспільно-політичної тематики;

читати, перекладати та переказувати тексти за фахом.

## LESSON 1

I. Translate this text in writing:

### **TYPES OF COMPUTER SECURITY**

Computer security is that branch of information technology which deals with the protection of data on a network or a stand-alone desktop. As every organization is dependent on computers, the technology of its security requires constant development. Here are the different types of computer security.

#### Hardware Security

##### Threat

Even if the computer is not plugged into a network, a person can open its cabinet and gain access to the hard drives, steal them and misuse or destroy the data saved on them or, damage the device altogether. It is also necessary to remember that in case one disassembles his computer hardware, the risk of losing coverage of warranty becomes very high.

##### Protection

The security of computer hardware and its components is also necessary for the overall protection of data. If a stand-alone system contains some important or classified information, it should be kept under constant surveillance. Locking system for a desktop and a security chain for a laptop are basic security devices for your machine. Certain disk locks are available in various sizes, which control the removal of the CPU cover protecting internal components of the system. For example, you will find disk/tape drive lock, computer case lock with cable and padlock, security cables, etc. A disk lock guards all the internal access points located on the CPU and protects them.

#### Software Security

#### Network Security

Computer networks are an integral part of any organization these days, as they facilitate the free flow of data and services to the authorized users. However, such networks also pose a security threat in case the data is classified and confidential, thus making network security a vital necessity.

##### Threats

As the data is available only for authorized users, it is possible for hackers to pretend to be one, by providing the correct user name and password. Computer network security can be disrupted or encroached in the following ways:

##### Denial of Service

Denial-of-service is meant to disable a computer or a network and can be executed with limited resources. It is one of the most common forms of attacks by hackers and can effectively disable the whole network of an organization. Denial of service attack makes a computer resource unavailable to its intended user. To carry out this kind of attack, hackers generally flood a network or the

access routers with bogus traffic. They also make attempts to disrupt connections between two machines and prevent individuals from accessing a service.

#### Trojan Horse

Trojan horse is common and one of the most potential threats to computer security. They are malicious and security-breaking programs, disguised as something which is considered as non-malicious by the security software. They are a useful tool for hackers who try to break into private networks. Hackers generally attach Trojan horse to a file, which triggers a virus or remotely controlled software, giving the hacker complete control over the computer.

#### Viruses and Worms

Viruses and worms are well-known for their destructive nature and the property of replicating themselves. They are basically pieces of computer program codes, which are written by hackers and other computer geniuses.

#### Sniffing

Sniffing is the act of intercepting TCP/IP packets while they are getting transferred on a network. The interception generally takes place through simple eavesdropping done by a hacker.

#### Protection

##### Firewall

It is one of the most essential type of network security in today's world of Internet. Firewall is a filter that prevents fraud websites from accessing your computer and damaging the data. However, a firewall is not a great option for securing the servers on the Internet because the main objective of a server is granting access to unknown users to connect to various web pages.

##### Security Software

Along with firewall, try installing a good anti-virus and security software to enhance the security level of your computer system.

##### Data Security

##### Threat

Although uncommon, hardware malfunction can prove to be a major threat to your data in the computer. The life span of hard disks is always limited because of surrounding factors and this can amount to a severe loss of all your files saved on the disk, if there is no proper backup of those files made on any other system.

##### Protection

##### Keep Backup

It is important to avoid data and information loss in case of hard disk crashes. The only solution is to regularly keep backups of all the data on other media such as magnetic tapes, CD-ROM, etc. It is a good practice to store the media off-site and in case of a disk crash, restore the information from the backup media onto the new disk. In case a backup media is not affordable, one should

try to store the files on at least two different media devices. These media devices should be systematically kept at a place which is safe and secured, as the information contained may be confidential. People usually have backup for database files, spreadsheet files and large documents. As the technical constraints are always there, it is better to take regular backups, in order to avoid any loss of information.

#### Clean-up Software

Install a software program on your computer that will clear all the old, unused files and registry keys. It will also help to detect malware and save your computer from a severe damage caused by it. Keep your system in the loop of latest updates and security alerts or else, it will become vulnerable to security threats.

It is important to keep a record of technical support consultants and software documentations, like manuals and guides to make them accessible to the staff members of the company.

II. Put 5 questions to the text.

**Example: What main types of computer security do you know?**

## LESSON 2

I. Translate this text in writing:

### **HOW DOES A COMPUTER KEYBOARD WORK?**

A computer keyboard is a hardware device that functions in accordance to the instructions provided by the user. It comprises circuits, switches, and processors that help in transferring keystroke messages to the computer.

#### Did You Know?

The current keyboard layout, or the QWERTY layout, which is based on the layout of the typewriter keyboard, was designed not to increase the speed of typing, but to slow it down, to avoid typewriters from jamming.

In today's technology-driven world, everyone is aware about computing, and how to use a computer. We all know that the keyboard is an input device that functions in accordance to the instructions of the user. Computer keyboards are used for performing various tasks, such as typing on a word processor or text editor, accessing menus, and playing games. In this article, we take a closer look at how computer keyboards work.

#### The Computer Keyboard Explained

The computer keyboard was modeled in the 1940s based on the technology of a typewriter keyboard. In general, most computer keyboards contain 80 to 110 keys, depending on the OS, the manufacturer, or the application it is made for.

These include function keys, typing keys, numerical keys, and control keys. Here is a picture of the most common type of computer keyboard.

In the picture, the top row (F1-F12) are the function keys, the second row are the numerical or number keys, the 3rd, 4th, and 5th, rows are the typing keys, while the last row contains the command keys.

In addition to these, a keyboard also contains other modifier keys, like Shift, and a numerical pad on the right to make inputting numbers easier.

#### How Computer Keyboards Work

When you type, or press any keys on the keyboard, a processor analyzes the position of the keys pressed, and sends this information to the computer, where it is sent to something called the 'keyboard controller'. The keyboard controller processes the information that is sent by the keyboard's processor, and, in turn, sends it to the operating system. The OS then checks this data to analyze if it contains any system level commands, like Ctrl+Shift+Esc, which is the keypress to bring up the Task Manager. If such system level commands are present, the computer executes them, if not, it forwards the information to the current application. The application then checks if the keypresses relate to commands in the application, like Ctrl+P, which is the keypress for the print command. Again, if there are such commands, they are executed first, and if not, then these keypresses are accepted as content or data. All of this happens in a fraction of a second, so even if you press many keys, there is no lag in the system.

So, how are these keypresses detected? Well, to put it simply, keyboards use switches and circuits to change keystrokes to a format the computer understands. Every keyboard contains a processor that does the work of translating the keystrokes, or the keys pressed, to the computer.

If you open a computer keyboard, you will see a small processing unit, and large circuit board. It is this circuit board, along with the processor, that enables the computer to understand what you are typing. This board, also known as the key matrix, is placed under the keys, and is broken at a specific point under every key, which results in making the circuit incomplete. When you press any particular key, it completes this circuit, thus enabling the processor to determine the location of the key that was pressed.

The key matrix under the keys has a corresponding chart or character map that is stored in the read-only memory (ROM) of the computer. When you press a key, the processor looks up the position of the circuit that was closed, or completed, with the character map, and determines which key was pressed. All the keys are mapped and stored in the memory. For example, in the character map, if just the location of the 'x' key is determined to be pressed, then the resulting lower case alphabet 'x' will be displayed or taken as a keypress, but if the locations of the 'Shift' and 'x' keys have been determined to be pressed, then the resulting uppercase character 'X' will be displayed or taken as a keypress.

Mechanical and capacitive are the two types of switches that are used to complete circuits in keyboards. Some keyboards, instead of using the mechanical process described above, use a capacitive process. In this process, the circuit is not broken and current passes through it continuously. However, each individual key has a plate attached to it that moves closer to the circuit when pressed. This movement registers with the key matrix, causing a change in the electric current flowing through the circuit. This change is then compared to the character map, and the location of the key pressed is determined.

Mechanical switches include rubber dome switches, membrane switches, metal contact switches, and foam element switches. Of these, rubber dome switches are the most common, as they have a good tactile response and are fairly resistant to spills and corrosion, in addition to being relatively inexpensive and easy to manufacture.

Though there are various types of keyboards, like wireless, Bluetooth, and USB keyboards, they all use the same principle, of completing a circuit to determine a keypress, to work.

II. Put 5 questions to the text.

**Example: What is computer keyboard?**

### LESSON 3

I. Translate this text in writing:

## **ADVANTAGES AND DISADVANTAGES OF COMPUTER NETWORKS**

A computer network is a set of electronically connected computers which can share information and resources among themselves. There are communication protocols that define how this sharing should take place.

Like every other technological prospect, computer networks come with its set of advantages and disadvantages.

Advantages of Networks

File Sharing

The major advantage of a computer network is that it allows file sharing and remote file access. A person sitting at one workstation that is connected to a network can easily see files present on another workstation, provided he is authorized to do so. This saves him/her the hassle of carrying a storage device every time data needs to be transported from one system to another. Further, a central database means that anyone on that network can access a file and/or update it. If files are stored on a server and all of its clients share that storage capacity, then it becomes easier to make a file available to multiple users.

Resource Sharing

Resource sharing is another important benefit of a computer network. For example, if there are twelve employees in an organization, each having their

own computer, they will require twelve modems and twelve printers if they want to use the resources at the same time. A computer network, on the other hand, provides a cheaper alternative by the provision of resource sharing. All the computers can be interconnected using a network, and just one modem and printer can efficiently provide the services to all twelve users.

#### Inexpensive Set-Up

Shared resources mean reduction in hardware costs. Shared files mean reduction in memory requirement, which indirectly means reduction in file storage expenses. A particular software can be installed only once on the server and made available across all connected computers at once. This saves the expense of buying and installing the same software as many times for as many users.

#### Flexible Handling

A user can log on to a computer anywhere on the network and access his files. This offers flexibility to the user as to where he should be during the course of his routine. A network also allows the network administrator to choose which user on the network has what specific permissions to handle a file. For example, the network administrator can allot different permissions to User A and User B for File XYZ. According to these permissions, User A can read and modify File XYZ, but User B cannot modify the file. The permission set for User B is read-only. This offers immense flexibility against unwarranted access to important data.

#### Increased Storage Capacity

Since there is more than one computer on a network which can easily share files, the issue of storage capacity gets resolved to a great extent. A standalone computer might fall short of storage memory, but when many computers are on a network, the memory of different computers can be used in such a case. One can also design a storage server on the network in order to have a huge storage capacity.

#### Disadvantages of Networks

##### Security Concerns

One of the major drawbacks of computer networks is the security issues that are involved. If a computer is a standalone computer, physical access becomes necessary for any kind of data theft. However, if a computer is on a network, a hacker can get unauthorized access by using different tools. In case of big organizations, various network security software need to be used to prevent theft of any confidential and classified data.

##### Virus and Malware

If even one computer on a network gets affected by a virus, there is a possible threat for the other systems getting affected too. Viruses can spread on a network easily, because of the inter-connectivity of workstations. Moreover, multiple systems with common resources are the perfect breeding ground for

viruses that multiply. Similarly, if malware gets accidentally installed on the central server, all clients in the network that are connected to that server will get affected automatically.

#### Lack of Robustness

If the main file server of a computer network breaks down, the entire system becomes useless. If there is a central linking server or a bridging device in the network, and it fails, the entire network will come to a standstill. In case of big networks, the file server should be a powerful computer, which often makes setting up and maintaining the system doubly expensive.

#### Needs An Efficient Handler

The technical skills and know-how required to operate and administer a computer network is considerably high. Any user with just the basic skills cannot do this job. Also, the responsibility that comes with such a job is high, since allotting username-passwords and permissions to users in the network are also the network administrator's duties. Similarly, network connection and configuration is also a tedious task, and cannot be done by an average user who does not have advanced knowledge of computers and/or networking.

#### Lack of Independence

Since most networks have a centralized server and dependent clients, the client users lack any freedom whatsoever. Centralized decision making can sometimes hinder how a client user wants to use his own computer.

Computer networks have had a profound effect on the way we communicate with each other today, and have made our life easier. From the World Wide Web to your local office LAN, computers have become indispensable in daily life, and networks have become a norm in most businesses. If networks are designed and configured keeping in mind its pros and cons, they are the best piece of facility you could ever have.

II. Put 5 questions to the text.

**Example: What are the advantages of networks?**

## LESSON 4

I. Translate this text in writing:

### **HOW DOES FACEBOOK WORK?**

Unlike other social networking websites, it may be difficult to find people with the same kind of interests as you have. But Facebook is indeed, one of the best networks to get in touch with long-lost friends. The original intention of Facebook was to connect college students with each other, and let them stay in touch. However, the website became so popular that today, anyone from any part of the world can join it. You can use this website to chat with your friends,

date people, share pictures, spread any topic of interest, and meet new people. Now that you have got a brief idea, let's take a look at how to get started.

### Starting Up on Facebook

Facebook started out a virtual space created by Harvard freshman Mark Zuckerberg as just something to help his friends communicate with each other. On Facebook, you are able to create a homepage of your own and network with millions of users all around the world. Once you become a member, you are permitted to send an invitation to friends and relatives to join your network. Once they have accepted your invitation, you can suggest the names of people in your network to your newly added friends. Whenever you visit your homepage, you can change and update your current status, and share whatever you are doing with your friends. The best part is that your friends would be able to see whatever you feel, and write to you the next time they log in. Moreover, they can write a comment and send a private message on what they feel about your update. Besides this, you can share website links and videos, and take a look at the links, videos, and photos which your friend have posted. These can be seen only by your selected group of friends. What's more, you could create a group where people who share the same interests can join in, and have discussions.

### Signing Up for Facebook

More than 60% of the total Facebook users are older than 35 years. The first step to be a part of this mammoth social networking website is to sign up. You just need to sign in your details like your name, birthday, gender, and your email address. The email address is not published, and for security reasons, can only be used to forward any messages which other people may have sent you. Once you have filled all the information, click on the sign-up icon. A security code appears (captcha code used to prevent spamming software) which you have to enter in order to confirm your signing up. You will then get a confirmation of your account in the email address you have provided.

### How to Start Connecting With People

Facebook currently has more than a billion users, half of which log in at least once a day. When you get the confirmation link that is sent to your email address, you need to click on it, and once you do that, you'll be directed to the 'Getting Started' page. Facebook will immediately use the info that you gave it, ranging from your school and/or college, your location, and if you've been invited to join by someone you know, relevant contacts from their friends list. Facebook has been programmed to ask whether you want it to search your email's contact list. If you opt to go ahead and allow Facebook to search for people, it would search for those people who are your email contacts, and will check if they are on Facebook. If there is anyone on Facebook who is also there in your email list, the website would suggest you those names. You can opt to

add them in the list of your friends, and have the freedom to not include anyone you don't wish to.

### Start Networking

If you know friends from your school or your colleagues who are already on Facebook, you can add them by first searching for them and then sending an invitation. They need to accept your invite and once accepted you can start networking with them by sending messages, pictures, videos, etc. Moreover, it gives you the option to add or ignore a person from being your friend. Once these steps are done, it means you have successfully created a Facebook profile, and are ready to keep in touch with your friends.

### Keep Updating

Once you have created a profile, you can choose to keep it updated so that people know what you have been up to. You can add photos (one profile picture and then multiple albums/photos of anything that you want to show) and share information which you want. You can also set preferences to as much or as little information you want to share with people who are not in your list of friends.

### The Intrinsic Workings of Facebook

Now that we know how Facebook works for us, here's what actually happens. A little behind the scenes look at the back-end to front-end working of the biggest social networking site on Earth.

To be concise, Facebook uses the all-powerful LAMP stack, a simple, open source, and fast scaling stack that allows Facebook to do what it does. LAMP basically stands for:

Linux

Apache

MySQL

PHP

What this means is that Facebook uses a stack, that acts as the entire front-end, which communicates with the back-end (Facebook Headquarters) and the user to give you what you want. You can draw parallels to any normal server like so:

Linux is the computer system kernel that forms the operating system. Linux is preferred because it is faster, free (open source), and highly secure (almost impervious to hacking attempts).

Apache is the HTTP server that Facebook uses Linux on.

MySQL is the database language. Facebook uses MySQL to segregate data according to where on Earth it's coming from. This helps in keeping location based information smooth and efficient.

PHP becomes the web programming language, on which the front-end of the site is built. Whatever parts of Facebook you see on your computer, are all made using PHP.

Finally, Memcached becomes the RAM for Facebook. With truckloads of data transactions happening between users every second, they need something that

will temporarily store data. Using Memcached makes the workload much lighter on Facebook's front-end. All in all, everything that Facebook uses is free and open sourced. Wikipedia is another website that uses the LAMP stack.

The back-end of Facebook uses a very simple need-based frame development procedure to create something only when it's needed. For instance, if you were to create a new group, it would be created instantly because of the fast need-based programming. For its back-end, Facebook uses Thrift as its protocol, Cassandra as the database management system, and Scribe as its data log server. So, with Facebook, you can connect with your friends, family, and acquaintances. You have the freedom to choose or ignore any person you want. Once you know how to do this, you can enjoy and have a lot of fun out there. You can also play a few games, such as Farmville, Mafia Wars, Crazy Taxi, and many more. So go ahead and try it, chances are you'll enjoy it soon enough.

II. Put 5 questions to the text.

**Example: Who did start out Facebook?**

## LESSON 5

I. Translate this text in writing:

### **WHO INVENTED THE COMPUTER?**

Ever wondered who invented the machine that allows you to read these very words while listening to music, maintaining a social profile and shooting at a bunch of terrorists, all at the touch of a button? Read on to know more about the inventor of the computer.

The history of computers, in the literal sense as 'computing machines', can be stretched back to abacuses, slide rules, and other similar calculators of the ancient world. The first programmable computer was created by Charles Babbage (December 26, 1791 - October 18 1871) in 1833.

Due to his invaluable invention, Babbage (shown in the adjoining image) is considered the Father of the computer.

This early computer was nothing like the ubiquitous digital giants of today. In fact, since neither electricity nor computer scripting languages had been invented, Babbage's design was mechanical; it had to be operated by various cranks and levers rather than simply pushing a button.

The image (below) shows Babbage's creation (click on the image for better viewing).

Charles Babbage's father, Benjamin Babbage, was a rich businessman. Thus, young Charles went to many prestigious schools and was home-tutored before

he went to Holmwood Academy in Enfield. This is where his romance with mathematics began.

Later, he went to Peterhouse, Cambridge for further studies. At Peterhouse he studied analytical philosophy and continued studying mathematics. He never graduated with honors, and was conferred an honorary degree in mathematics without examination.

Apart from being a gifted mathematician, Babbage was also a philosopher and an avid amateur cryptographer. He was also reported to be heavily influenced by the Indian system of logic.

Babbage noticed that the calculations made by the human 'computers', especially regarding logarithms, were often incorrect. This gave him the idea of a machine capable of doing the calculations, intrinsically without the human margin of error. Ada Lovelace, who helped Babbage program his machine, is considered as the first computer programmer in the world.

Interestingly, the history of programming itself doesn't begin with Babbage's 'Analytical Engine'. The first programmable device in the world was actually a loom! Invented by Joseph Marie Jacquard, the Jacquard Loom was the first ever programmable machine.

The programming in both, the Jacquard loom and Babbage's computer, was done through punched cards. Babbage also invented a mechanical forerunner of the printer as the output device for his machine.

The adjoining illustration shows a man punching cards to be used to program the loom (click on the image for better viewing).

The next leap forward in the history of computers came in the form of Konrad Zuse and John Atanasoff's contemporaneous but varied designs. Atanasoff built the first digital computer in the world using vacuum tubes -- the Atanasoff-Berry Computer, laying the groundwork for what would become one of the most useful and common devices in the world. However, Atanasoff's computer was not programmable. On the other hand, Konrad Zuse had built a programmable computer, known as the Z3, which was electromechanical, i.e, analog.

Despite the respective shortcomings of their designs, Atanasoff and Zuse are both considered among the most important names in computer technology and, due to the disparity between their designs, among the inventors of the computer itself. George Stibitz is also considered among the inventors of the digital computer.

The numerous input, output and peripheral devices attached to modern computers were not part of these early designs. They were invented by the following scientists:

Monitor (Cathode Ray Tube): Allen DuMont (1931)

Mouse: Douglas Engelbart (1963)

QWERTY Keyboard: Christopher Sholes (1867 - on typewriters)

Scanner: Giovanni Caselli / Edouard Belin (1858 / 1913)

Charles Babbage couldn't help tinkering with his designs, always striving for the betterment of his devices. But constrained by the technology of the time, the analytical engine never got to the level of sophistication Babbage desired. In 1991, a fully functioning model of his difference engine was constructed, showing the prognostic inventor's true brilliance. The model also promoted research into the possible applications of mechanical computing, which can be very helpful in situations where digital computers cannot tolerate the physical conditions. In 2011 British scientists initiated a project to build the analytical engine to the best of Babbage's original designs, intended to be completed by 2021. That would indeed be a fitting tribute to the man who set the world on the ongoing journey of unimaginable technological advancement.

With the escalating popularity and usability of the Internet, it is only normal that issues like Internet security or Internet safety are being discussed. Other than hackers and spammers, even pedophiles (online predators) and cyber-terrorists are lurking on the Internet in search of easy prey. If you are wondering why everybody is increasingly talking about Internet security and the need to ensure Internet safety while surfing the virtual world, some information on the threats that you are likely to face in the cyberspace will help you get rid of your doubts.

II. Put 5 questions to the text.

**Example: Who did invent the first programmable computer?**

## LESSON 6

I. Translate this text in writing:

### **WHY IS INTERNET SAFETY SO IMPORTANT?**

There's nothing new about hackers breaking into systems, or fraudulent acts, like identity theft and piracy, in the cyberspace. If at all there is something to be worried about, it is the rate at which these things are happening of late and that's why it's necessary to know why Internet safety is important.

In order to understand why you need to safeguard your privacy and maintain Internet safety standards, it is very important to be aware of the dangers or risks associated with unsecured Internet access. So let's discuss some of the most common issues in Internet safety:

#### Unauthorized Network Access or Hacking

Unauthorized access is one of the major threats as far as Internet safety is concerned. Network security consists of the provisions made in an underlying computer network infrastructure to protect the network and the network-accessible resources from unauthorized access. Hacking means people can get unauthorized access to your account, computer, or network. Once they have the access to your account, they have complete control over all your transactions, and can misuse your account for illegal or objectionable purposes. A hacker

getting access to your online banking account is as good as a robber getting access to your safe.

In March 2012, FBI Director, Robert Mueller revealed that hacking would overshadow terrorism as the biggest threat for the nation in the near future. While 50 per cent of the hacking cases in the US are attributed to hacktivism, a whopping 40 per cent are attributed to cybercrimes.

#### Phishing, Email Frauds, and Spamming

Phishing refers to the cases of online scams wherein people fraudulently acquire sensitive information by posing as a trustworthy entity via email or instant messaging. Often this information can include your important financial as well as personal contact details. The information can then be used for several illegal purposes, which, in turn, can put you in trouble. At times, this information is collected and sold to online advertisers as well. Online scams, which involve requests for your bank account numbers, passwords, or any other sensitive information, are a menace over the Internet. Spamming might be relatively harmless, but it is just as annoying since it floods your mailbox with unwanted advertising. Spammers are also likely to sell your address and phone numbers, as a result of which you might end up getting bombarded with telemarketing calls and snail mail at times.

RSA Security LLC, formerly known as RSA, is a reputed computer and network security company based in the United States. If the data revealed by them in July 2012 is to be believed, the worldwide monetary losses from phishing alone accounted for over US\$687 million in the first half of 2012. Similarly, Google Transparency Report reveals that the search engine giant flags around 10,000 websites as unsafe on a daily basis because of phishing and malware.

#### Sexual Abuse, Pedophiles, and Pornography

The Internet is not just flooded with illegal pornographic content, but is also full of sexual predators on a lookout for easy prey. There are several cases of pedophiles trapping children via chat and web cams, bullying them into meeting in person, and abusing them. Internet pornography is a major threat for the people who frequently keep on posting their photographs and videos over the Internet, since these can be misused and even posted on pornographic sites.

In 1998, the National Center for Missing & Exploited Children started the CyberTipline (1-800-843-5678) to help people report crimes against children. Since its inception, it has received more than 1.7 million reports of suspected child sexual exploitation. Furthermore, between 2004 and 2008, the law enforcement agencies working on Internet Crimes Against Children recorded a rise of 230 percent in the number of documented complaints of online enticement.

#### Cyberterrorism - A Threat to National Security

Several government websites contain important information, which is either uploaded over the Internet or stored in their database. These websites are

vulnerable to security threats since many people try to break into security systems to access undisclosed matters of national importance. Almost every major terror group uses the Internet today, primarily as a propaganda tool and also as a means of communication. Cyber-terrorists can also bring down the infrastructure, which is more or less dependent on the Internet today, to spread panic in the world. While cyberterrorism is definitely a threat, criminal activities (e.g. Internet extortion) and nuisance attacks (e.g. email bombing) are also rampant in the virtual world.

## Ways to Ensure Internet Safety

### Secure Your Network

Taking into account how vulnerable we are to cybercrimes, having strong firewall protection for the network is a must today. In case you want to secure your network for your home PC, you need a basic firewall, anti-virus software, anti-spyware software, and a robust password in case of wireless connections. In case you have a medium business, you would need a strong firewall and all the previously mentioned parameters with the addition of physical security and a network analyzer. In case of large businesses, you would require stronger Internet security software and security fencing in addition to the network analyzers.

### Be Responsible

Internet safety is not just about making your network secure, but is also about being responsible when you are online. You should not upload your pictures and videos on social networking sites that do not provide strong privacy settings. Make sure that you go through the website's privacy policy and also resort to the most stringent privacy settings for your social networking profile. Do not accept friends/chat request from strangers. Anonymous surfing is yet another safety measure that--though simple--can help you secure your Internet.

### Make Internet Child-safe

It is safe to educate your children about the possible dangers of the Internet and supervise their online activities for a while, but your children might get a wrong impression if they realize that you are spying on their online activities. This is where cyber security software and hardware come to your rescue. It is possible to make Internet child-safe by using software which allows you block websites which are not ideal for children. An even better option is to have a healthy relationship with your children. It will help you discuss the dos and don'ts of the Internet with them, without sounding preachy.

Internet safety or Internet security is an important issue that needs to be dealt with for safeguarding the security and privacy over the World Wide Web. With Internet security threats, like hacking, phishing, spyware and virus attacks, identity thefts, cyberbullying, child pornography, etc., becoming commonplace, it is high time you resort to smart-surfing and protect your computer and your data online.

II. Put 5 questions to the text.

**Example: What is one of the major threats as far as Internet safety is concerned?**

## LESSON 7

I. Translate this text in writing:

### **PEOPLE WITH DISABILITIES AND COMPUTER TECHNOLOGY**

People with disabilities meet barriers of all types. However, computers are helping to lower many of these barriers. As word processors have replaced typewriters, electronic spreadsheets have replaced handwritten books, and on-line services have supplemented telephone and written communication, disabled students and employees who have computer access have become capable of handling a wider range of activities independently. Although people with disabilities face a variety of barriers to providing computer input, interpreting output, and reading documentation, adaptive hardware and software have been developed to provide functional alternatives to standard operations.

#### Mobility Impairments

##### Input

Equipment which provides flexibility in the positioning of monitors, keyboards, documentation, and table tops is useful for many individuals with disabilities. Plugging all computer components into power outlet strips with accessible on/off switches makes it possible for some individuals to turn equipment on and off independently.

Some adaptive hardware and software assist individuals with little or no use of their hands in using a standard keyboard. Individuals who have use of one finger, a mouth- or head-stick, or some other pointing device, can control the computer by pressing keys with the pointing device. Software utilities can create "sticky keys" that electronically latch the SHIFT, CONTROL, and other keys to allow sequential keystrokes to input commands that normally require two or more keys to be pressed simultaneously. The key repeat function can be disabled for those who cannot release a key quickly enough to avoid multiple selections. Keyboard guards (solid templates with holes over each key to assist precise selection) can be used by those with limited fine motor control.

Sometimes repositioning the keyboard and monitor can enhance accessibility. For example, mounting keyboards perpendicular to tables or wheelchair trays and at head-height can assist individuals with limited mobility who use pointing

devices to press keys. Other simple hardware modifications can assist individuals with mobility impairments. For example, disk guides can assist with inserting and removing diskettes; a dedicated hard disk and/or computer network access can eliminate or reduce the necessity to do so.

For individuals who need to operate the computer with one hand, left- and right-handed keyboards are available. They provide more efficient key arrangements than standard keyboards designed for two-handed users.

Some hardware modifications completely replace the keyboard and/or mouse for individuals who cannot operate these standard devices. Expanded keyboards (larger keys, spaced far apart) can replace standard keyboards for those with limited fine motor control. Mini-keyboards provide access to those who have fine motor control but lack a range of motion great enough to use a standard keyboard. Track balls and specialized input devices can replace mice.

For those with more severe mobility impairments keyboard emulation is available, including scanning and Morse code input. In each case, special switches make use of at least one muscle over which the individual has voluntary control (e.g., head, finger, knee, mouth). In scanning input, lights or cursors scan letters and symbols displayed on computer screens or external devices. To make selections, individuals use switches activated by movement of the head, finger, foot, breath, etc. Hundreds of switches tailor input devices to individual needs. In Morse code input, users input Morse code by activating switches (e.g., a sip-and-puff switch registers dot with a sip and dash with a puff). Special adaptive hardware and software translate Morse code into a form that computers understand so that standard software can be used.

Voice input provides another option for individuals with disabilities. Speech recognition systems allow users to control computers by speaking words and letters. A particular system is "trained" to recognize specific voices. Special software can further aid those with mobility impairments. Abbreviation expansion (macro) and word prediction software can reduce input demands for commonly-used text and keyboard commands. For example, word prediction software anticipates entire words after several keystrokes and increases input speed.

## Output

Individuals with mobility impairments who have difficulty obtaining output from printers may need assistance from others.

## Documentation

On-screen help can provide efficient access to user guides for individuals who are unable to turn pages in books.

## Blindness

### Input

Most individuals who are blind use standard keyboards, however Braille input devices are available. Braille key labels assist with keyboard use.

### Output

Voice output can be used to read screen text to blind computer users. Special software programs "read" computer screens and speech synthesizers "speak" the text. The availability of earphones for individuals using voice output systems can reduce the distractions for others nearby.

Refreshable Braille displays allow line-by-line translation of the screen into Braille on a display area where vertical pins move into Braille configurations as screen text is scanned. Braille displays can be read quickly by those with advanced Braille skills, are good for detailed editing (e.g., programming and final editing of papers), and do not disrupt others in work areas because they are quiet. Braille printers provide output for blind users.

## Documentation

Scanners with optical character recognition can read printed material and store it electronically on computers, where it can be read using voice synthesis or printed using Braille translation software and Braille printers. Such systems provide independent access to journals, syllabi, and homework assignments for blind students. Some hardware and software vendors also provide Braille or ASCII versions of their documentation to support blind users.

## Low Vision

### Input

Most individuals who have visual impairments can use standard keyboards, but large print keytop labels are sometimes useful.

### Output

Special equipment for individuals who are visually impaired can modify display or printer output. Computer-generated symbols, both text and graphics, can be enlarged on the monitor or printer, thereby allowing individuals with low vision to use standard word processing, spreadsheet, electronic mail, and other software applications. For individuals with some visual impairments, the ability to adjust the color of the monitor or change the foreground and background colors is also of value. For example, special software can reverse the screen from black on white to white on black for people who are light sensitive. Anti-glare screens can make screens easier to read. Voice output systems are also used by people with low vision.

## Documentation

Scanners with optical character recognition can read printed material and store it electronically on computers, where it can be read using voice synthesis or printed in large print. Some hardware and software vendors also provide large print or ASCII versions of their documentation (continued in Lesson 8).

II. Put 5 questions to the text.

**Example: What can we use to read screen text to blind computer users?**

## LESSON 8

I. Translate this text in writing (continued):

### **PEOPLE WITH DISABILITIES AND COMPUTER TECHNOLOGY (CONTINUED)**

#### Hearing and/or Speech Impairments

Speech and hearing disorders alone do not generally interfere with computer use. However, advanced speech synthesizers are close enough to human quality to act as substitute voices and thus provide a compensatory tool for students who cannot communicate verbally. Students with portable systems can participate in class discussions once adapted computers provide them with intelligible speaking voices. Word processing and educational software may also help hearing impaired students develop writing skills.

#### Input

Students with hearing disabilities generally do not have special problems inputting information with a standard keyboard and mouse.

#### Output

Alternatives to audio output can assist the hearing-impaired computer user. For example, if the sound volume is turned to zero, a Macintosh computer will flash the menu bar when audio output is normally used.

## Documentation

Individuals with hearing impairments typically do not have difficulty using standard written or on-screen documentation.

## Specific Learning Disabilities

Educational software where the computer provides multi-sensory experiences, interaction, positive reinforcement, individualized instruction, and repetition can be useful in skill building. Some students with learning disabilities who have difficulty processing written information, can also benefit from completing writing assignments, tutorial lessons, and drill-and-practice work with the aid of computers. For example, a standard word processor can be a valuable tool for individuals with dysgraphia, an inability to produce handwriting reliably.

## Input

Quiet work areas and ear protectors may make computer input easier for individuals with learning disabilities who are hyper-sensitive to background noise.

Software that aids in efficient and accurate input can also assist. Some people can compensate for high rates of input errors by using spell checkers, thesauruses, and grammar checkers. In addition, word prediction programs (software that predicts whole words from fragments) have been used successfully by students with learning disabilities. Similarly, macro software which expands abbreviations can reduce the necessity to memorize keyboard commands and can ease the entry of commonly-used text.

## Output

Some learning disabled individuals find adaptive devices designed for those with visual impairments useful. In particular, large print displays, alternative colors on the computer screen, and voice output can compensate for some reading problems. People who have difficulty interpreting visual material can improve comprehension and the ability to identify and correct errors when words are spoken or printed in large fonts.

## Documentation

Some individuals with learning disabilities find it difficult to read. Computer documentation provided in electronic forms can be used by enlarged character and voice synthesis devices to make it accessible to those with reading difficulties.

II. Put 5 questions to the text.

**Example: Do people with hearing disabilities have special problems related to inputting information with a standard keyboard and mouse?**

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