

## LATIHAN 1.1

### 1. Define information and Communication Technology (ICT)

*ICT is the technology required for information processing, in particular, the use of electronic computers, communication devices and software applications to convert, store, protect, process, transmit and retrieve information from anywhere, anytime.*

### 2. Describe the brief evolution of computers.

#### a) **FIRST GENERATION (1940-1956)**

*The 1<sup>st</sup>. generation computer were huge, slow, expensive and often unreliable. In 1946, two Americans, Presper Eckert and Willian Mauchly build the ENIAC (Electronic Numerical Integrator and Computer). It use vacuum tube instead of mechanical switches of the MARK 1.*

#### b) **SECOND GENERATION (1956-1963)**

*The creation of transistor spark the production of 2<sup>nd</sup>. generation. Transistor was small devices use to transfer electronic signals across a resister.*

#### c) **THIRD GENERATION (1964-1971)**

*In the 3<sup>rd</sup>. generation era, the IBM 370 series were introduced in 1964. It came in several models and sizes. It was used for business and scientific programs. Other computer models introduced were CDC 7600 and B2500.*

#### d) **FOURTH GENERATION (1971- PRESENT)**

*The growth of the computer industry developed technologies of computer inventions. There are many types of computer models such as Apple Macintosh, IBM, DELL & ACER. In 1971 Intel created the first microprocessor. In 1976, Steve Jobs built the first Apple computer. Then, in 1981, IBM introduced its first personal computer.*

#### e) **FIFTH GENERATION (PRESENT & BEYOND)**

*The 5<sup>th</sup>. generation are technologically advance and are still being development to become more efficient. The inventions of new hardware technology have grown rapidly including many other computer devices such as silicone chips, processor, robotics, virtual reality intelligent systems & programs which translate languages*

### 3. List the usage of ICT in everyday life

a) *In education, teachers, students, researchers and school administrators benefits from the usage of ICT. Computers offer interactive experiences, enhanced learning, cognitive development & better management.*

b) *In the banking, customers, businessman & bank administrator benefits from the usage of ICT. **CUSTOMERS** - can make any transactions at the 24 hour service centre's or via online. These services allow them to do transaction at anytime they want*

#### c) **INDUSTRY**

*Computers are used to facilitate production planning and control systems, to support chain management and to help in product design in the industrial sector. In the industrial sector, workers, researchers and administrator benefits from the usage of ICT.*

d) *E-commerce helps in boosting the economy. It makes buying and selling activities easier, more efficient and faster. For this application, computers, Internet and shared software are needed. In the e-commerce sector, customers, suppliers and employees benefits from the usage of ICT*

e) *Among other sectors that benefit from the usage of ICT are archiecture, arts, career, goverment, healthcare, home, law enforcement, transportation and travel*

4. State the differences between computerised and non-computerised systems

<b>Sector</b>	<b>Non-Computerised Systems</b>	<b>Computerised</b>
<b>EDUCATION</b>	<ul style="list-style-type: none"> <li>❖ depends strictly on teachers &amp; textbook</li> <li>❖ no or limited technology in the teaching &amp; learning process</li> </ul>	<ul style="list-style-type: none"> <li>❖ more interesting &amp; interactive experiences</li> <li>❖ enhanced learning</li> </ul>
<b>BANKING SYSTEM</b>	<ul style="list-style-type: none"> <li>❖ banking was done manually by taking deposits directly</li> <li>❖ transactions can only be made during working hours</li> <li>❖ takes time to approve any loan applications</li> </ul>	<ul style="list-style-type: none"> <li>❖ all transactions are done by computers</li> <li>❖ transaction can be done at anytime and place</li> <li>❖ online services, phone banking system, credit cards are available</li> </ul>
<b>INDUSTRY</b>	<ul style="list-style-type: none"> <li>❖ Production was slow because everything was done manually and totally depended on human labour.</li> </ul>	<ul style="list-style-type: none"> <li>❖ Computers and telecommunications industry became very popular and profitable since production can be increased through an all day operation.</li> </ul>
<b>COMMERCE</b>	<ul style="list-style-type: none"> <li>❖ Trading was made using the barter system and it was then later developed into currency.</li> <li>❖ Advertisement was in the form of word of mouth, billboards and printed flyers.</li> <li>❖ Trading globally was extremely slow, late and expensive. Traders had to find ways to market local products in the global market.</li> </ul>	<ul style="list-style-type: none"> <li>❖ E-commerce plays an important role in the economic scene. It includes distribution, buying, selling and servicing products that are done electronically</li> </ul>

5. State the impact of ICT on society.

i. **FASTER COMMUNICATION SPEED**

With the Internet, news or messages are sent via e-mail to anyone efficiently. With the capability and connection speed on the Internet, any information can travel fast and at an instant. It saves time and is inexpensive.

ii. **LOWER COMMUNICATION COST**

Using the Internet is cost-effective than other modes of communication such as telephone, mailing or courier service. It allows access to large amounts of data at a very low cost. We do not have to pay for any basic services provided by the Internet. The cost of connection is relatively cheap.

iii. **RELIABLE MODE OF COMMUNICATION**

Computers are reliable. Information could be accessed and retrieved from anywhere and at anytime. This makes it a reliable mode of communication.

iv. **EFFECTIVE SHARING OF INFORMATION**

With ICT, information can be shared all around the world. People can share and exchange opinions, news and information through discussion groups, mailing list and forums. This will contribute to the development of knowledge based society.

v. **PAPERLESS ENVIRONMENT**

ICT has created the term paperless environment which means information can be stored & retrieved through the digital medium instead of paper. Online communication via emails, online chat and instant messaging also helps in creating the paperless environment.

- vi. **BORDERLESS COMMUNICATION**  
Internet has become a borderless sources for services and information. Through the Internet, information and communication can be borderless. It offers fast information retrieval, interactivity, accessibility and versatility.
- vii. **SOCIAL PROBLEMS**  
There are some negative effects of ICT. It has created social problems in the society. Nowadays, people tend to choose online communication rather than having real time conversations. People tend to become more individualistic and introvert. Another negative effect of ICT are fraud, identity theft, pornography & hacking. This will result a moral decedent and generate threads to the society.
- viii. **HEALTH PROBLEMS**  
A computer may harm users if they use it for long hours frequently. Computer users are also exposed to bad posture, eyestrain, physical and mental stress. In order to solve the health problems, an ergonomic environment can be introduced

**LATIHAN 1.2**

1. Define the following ICT terms
  - i. **COMPUTER ETHICS**  
Computer ethics is a system of moral standards or values used as a guideline for computer users. It is needed to stop the current technology products from being exploited.
  - ii. **CODE OF ETHICS**  
Ethics is a moral philosophy where a person makes a specific moral choice and sticks to it. Code of ethics in computing means moral guidelines to refer to when using the computer and the Internet.
  - iii. **INTELLECTUAL PROPERTY**  
Intellectual property refers to any product of human intellect that is unique and has value in the market place. This covers ideas, inventions, unique name, computer program codes and many more.
  - iv. **PRIVACY**  
Privacy in IT refers to data and information privacy. In general, data include texts, numbers, sounds, images and video. Information privacy is described as the rights of individuals and companies to deny or restrict the collection and use of information about them.
  - v. **COMPUTER CRIMES**  
Computer crimes is defined as any criminal activities that are related to the use of computers. These activities include computer fraud, copyright infringement, computer theft and computer attack.
  - vi. **CYBER LAW**  
Cyber law refers to any laws relating to protecting the Internet and other online communication technologies.
2. Differentiate between ethics and law

ETHICS	LAW
Guideline: As a guideline to computer users.	Control: As a rule to control computer users.
Moral Standards: Ethical behaviour is judged by moral standards	Judicial Standards: Law is judged by judicial standards.
Free To Follow: Computer users are free to follow or ignore the code of ethics.	Must Follow: Computer users must follow the regulations and law.
No Punishments: No punishment for anyone who violates ethics.	Punishments: Penalties, imprisonments and other punishments for those who break the law.
Universals: Universal, can be applied anywhere, all over the world	Depends On Country: Depends on country and state where the crime is committed.

<i>Produce Ethical Computer Users: To produce ethical computer users.</i>	<i>Prevent Misusing Of Computers: To prevent misuse of computers.</i>
<i>Immoral: Not honouring computer ethics means ignoring the moral elements (immoral).</i>	<i>Crime: Not honouring the law means committing a crime.</i>

3. State the need for intellectual property laws
  - i. Patent for inventions
  - ii. Trademarks for brand identity
  - iii. design for product appearance
  - iv. copyright for material
4. List ways to protect privacy
  - i. privacy law
  - ii. utilities software
5. State authentication and verification methods/ technologies

**a) Methods of Authentication**

*There are two commonly used authentication methods, which are **biometric device** and **callback system**. Biometric device is a device that translates personal characteristics into a digital code that is compared with a digital code stored in the database. Biometric devices include Fingerprint Recognition, Facial Recognition, Hand Geogmetry, Iris Scanning, Retinal Scanning, Voice Recognition and Signature Verification. Callback system refers to the checking system that authenticates the user.*

**b)**

i. Fingerprint recognition.

In order to prevent fake fingers from being used many biometric fingerprint systems also measure blood flow, or check for correctly arrayed ridges at the edges of the fingers.

ii. *Facial Recognition*

*Facial recognition analyses the characteristics of an individual face images captured through a digital video camera.*

iii. *Hand Geometry Scanning*

*Hand scanning involves the measurement and analysis of the shape of one's hand.*

iv.iris scanning

Iris scanning analyses the features that exist in the coloured tissues surrounding the pupil which has more that can be used for comparison, including rings, furrows and freckles.

v. Retina. Scanning

Retinal biometrics involves the scanning of retina and analysis the layer of blood vessels at the back of the eye.

vi.Voice recognition

Voice recognition system compares a person live speech with their stored voice pattern

vii.*Signature Verification System*

*Signature verification system uses special pen and tablet. After pre-processing the signature, several features are extracted.*

**c) Methods of Verification**

There are two methods used in verification, which are **user identification** and **processed object**. User identification refers to the process of validating the user. Processed object refers to something the user has such as identification card, security token and cell phone.

6. List effects of controversial contents on society:

**i. Pornography:**

- ❖ can lead to criminal acts such as exploitation of women and children
- ❖ can lead to sexual addiction or perversion
- ❖ can develop low moral value towards other men, women or children
- ❖ can erode good religious, cultural and social beliefs and behaviour

**ii. Slander:**

- ❖ can develop into a society that disregards honesty and truth
- ❖ can develop bad habit of spreading untruths and rumours
- ❖ can lead to unnecessary argument
- ❖ can cause people to have negative attitudes towards another person

7. Describe the process of filtering to control access to controversial contents

<i>FILTERING TECHNIQUE</i>	<i>INFO</i>
<i>KEYWORD BLOCKING</i>	<ul style="list-style-type: none"> <li>❖ uses a list of banned words or objectionable terms.</li> <li>❖ As the page is downloading, the filter searches for any of these words.</li> <li>❖ If found, it will block the page completely, stop downloading block the banned words and even shut down the browser.</li> </ul>
<i>SITE BLOCKING</i>	<ul style="list-style-type: none"> <li>❖ prevents access to any sites listed.</li> </ul>
<i>WEB RATING SYSTEMS</i>	<ul style="list-style-type: none"> <li>❖ Web sites are rated in terms of nudity, sex and violence.</li> <li>❖ Ratings done either by the web page author or by the independent bureau.</li> <li>❖ Browsers set to only accept pages with certain levels of ratings.</li> </ul>

8. Explain the need for Cyber Law

Cyber Law is needed as in the recent years, many concerns and issues were raised on the integrity and security of information, legal status of online transactions, privacy and confidentiality of information, intellectual property rights and security of government data placed on the Internet.

The Need for Cyber Law are;

- ❖ Integrity and Security of Information /
- ❖ Security of Government Data /
- ❖ Legal Status of Online Transactions
- ❖ Intellectual Property Rights
- ❖ Privacy and Confidentially of Information

9. Explain briefly the computer crimes below:

**i. Fraud:**

*Computer fraud is defined as having an intention to take advantage over or causing loss to other people, mainly on monetary basis through the use of computers. Computer fraud includes e-mail hoaxes, programme fraud, investment schemes, sales promotions and claims of expertise on certain fields.*

*Students need to be aware of other computer frauds such as health frauds, scams and hacking. Students will also most likely get false information while researching information on the Internet.*

**ii. Copyright Infringement:**

*Copyright infringement is defined as a violation of the rights secured by a copyright. It involves illegal copy or reproduction of copyrights material by the black market group. The open commercial sale of pirated item is also illegal. With the current technology, the most perfect copy of the original copy can be downloaded from the internet.*

**iii. Theft:**

*Computer theft is defined as the unauthorised use of another person's property with the intention to deny the owner the rightful possession of that property or its use. Examples of computer theft include:*

- ❖ *transfer of payments to the wrong accounts*
- ❖ *tap into data transmission lines on database at no cost*
- ❖ *divert goods to the wrong destination*

**iv. Compute Attacks:**

*Computer attack may be defined as any activities taken to disrupt the equipment of computer systems, change processing control or corrupt stored data. Computer attack can be in the forms of:*

- ❖ *physical attack that disrupt the computer facility or its transmission lines.*
- ❖ *an electronic attack that uses the power of electromagnetic energy to overload computer circuitry.*
- ❖ *a computer network attack that uses a malicious code to exploit a weakness in software, or in the computer security practices of a computer user.*

<b>LATIHAN 1.3</b>
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1. Define computer security

*Computer security means protecting our computer systems and the information they contain against unwanted access, damage, destruction or modification. Three types of computer security are:*

- ❖ *hardware security*
- ❖ *software security/data security*
- ❖ *network security*

2. Explain briefly the different threats to computer security:

**i. Malicious code**

*Malicious code is also known as a rogue program. It will cause undesired effects in the programmer's part. The effect is caused by an agent, with the intention to cause damage. The agent for malicious code is the writer of the code who causes its distribution. There are*

various kinds of malicious code. They include virus, Trojan horse, logic door, trapdoor and backdoor, worm and many others.

**ii. Hacking**

Hacking is defined as unauthorised access to the computer system by a hacker. Hackers are persons who learn about the computer system in detail. They write program referred to as hacks. Hackers may use a modem or cable to hack the targeted computers.

**iii. Natural disaster**

Computers are also threatened by natural or environmental disaster. Examples of natural and environmental disasters:

- ❖ Flood
- ❖ Fire
- ❖ Earthquakes, storms and tornados
- ❖ Excessive Heat
- ❖ Inadequate Power Supply

**iv. Theft**

Two types of computer theft:

- a. Computer is used to steal money, goods, information and resources.
- b. Stealing of computer, especially notebook and PDAs.

3. Explain briefly the appropriate security measures to overcome the identified computer threats

**ANTIVIRUS**

An antivirus program protects a computer against viruses by identifying and removing any computer viruses found in the computer.

**ANTI-SPYWARE**

Spyware is a program placed on a computer without the user's knowledge. It secretly collects information about the user.

The spyware program communicates information to the outside source.

An anti-spyware application program sometime called tracking software or a spybot is used to remove spyware.

**CRYPTOGRAPHY**

Cryptography is a process of hiding information by altering the actual information into different representation

**DATA BACKUP**

Data Backup is a program of file duplication. Backups of data applications are necessary so that they can be recovered in case of an emergency.

**FIREWALL**

Firewall is a piece of hardware or software which functions in a networked environment to prevent some communications forbidden by the security policy. It might permit limited access from in or outside the network perimeters or from certain user or for certain activities.

**HUMAN ASPECTS**

Human aspects refer to the user and also the intruder of a computer system. It is one of the hardest aspects to give protection to.

## LATIHAN 1.4

1. Describe the impact of ICT on society

### **Home & Education**

*Today, computers are used in schools, colleges and universities to promote better education. Students use software packages to complete their assignments. Educators use the computer-based training and web-based training as replacements for lecture presentation.*

### **Computers for Higher Education**

*Open Distance Learning (ODL) or online learning can be implemented as computers are the main medium in delivering the knowledge from one location to the other locations. This type of learning consists of online forum, discussion, quizzes, test questions and many more. The example of the Open Distance Learning institution is the Open University of Malaysia.*

### **Business**

*People use finance or accounting software to balance check books, pay bills, track personal income and expenses, manage investments and evaluate their financial plans. Accounting software helps companies to record and report their financial transactions.*

### **Computers in Banking**

*In the banking sector, many financial institutions offer online banking. People can access their financial records from anywhere in the world. One example of online banking is Maybank2u. Most of the packages on banking offer a variety of online services which requires access to the web. For example we can track our investment online, compare insurance rates and do online banking.*

### **Industry**

*By using the CAM system, computers record actual labour, material, machine and computer time used to manufacture a particular product. Computers process this data and automatically update inventory, production, payroll and accounting records on the company's network. Examples of companies using this system are Proton and Perodua.*

### **Graphics & Multimedia**

*Computers are crucial in publishing especially in the process of making works available to the public. These works include magazines, books, newspapers, music and film production. Special software applications are used to assist graphic designers to develop graphics, texts, photographs and composing songs.*

### **Computers in Tourism**

*Today, people will go online to get all related information about traveling. They can visit websites to get information on destinations, prices, hotels, flights and car rentals. They can also purchase ticket online, all payments can be made by using credit card.*

### **Communication**

*A government provides society with direction by making and administering policies. Most government offices or agencies have websites in order to provide citizens with up-to-date or latest information. Examples of software applications used for communication include e-mail, web browsers, newsgroups, instant messaging and video conferencing. We can access government websites to:*

- ❖ check information on taxes ([www.hasil.org.my](http://www.hasil.org.my))*
- ❖ pay parking tickets and check summons ([www.jpj.gov.my](http://www.jpj.gov.my))*
- ❖ register online for IPTA/IPTS application ([www.moe.gov.my](http://www.moe.gov.my))*

### **Computers in the Healthcare**

*In the medical field, computers are very important in running the operations. Medical staffs use computers for various purposes, namely:*

- ❖ maintaining patient records*
- ❖ monitoring patients' vital sign*
- ❖ assisting doctors, nurses and technicians with medical tests by using computer and computerised devices .*
- ❖ using medical software to help with researching and diagnosing health conditions.*

### **Science**

*In the scientific world, computers are used in all fields of science from biology to astronomy to meteorology and others. These are things that can be done by computers, namely:*

- ❖ collecting, analyzing and modelling data*
- ❖ serving as medium of communication with colleagues around the world*
- ❖ contributing to new inventions or breakthrough in surgery, medicine and treatment*
- ❖ imitating functions of the central nervous system, retina of the eye and others by tiny computers*