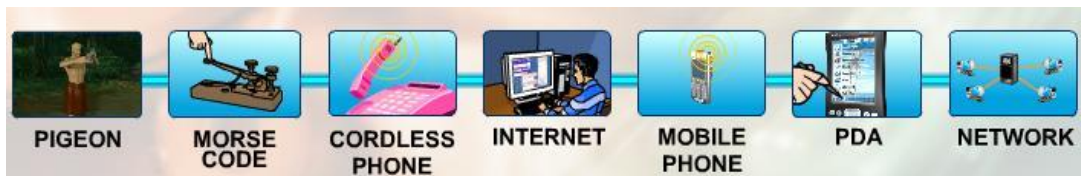


LESSON 1 INTRODUCTION TO INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)

EVOLUTION OF COMMUNICATION

Communication has improved and evolved to facilitate our daily activities. In the 21st century, everything related to communication utilizes technology to 'send out' or disseminate information to a wider audience. Information can be 'sent out' in many ways. The inventions of cellular phones, television and other electronic devices are important in enhancing communication.



WHAT IS 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.



INFORMATION

Information refers to the knowledge obtained from reading, investigation, study or research.



The tools to transmit information are the telephone, television and radio.



We need information to make decisions and to predict the future. For example, scientists can detect the formation of a tsunami using the latest technology and warn the public to avoid disasters in the affected areas.

Information is knowledge and helps us to fulfill our daily tasks. For example, forecasting the stock exchange market.



COMMUNICATION



Communication is an act of transmitting messages. It is a process whereby information is exchanged between individuals using symbols, signs or verbal interactions. Previously, people communicated through sign or symbols, performing drama and poetry. With the advent of technology, these 'older' forms of communication are less utilised as compared to the use of the Internet, e-mail or video conferencing.



Communication is important in order to gain knowledge. With knowledge, we are more confident in expressing our thoughts and ideas.

TECHNOLOGY

Technology is the use of scientific knowledge, experience and resources to create processes and products that fulfill human needs. Technology is vital in communication.



Aiding Communication

Telephone and fax machines are the devices used in extending communication.

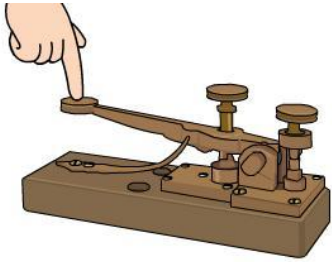




Spreading Information


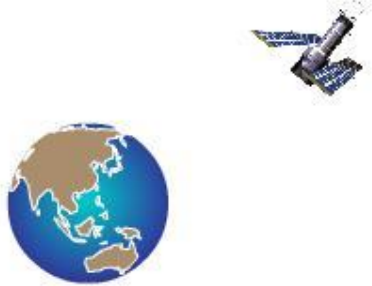
To broadcast information such as news or weather reports effectively. Radio, television, satellites and the World Wide Web (www) are powerful tools that can be used.



TECHNOLOGY TIMELINE

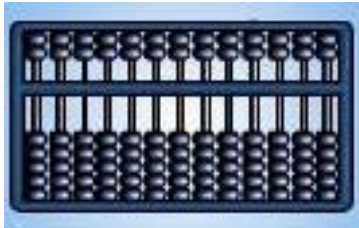

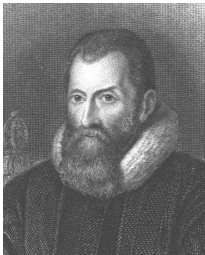
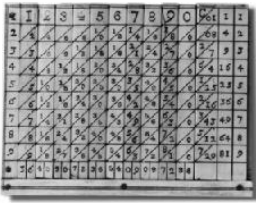


Technology	Year
	<p>In 3500 BC, the Sumerians developed cuneiform writing.</p>
	<p>In 1500 BC, the Phoenicians developed the alphabet</p>
	<p>In 105 BC, Tsai Lun of China invented paper.</p>
	<p>In 1454, the first printing began with the creation of a printing machine.</p>


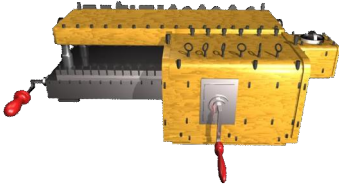

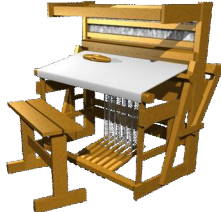




Technology	Year
	In 1793, the telegraph line was invented.
	In 1876, the first telephone was introduced.
	In 1925, television was made known to public.
	In 1941, the computer was created.
	In 1958, the photocopier machine was introduced.

Technology	Year
	In 1963, the communication satellite was introduced.
	In 1969, the first Internet known as ARPANET was introduced.

LESSON 2 EVOLUTION OF COMPUTERS

In the early years, before the computer was invented, there are several inventions of counting machines.

Year	Creator	Machines
200 BC		 <p data-bbox="1019 730 1295 762">CHINESE ABACUS</p>
500 BC		 <p data-bbox="1013 1079 1302 1110">EGYPTIAN ABACUS</p>
1620	 <p data-bbox="542 1440 751 1472">JOHN NAPIER</p>	 <p data-bbox="1036 1440 1295 1472">NAPIER'S BONES</p>
1653	 <p data-bbox="529 1839 768 1871">BLAISE PASCAL</p>	 <p data-bbox="1078 1839 1252 1871">PASCALINE</p>

Year	Creator	Machines
1673	 <p>GOTTFRIED WILHELM VON LEIBNIZ</p>	 <p>LEIBNIZ'S RECHNER</p>
1801	 <p>JOSEPH MARIE JACQUARD</p>	 <p>WEAVING LOOM</p>
1823	 <p>CHARLES BABBAGE</p>	 <p>MECHANICAL CALCULATOR MACHINE</p>
1941	 <p>HARVARD UNIVERSITY</p>	 <p>MARK 1</p>

COMPUTER GENERATIONS

FIRST GENERATION (1940-1956)

The first generation of 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.



Presper Eckert



Willian Mauchly



Vacuum tube



MARK 1


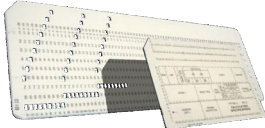

In 1951, Eckert and Mauchly build the UNIVAC, which could calculate at the rate of 10,000 addition per seconds.



UNIVAC 6 UNIVERSAL AUTOMATIC COMPUTER

Hardware Technology

New invention of hardware were needed with the new computer technology.

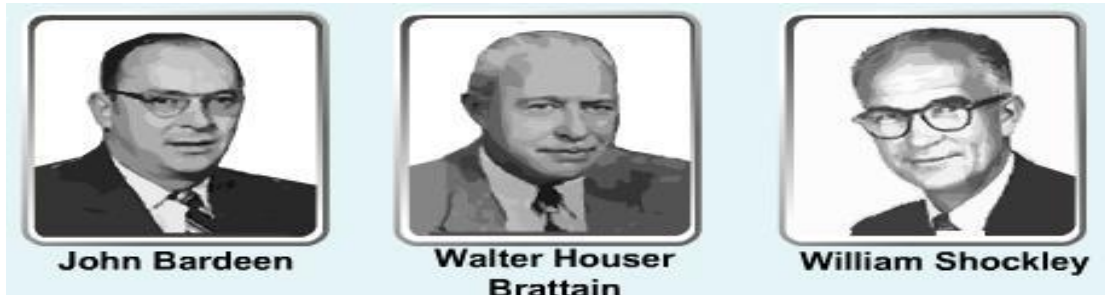
Technology	Details
<p>VACUUM TUBE</p> 	<p>The vacuum tube was an extremely important step of the advancement of computers. In a computer, a vacuum tube which is an electronic tube about the size of light bulbs, was used as the internal computer components. Thousands of them were used.</p>
<p>PUNCHED CARD</p> 	<p>Punched card was used to store data.</p>
<p>MAGNETIC TAPE</p> 	<p>Magnetic tape was introduced in 1957. It was a faster and a more compact method of storing data. Using magnetic tape became more reliable and cost-effective.</p>

Problems

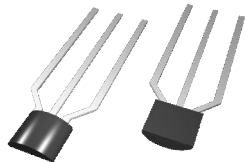
- the vacuum tubes generated a great deal of heat causing many problems in temperature regulation and climate control
- the tubes also burnt out frequently
- people operating the computer did not know that the problem was in the programming machine
- the second generation computer scientists invented something new due to lots of problem created by vacuum tubes

SECOND GENERATION (1956-1963)

The famous computer scientists during the second generation era were:



The creation of transistor spark the production of a wave of second generation computer. Transistor was small devices use to transfer electronic signals across a resister. Transistors had many advantages compared to other hardware technology.



- transistors were smaller than vacuum tubes
- they needed no warm up time
- consumed less energy
- generated much less heat
- faster and more reliable

THIRD GENERATION (1964-1971)

In the third 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.



The development of integrated circuit (IC), signal the beginning of the third generation computers. Silicone chips were manufactured in 1961 at the Silicone Valley. Then came the integrated circuit technology, which had reduced the size and cost of computers.

It is a complete electronic circuit on a small chip of silicone. Which is also known as semi conductor. Other than that, the Magnetic Core Memory

was replaced by a device called the microchip. Also the first 256 bit RAM was introduced and it was the basis for development of 1K bit RAM.

Advantages

A new concept in this generation was that of a family of computer which allowed computer to be upgraded and expanded as necessary.



- Silicone chips were reliable, compact and cheaper.
- Sold hardware and software separately which created the software industry.
- customer service industry flourished (reservation and credit checks)

FOURTH GENERATION (1971-PRESENT)

It took only 55 years for the 4 generations to evolve. 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.



Steve Jobs



Bill Gates



Micheal Dell

During the fourth generation, hardware technology such as silicone chips, microprocessor and storage devices were invented. A microprocessor is a specialized chip which is developed for computer memory and logic.

Microprocessor



Silicone Chips

The microprocessor is a large-scale integrated circuit which contained thousands of transistors. The transistors on this one chip are capable of performing all of the functions of a computer's central processing unit.

Advantages

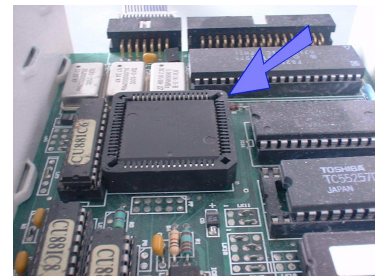
- Computers became 100 times smaller than ENIAC (Electronic Numerical Integrator and Computer) the first computer
- Gain in speed, reliability and storage capacity
- Personal and software industry boomed

FIFTH GENERATION (PRESENT & BEYOND)

The fifth generation computers are technologically advance and are still being development to become more efficient.

The inventions of new hardware technology in the fifth generation have grown rapidly including many other modern computer devices such as :

- silicone chips
- processor
- robotics
- virtual reality
- intelligent systems
- programs which translate languages

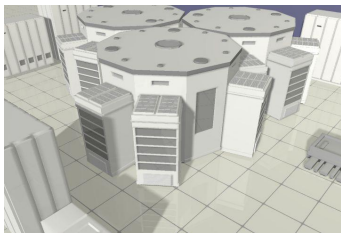


NEW ERA COMPUTER

After the fifth generation computer, the technology of computer has become more advanced, modern and sophisticated. The latest invention in the era of computers are :

- Super Computers
- Mainframe Computers
- Mini Computers
- Personal Computers
- Mobile Computers

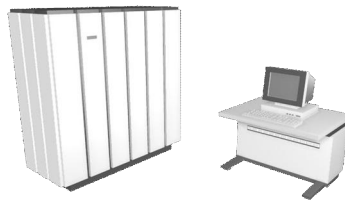
In the new era of computers, expert system such as teleconferencing and speech-recognition system have been invented as part of modern world communication tools.



Super Computers



Mini Computers



Mainframe Computers



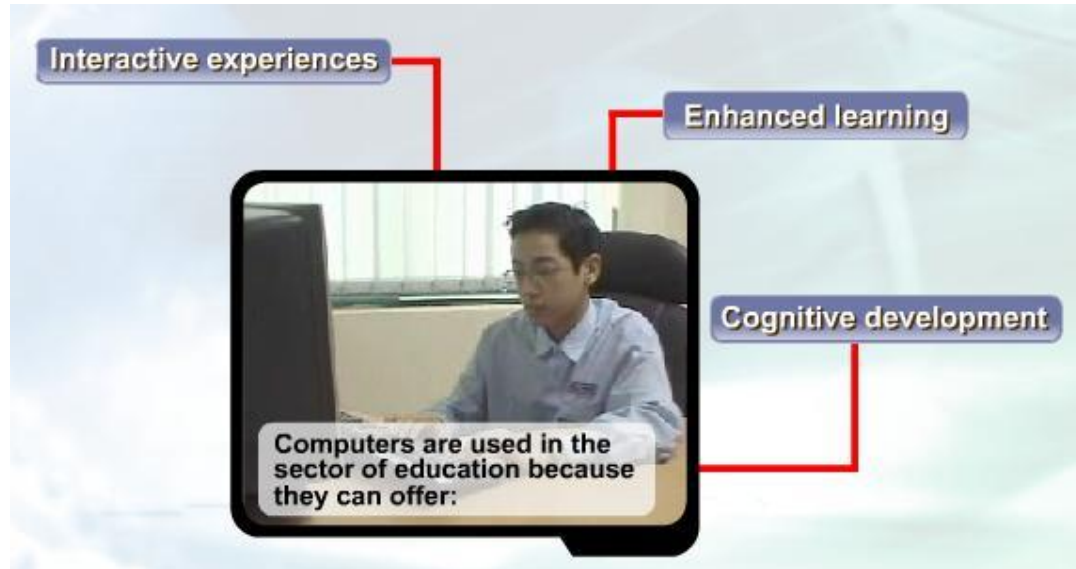
Personal Computers



Mobile Computer

LESSON 3 USAGE OF ICT IN DAILY LIFE

EDUCATION



Today, most schools and higher educational institutions have computers in the classroom for teacher and students. In education, teachers, students, researchers and school administrators benefits from the usage of ICT.




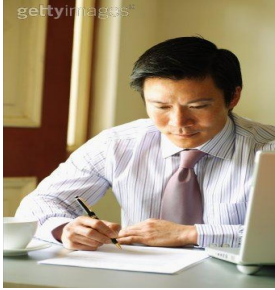
Teachers

Teachers use computers to research for teaching materials, participate in online forums and online conferences as well as to aid their teaching.



Students

Students use the computers as a reference tool. They use computers to browse the Internet to look for information.

 <p>Researchers</p>	<p>Researchers use computers to collect and process data.</p>
 <p>School administrators</p>	<p>School administrators use computers for administrative purposes to make sure that the entire operation runs smoothly.</p>

BANKING


The computer is the nerve centre of the banking system around the world. It functions to control the entire banking system that also includes 'Electronic Banking Services'.

Electronic banking provides 24 hour services. The services include :

- Automated Teller Machine (ATM)
- Cheque Deposit
- Electronic Fund Transfer
- Direct Deposit
- Pay by phone system
- Personal computer banking/ internet banking

In the banking sector, customers, businessman and bank administrator benefits from the usage of ICT.




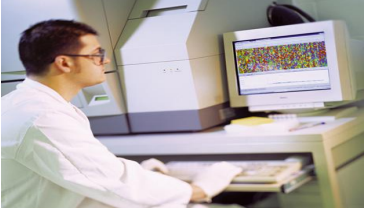
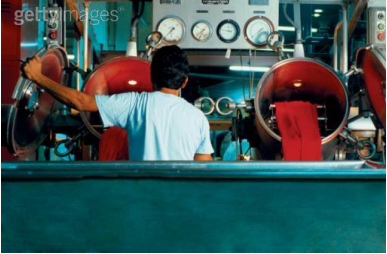
 <p>Customers</p>	<p>Customers can make any transactions at the 24 hour service centres or via online. These services allow them to do transaction at anytime they want.</p>
 <p>Businessmen</p>	<p>Businessmen can save their time by using the online services offered by banks. They can access company accounts for loan applications, business transactions and update on their cash flow at any time.</p>
 <p>Bank administrators</p>	<p>Bank administrators can oversee the entire banking activities such as reconciliations, inter-branch transactions (IBT), telegraphic transfer and others by referring to the banking system.</p>

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.



 <p>Workers</p>	<p>Workers use machines that are connected to computers to operate. In some productions, robots are used to take over jobs that are dangerous to the workers.</p>
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 <p>Researchers</p>	<p>Researchers use computers to analyse and collect research data for future reference.</p>
 <p>Administrators</p>	<p>Administrators use computers to oversee the entire operations in the plant or factory to detect specific errors or defects that occurred in the process.</p>


E-COMMERCE

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 r, suppliers and employees benefits from the usage of ICT.

 <p>Customers</p>	<p>Customers use computers to be connected online with suppliers to purchase products. This method can save time and cost as they do not have to go to any outlets.</p>
--	---

 <p>Suppliers</p>	<p>Suppliers use computers to keep track of their transactions. All products are bar coded and can be read by the computer scanner to help in determining prices and managing inventory.</p>
 <p>Employees</p>	<p>Employees use computers and telephones to communicate with their customers for any enquiries.</p> <p>The system helps employees to get the latest updates on inventory to be informed to the customers.</p>

OTHER SECTOR



Architecture Arts Career Government

Healthcare Home Law Enforcement Transportation Travel

LESSON 4 COMPUTERISED AND NON-COMPUTERISED SYSTEMS

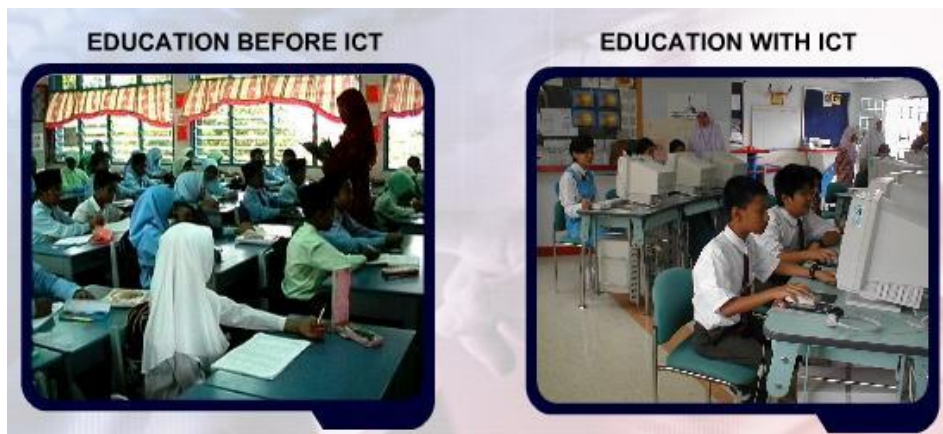
COMPUTER SYSTEM

A system is an arrangement of elements that when it is put together it becomes an organised and established procedure. A system typically consists of components connected together in order to facilitate the flow of information, matter or energy.



A computer system consists of a set of hardware and software which processes data in a meaningful way.

EDUCATION



- education is the science of teaching and learning of specific skills
- it also imparts knowledge, good judgement and wisdom

BANKING SYSTEM

BANKING BEFORE ICT

- banking was done manually by taking deposits directly
- transactions can only be made during working hours
- takes time to approve any loan applications



BANKING WITH ICT

- all transactions are done by computers
- transaction can be done at anytime and place
- online services, phone banking system, credit cards are available



INDUSTRY

INDUSTRY BEFORE ICT

Production was slow because everything was done manually and totally depended on human labour.



INDUSTRY WITH ICT

Computers and telecommunications industry became very popular and profitable since production can be increased through an all day operation.



COMMERCE

Commerce is an activity of exchanging, buying and selling of commodities on a large scale involving transportation from place to place.

COMMERCE BEFORE ICT

- Trading was made using the barter system and it was then later developed into currency.
- Advertisement was in the form of word of mouth, billboards and printed flyers.
- Trading globally was extremely slow, late and expensive. Traders had to find ways to market local products in the global market.



COMMERCE WITH ICT

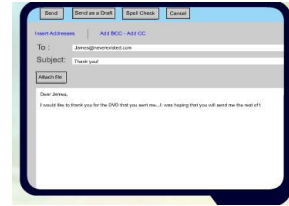
E-commerce plays an important role in the economic scene. It includes distribution, buying, selling and servicing products that are done electronically.



LESSON 5 THE IMPACT OF ICT ON SOCIETY

FASTER COMMUNICATION SPEED

In the past, it took a long time for any news or messages to be sent. Now with the Internet, news or messages are sent via e-mail to friends, business partners or to anyone efficiently. With the capability of bandwidth, broadband and connection speed on the Internet, any information can travel fast and at an instant. It saves time and is inexpensive.



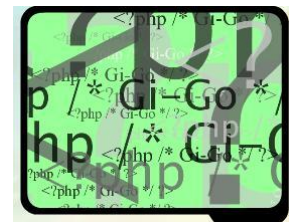
LOWER COMMUNICATION COST



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

RELIABLE MODE OF COMMUNICATION

Computers are reliable. With the internet, information could be accessed and retrieved from anywhere and at anytime. This makes it a reliable mode of communication. However, the input to the computer is contributed by humans. If the data passed to the computer is faulty, the result will be faulty as well. This is related to the term GIGO.



GIGO is a short form for Garbage In Garbage Out. It refers to the quality of output produced according to the input. Normally bad input produces bad output.

EFFECTIVE SHARING OF INFORMATION

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



PAPERLESS ENVIRONMENT



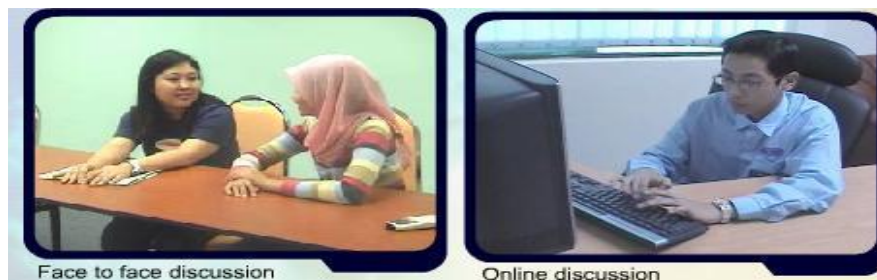
ICT technology has created the term paperless environment. This term means information can be stored and retrieved through the digital medium instead of paper. Online communication via emails, online chat and instant messaging also helps in creating the paperless environment.

BORDERLESS COMMUNICATION



Internet offers fast information retrieval, interactivity, accessibility and versatility. It has become a borderless sources for services and information. Through the Internet, information and communication can be borderless.

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 is :

- fraud
- identity theft
- Pornography
- Hacking

This will result a moral decedent and generate threads to the society.

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. For example, an ergonomic chair can reduces back strain and a screen filter is used to minimize eye strain.

LESSON 6 COMPUTER ETHICS

ETHICS IN GENERAL

A guideline is needed to stop the current technology products from being exploited for example replicating original CDs and selling them as pirated software, this unethical behaviour can be controlled by the code of conducts.

Unethical refers to any code of conducts that are not conforming to approved standards of social or professional behaviour.

Computer ethics is a system of moral standards or values used as a guideline for computer users.

THE TEN COMMANDMENTS OF COMPUTER ETHICS

The United States Institute of Computer Ethics has come out with the Ten Commandments of Computer Ethics. These principles consider the effective code of conducts for the proper use of information technology. The Ten commandments of computer ethics are :

1. You shall not use a computer to harm other people.
2. You shall not interfere with other people's computer work.
3. You shall not snoop around in other people's computer files.
4. You shall not use a computer to steal.
5. You shall not use a computer to bear false witness.
6. You shall not copy or use proprietary software for which you have not paid.
7. You shall not use other people's computer resources without authorisation or proper compensation.
8. You shall not appropriate other people's intellectual output.
9. You shall think about the social consequences of the program you are writing or the system you are designing.
10. You shall always use a computer in ways that ensure consideration and respect for your fellow humans.

GUIDELINES ON THE E-MAIL AND INTERNET USAGE

Some guidelines from the Department of Public Services of Malaysia:

- use only individual e-mail address to forward individual opinion
- keep the identity name and password a secret to avoid the misuse of your e-mail without your knowledge
- e-mail must be active to promptly reply the necessary actions needed for any matters
- ensure the total mail kept in the box is within the computer storage capacity
- scan files regularly to avoid the transmission of virus from one computer to another

- do not send e-mails that contain classified information which can be used to tarnish other people or country
- choose a suitable time to search the Internet to save access time and cost
- beware of prohibited sites which could affect one's moral, organisation or nation
- print only relevant documents that you think can be used in future to save cost

UNETHICAL COMPUTER CODE OF CONDUCTS

With the advancement of ICT, it is easy for anyone to retrieve your information from the Internet. You may not realise that when you fill a form on the Internet, your information may be exposed and stolen.

Examples of unethical computer code of conducts include:

- modifying certain information on the Internet, affecting the accuracy of the information
- selling information to other parties without the owner's permission
- using information without authorization
- involvement in stealing software
- invasion of privacy

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.

ETHICAL COMPUTER CODE OF CONDUCTS

Examples of ethical computer code of conducts include:

- sending warning about viruses to other computer users
- asking permission before sending any business advertisements to others
- using information with authorization

LESSON 7

THE DIFFERENCES BETWEEN ETHICS AND LAW

DEFINITION OF ETHICS

In general, ethics is a moral philosophy where a person makes a specific moral choice and sticks to it. On the other hand, ethics in computing means moral guidelines to refer to when using the computer and computer networks. This includes the Internet.



DEFINITION OF LAW

Law is a legal system comprising of rules and principles that govern the affairs of a community and controlled by a political authority.

Law differs from one country to another. In the era of technology, computer law is needed to clarify goods or actions that fall under the computer law. Computer law refers to all areas in law that requires an understanding of computer technology such as hardware, software and Internet.



Examples of laws of computing in Malaysia include the Malaysian Communication and Multimedia Act, the Computer Crime Act 1997 and the Telemedicine Act 1997.

WHY DO WE NEED ETHICS AND LAW IN COMPUTING?

- Respecting Ownership
- Respecting Privacy
- Respecting Property

RESPECTING OWNERSHIP

We must respect ownership by not stealing other people's work either by duplicating or distributing it. Duplicating and distributing copies of audio tapes, video tapes and computer programs without permission and authorisation from the individual or company that created the program are immoral and illegal.

RESPECTING PRIVACY AND CONFIDENTIALITY

We should respect other people's privacy and confidentiality by refraining ourselves from reading their mails or files without their permission. If we do so, it is considered as violating an individual's rights to privacy and confidentiality.

RESPECTING PROPERTY

Property here means ownership. Since an individual data and information are considered as property, therefore, an act of tampering and changing electronic information is considered as vandalism and disrespect for other people's property.

SIMILARITIES BETWEEN ETHICS AND LAW

Both ethics and law are complimentary to each other and are made:

- to guide user from misusing computers
- to create a healthy computer society, so that computers are used to contribute to a better life
- to prevent any crime

DIFFERENCES BETWEEN ETHICS AND LAWS

ETHICS	
GUIDELINE	As a guideline to computer users.
MORAL STANDARDS	Ethical behaviour is judged by moral standards.
FREE TO FOLLOW	Computer users are free to follow or ignore the code of ethics.
NO PUNISHMENTS	No punishment for anyone who violates ethics.
UNIVERSALS	Universal, can be applied anywhere, all over the world.
PRODUCE ETHICAL COMPUTER USERS	To produce ethical computer users.
IMMORAL	Not honouring computer ethics means ignoring the moral elements (immoral).

LAW	
CONTROL	As a rule to control computer users.
JUDICIAL STANDARDS	Law is judged by judicial standards.
MUST FOLLOW	Computer users must follow the regulations and law.
PENALTIES, IMPRISONMENTS AND OTHER PUNISHMENTS	Penalties, imprisonments and other punishments for those who break the law.
DEPENDS ON COUNTRY	Depends on country and state where the crime is committed.
PREVENT MISUSING OF COMPUTERS	To prevent misuse of computers.
CRIME	Not honouring the law means committing a crime.

UNETHICAL VS. LAW BREAKING CONDUCTS

Unethical:

- using the office computer to do personal things
- reading your friend's e-mail without his or her permission
- plagiarising and using materials from the Internet for your class assignment without giving credit to the original author.

Law breaking:

- sending a computer virus via e-mail
- hacking into your school's database to change your examination results.
- selling pirated software in a night market

LESSON 8 INTELLECTUAL PROPERTY RIGHTS

DEFINITION OF INTELLECTUAL PROPERTY

Intellectual Property refers to works created by inventors, authors and artists. These works are unique and have value in the market place. In our daily lives, we are surrounded by things that are protected by IP. Your school bags, your shoes and even your socks are protected by Intellectual Property rights. Nike, Bata or Adidas, for example, are all protected by a group of legal rights.

INTELLECTUAL PROPERTY LAW

Intellectual Property laws cover ideas, inventions, literary creations, unique names, business models, industrial processes, computer program codes and more.

INVENTIONS PROTECTED BY INTELLECTUAL PROPERTY LAWS

As businesses continue to expand globally, business owners must realise the importance of getting professional advice on how to establish and safeguard their intellectual property rights. These include :

- Trademarks
- Service marks
- Trade/company names
- Domain names
- Geographical indications
- Copyrights
- Patents

Example : Protected by property law.



INTELLECTUAL PROPERTY PROTECTION

There are four types of Intellectual Property protection. They are patents for invention, trademarks for brand identity, designs for product appearance and copyright for material.

- Patents for inventions
- Trademarks for brand identity
- Design for product appearance
- Copyright for material

Patents for inventions

Utility, design or plant patents that protect inventions and improvements to existing inventions

Trademarks for brand identity

Words, names, symbols, devices and images that represent products, goods or services.

Design for product appearance

Literary and artistic material, music, films, sound recordings and roadcasts, including software and multimedia.

Copyright for material

The features of, in particular, the lines, contours, colours, shape, texture or material of the product itself or its ornamentation.

LESSON 9 PRIVACY IN COMPUTER USAGE

WHAT IS PRIVACY?

Privacy in IT refers to data and information privacy. Data refers to a collection of raw unprocessed facts, figures and symbols. Then, computer is used to process data into information. 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.

WAYS COMPUTER TECHNOLOGY THREATEN OUR PRIVACY

Every time you click on an advertisement or register a software product online, your information is entered into a database. Computer technology can also threaten privacy through spam. Do you know what spam is? Spam is unsolicited e-mail messages, advertisements or newsgroup postings sent to many recipients at once.

How does computer technology threaten the privacy of our data?

It is done through:

- Cookies
- Electronic profile
- Spyware

Computer technology threatens our privacy through electronic profiling. For example, when we fill out a form such as a magazine subscription, purchasing products or contest entry form on the Internet, this data is kept in the database. It will include age, address, marital status and other personal details.

Cookies

- are used to identify users by web casting, e-commerce and other web applications
- contain user information and are saved in the computer hard disk
- are used by some websites to store passwords and track how regularly we visit a website, that's how we become potential targets for web advertisers
- enable web sites to collect information about your online activities and store them for future use, then the collected details will be sold to any company that requests for it.



Electronic profile

- electronic profile is the combining of data in a database that can be sold to the Internet by the company to the interested parties.
- this database is in a form such as magazine subscription or product warranty cards that had been filled by online subscribers.
- the information in electronic profile includes personal details such as your age, address and marital status.



Spyware

- refers to a program that collects user information without the user's knowledge.
- can enter computers, sneaking in like a virus.
- is a result of installing new programs.
- communicates information it collects to some outside source while we are online.



WHY DO WE NEED PRIVACY?

We need privacy for anonymity. For example, the Internet creates an elaborate trail of data detailing a person surfing on the Web because all information is stored inside cookies. We do not want our trail to be detected.

We also need privacy for confidentiality. For example, online information generated in the course of a business transaction is routinely used for a variety of other purposes without the individual's knowledge or consent.

We do not want our private lives and habits exposed to third parties.

CAN PRIVACY BE PROTECTED?

Privacy can be protected by:

(a) Privacy law

The privacy laws in Malaysia emphasises on the following:

- Security Services to review the security policy
- Security Management to protect the resources
- Security Mechanism to implement the required security services
- Security Objects, the important entities within the system environment

(b) Utilities software

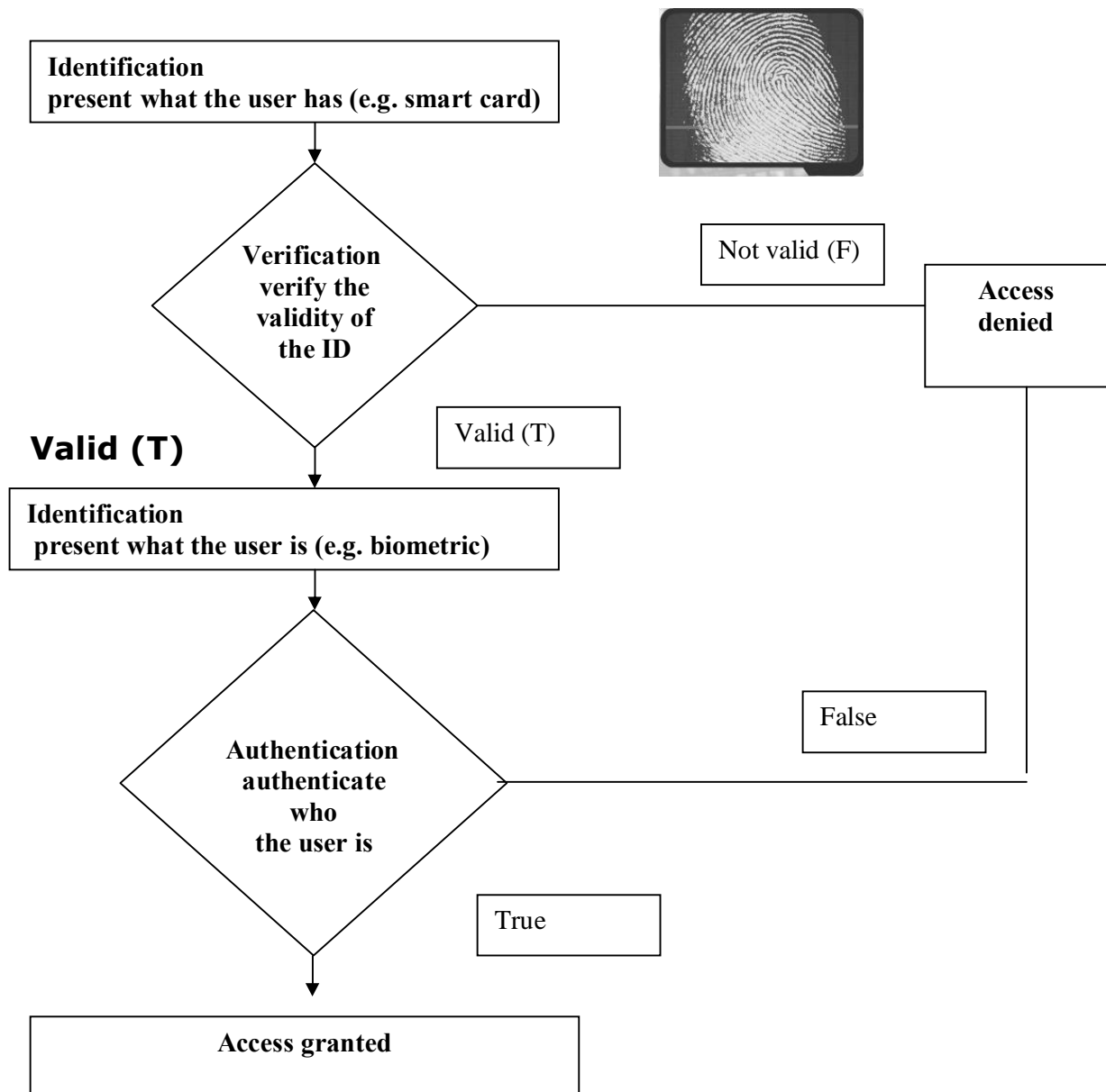
Example: anti-spam program, firewall, anti-spyware and antivirus.

LESSON 10 AUTHENTICATIONS

Authentication is a process where users verify that they are who they say they are. The user who attempts to perform functions in a system is in fact the user who is authorised to do so.

For Example : When you use an ATM card, the machine will verify the validation of the card then the machine will request for a pin number. This is where the authentication process takes place.

AUTHENTICATION



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.



Callback system refers to the checking system that authenticates the user.



BIOMETRIC DEVICES

Fingerprint Recognition

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



Facial Recognition

Facial recognition analyses the characteristics of an individual's face images captured through a digital video camera. Facial recognition is widely used, touted as a fantastic system for recognising potential threats (whether terrorists, scam artists, or known criminals).



Hand Geometry Scanning

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

Unlike fingerprints, the human hand isn't unique. Individual hand features are not descriptive enough for identification. It is possible to devise a method by combining various individual features and measurements of fingers and hands for verification purposes.



Iris Scanning

Iris scanning analyses the features that exist in the coloured tissues surrounding the pupil which has more than 200 points that can be used for comparison, including rings, furrows and freckles.



The scans use a regular video camera and can be done from further away than a retinal scan. It will work perfectly fine through glasses and in fact has the ability to create an accurate enough measurement that it can be used for identification purposes.

The accuracy of this method is excellent while the cost involved is high.

Retinal Scanning

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



Retinal scanning involves using a low-intensity light source and an optical coupler and can read the patterns at a great level of accuracy.

Retina scanning requires the user to remove glasses, place their eye close to the device, and focus on a certain point. Whether the accuracy can outweigh the public discomfort is yet to be seen.

The accuracy in retinal scanning is very good and the cost involved is fair.

Voice Recognition

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

Voice recognition biometrics requires user to speak into a microphone. What he speaks can be his password or an access phrase.



Verification time is approximately 5 seconds. To prevent recorded voice use, most voice recognition devices require the high and low frequencies of the sound to match, which is difficult for many recording instruments to recreate well. Also, some devices generate random number of sequences for verification.

The accuracy in voice recognition is fair and the cost involved is very reasonable.

Signature Verification System

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



The authenticity of a writer is determined by comparing an input signature to a stored reference set (template) consisting of three signatures.

The similarity between an input signature and the reference set is computed using string matching and the similarity value is compared to a threshold.

The accuracy in signature verification system is fair and the cost involved is excellent.

CALLBACK SYSTEM

The callback system is commonly used in the bank operation and business transaction.

For example, when you book for the taxi service, the operator will ask you to hang up and she will call you back to confirm for the service required.



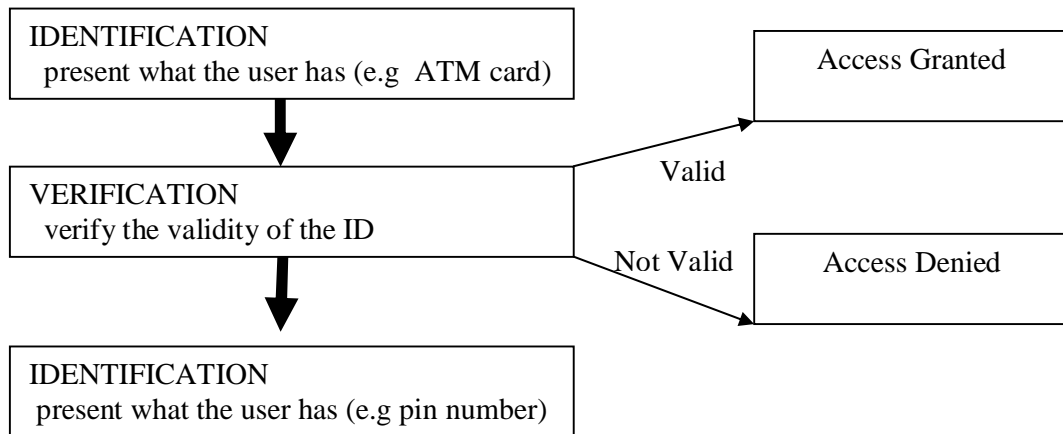
WHY IS AUTHENTICATION IMPORTANT?

Authentication is important in order to safeguard against the unauthorised access and use.

LESSON 11

VERIFICATIONS

Verification is the act of proving or disproving the correctness of a system with respect to a certain formal specification.



METHODS OF VERIFICATION

There are two methods commonly 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.



USER IDENTIFICATION

The examples of validating process using the user identification are:

- Key in the user name to log-in to a system and the system will verify whether the user is valid or invalid user
- Show the exam slip to verify that you are the valid candidate for the exam.
- show a passport before departure.



PROCESSED OBJECT

The examples of validating process using the processed object are:

- the policeman will check on the driver's license to identify the valid driver
- employees have to swipe their security card to enter the building
- buy blouses at the mall using a credit card



LESSON 12 CONTROVERSIAL CONTENT

A controversial content is information that causes disagreement in opinions and may cause the disruption of peace because different people or culture will have different views about the contents.

ISSUES ON CONTROVERSIAL CONTENTS

The issues on controversial contents are always focusing on pornography and slander. Malaysia considers pornography and slander as illegal.

Pornographic and slanderous activities can be in the forms of plots and actions displayed on video games, controversial rhythm or lyrics of music, controversial contents of books and controversial issues on religion and philosophy.



Pornography Creative activity (writing or pictures or films etc.) of no literary or artistic value other than to stimulate sexual desire.

Slander Oral communication of false statements injurious to a person's reputation. A false and malicious statement or report about someone.

PORNOGRAPHY

What is pornography? Why is pornography considered “negative” content?



Both pictures are very cute pictures of innocent babies. Neither can be considered pornographic by normal standards.

DEFINITION OF PORNOGRAPHY

The definition of pornography is any form of media or material (like books or photographs) that depicts erotic behaviour and is intended to cause sexual excitement.

Pornography tends to exploit men, women and children in a distasteful manner.

SLANDER

Slander is another example of controversial content.

Slander is a legal term for false and malicious statement (meaning knowing that it is false, or "reckless disregard" that it was false) about someone.



Examples :

You wrote an e-mail that a fellow classmate was having an affair with a teacher, even though it was not true. You then sent it to five other friends.

Ahmad is a muslim. One day, he received a "spam" e-mail stating that his favourite soda drink "Soda Moda" uses non-halal food colouring, but he does not know if the source of the content is credible or true. He decides to forward the e-mail to 50 of his friends.

Chin Wei spreads a rumour that a Government Minister is receiving bribes from an enemy government.

IMPACTS ON MALAYSIAN SOCIETY

What can you conclude about the impact of controversial content on the Malaysian society?

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

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

LESSON 13 THE PROCESS OF INTERNET FILTERING

INTERNET FILTERING

It is our responsibility to ensure that the teenagers are protected from these corruptions of the mind by filtering access to the Internet. Internet filtering is a process that prevents or blocks access to certain materials on the Internet.



It is our responsibility to ensure that the teenagers are protected from these corruptions of the mind by filtering access to the Internet.

What is Internet filtering?

Internet filtering is a process that prevents or blocks access to certain materials on the Internet. Filtering is most commonly used to prevent children from accessing inappropriate material and to keep employees productive on the Internet.

CONTROLLING ACCESS TO THE INTERNET

Controlling access to the internet by means of filtering software has become a growing industry in Malaysia and elsewhere. Its use has increase as the mandatory response to the current plague of society, namely internet pornography, politically incorrect site, hatred, violence, hate and in general anything viewed to be unpleasant or threatening.

The current preferred method of choice to limit access on the Internet is to filter content either by:

- keyword blocking
- site blocking
- web rating systems

These methods require software to be installed at a client of server level.

KEYWORD BLOCKING

One of the strategies is by using the keyword blocking method. This method uses a list of banned words or objectionable terms.



As the page is downloading, the filter searches for any of these words. If found, it will block the page completely, stop downloading the page, block the banned words and even shut down the browser.

SITE BLOCKING

- software company maintains a list of 'dubious Internet sites'
- the software prevents access to any sites on this list
- 'denial lists' regularly updated
- some software provides control over what categories of information you block
- Who decides what goes on the 'denial list' and what criteria are they using?
- can you keep track of the whole of the Internet?
- filters can use both site blocking and word blocking

WEB RATING SYSTEMS

Web sites are rated in terms of nudity, sex, violence and language. The Recreational Software Advisory Council (RSACI) is responsible for the rating of the websites on the content on the internet.

- ratings done either by the web page author or by the independent bureau.
- browsers set to only accept pages with certain levels of ratings.

LESSON 14 CYBER LAW

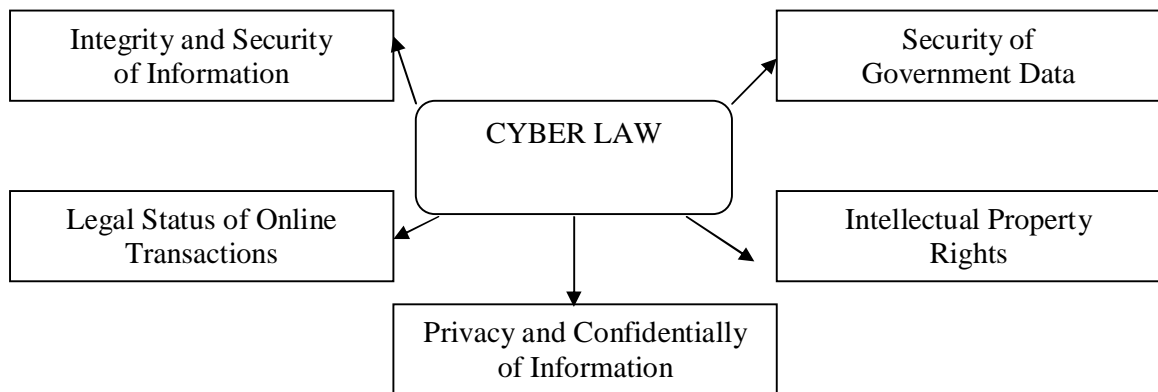
WHAT IS CYBER LAW?

Cyber law refers to any laws relating to protecting the Internet and other online communication technologies.



NEEDS FOR CYBER LAW

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.



These concerns and issues clearly indicate why cyber laws are needed in online activities.

THE CYBER LAW ACTS IN MALAYSIA

The Malaysian Government has already passed several cyber laws to control and reduce the Internet abuse.

These cyber laws include:

- Digital Signature Act 1997
- Computer Crimes Act 1997
- Telemedicine Act 1997
- Communications and Multimedia Act 1998

Beside these cyber laws, there are three other cyber laws being drafted.

- Private Data Protection Bill
- Electronic Government Activities Bill
- Electronic Transactions Bill

DIGITAL SIGNATURE ACT 1997

The Digital Signature Act 1997 secures electronic communications especially on the Internet.

Digital Signature is an identity verification standard that uses encryption techniques to protect against e-mail forgery. The encrypted code consists of the user's name and a hash of all the parts of the message.

By attaching the digital signature, one can ensure that nobody can eavesdrop, intercept or temper with transmitted data.



COMPUTER CRIMES ACT 1997

The Computer Crimes Act 1997 gives protection against the misuses of computers and computer criminal activities such as unauthorised use of programmes, illegal transmission of data or messages over computers and hacking and cracking of computer systems and networks.

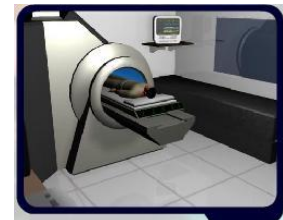


By implementing the Computer Crimes Act 1997, users can protect their rights to privacy and build trust in the computer system. At the same time, the government can have control at a certain level over cyberspace to reduce cyber crime activities.

TELEMEDICINE ACT 1997

The Telemedicine Act 1997 ensures that only qualified medical practitioners can practice telemedicine and that their patient's rights and interests are protected.

These act provides the future development and delivery of healthcare in Malaysia.



COMMUNICATIONS AND MULTIMEDIA ACT 1998

The implementation of Communication and Telecommunication Act 1998 ensures that information is secure, the network is reliable and the service is affordable all over Malaysia.

This Act also ensures high level of user's confidence in the information and communication technology industry.



LESSON 15 COMPUTER CRIMES

COMPUTER CRIMES

A computer crime is defined as any criminal activity that is related to the use of computers. These activities include computer fraud, copyright infringement, computer theft and computer attack.



COMPUTER 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.

There are many forms of computer fraud which include 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.



COPYRIGHT INFRINGEMENT

Copyright infringement is defined as a violation of the rights secured by a copyright. Copyright infringement 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.

COMPUTER 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

COMPUTER ATTACK

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

LESSON 16 COMPUTER SECURITY

DEFINITION OF COMPUTER SECURITY

Computer security means protecting our computer systems and the information they contain against unwanted access, damage, destruction or modification.

We need to protect our computer from any intruders such as hackers, crackers and script kiddie.

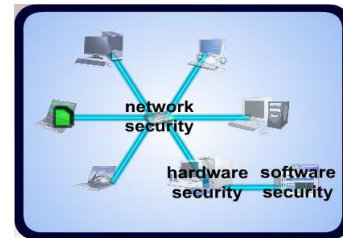


We do not want strangers to read our e-mail, use our computer to attack other systems, send forged e-mail from our computer, or examine personal information stored on our computer such as financial statements.

TYPES OF COMPUTER SECURITY

Three types of computer security are:

- a) hardware security
- b) software security/data security
- c) network security



a) HARDWARE SECURITY

Hardware security refers to security measures used to protect the hardware specifically the computer and its related documents.

The examples of security measures used to protect the hardware include PC-locks, keyboard-locks, smart cards and biometric devices.



b) SOFTWARE AND DATA SECURITY

Software and data security refers to the security measures used to protect the software and the loss of data files.

Examples of security measures used to protect the software are activation code and serial number.



An example of security measure used to protect the loss of data files is the disaster recovery plan method. The idea of this plan is to store data, program and other important documents in a safe place that will not be affected by any major destruction.

c) NETWORK SECURITY

The transfer of data through network has become a common practice and the need to implement network security has become significant.



Network security refers to security measures used to protect the network system. One example of network security measures is firewall. With firewall, network resources can be protected from the outsiders.

PERSONAL COMPUTER SECURITY CHECKLIST

In order to make sure our computers are secured, here are the computer security checklist to follow.

- ✓ Do not eat, drink or smoke near the computer
- ✓ Do not place the computer near open windows or doors
- ✓ Do not subject the computer to extreme temperatures
- ✓ Clean the equipment regularly
- ✓ Place a cable lock on the computer
- ✓ Use a surge protector
- ✓ Store disks properly in a locked container
- ✓ Maintain backup copies of all files
- ✓ Stores copies of critical files off sites
- ✓ Scan a floppy disk before you open it
- ✓ Do not open any unknown email received

LESSON 17

INTRODUCTION COMPUTER THREATS

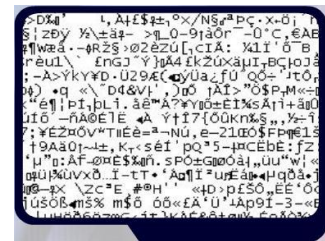
The computer is a great tool to store important information. In certain cases, the information is very vital that losing it will harm the computer system.

Computer threats can come from many ways either from human or natural disasters. For example, when someone is stealing your account information from a trusted bank, this threat is considered as a human threat. However, when your computer is soaked in heavy rain, then that is a natural disaster threat.

MALICIOUS CODE

Malicious code is also known as a rogue program. It is a threat to computing assets by causing 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, or any person 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.



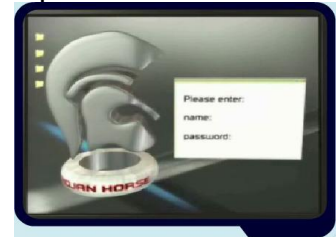
a) VIRUS

- a program that can pass on the malicious code to other programs by modifying them
- attaches itself to the program, usually files with .doc, .xls and .exe extensions
- destroys or co-exists with the program
- can overtake the entire computing system and spread to other systems



b) TROJAN HORSE

- a program which can perform useful and unexpected action
- must be installed by users or intruders before it can affect the system's assets
- an example of a Trojan horse is the login script that requests for users' login ID and password
- the information is then used for malicious purposes



c) LOGIC BOMB

- logic bomb is a malicious code that goes off when a specific condition occurs.
- an example of a logic bomb is the time bomb
- it goes off and causes threats at a specified time or date



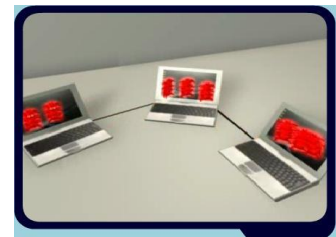
e) TRAPDOOR OR BACKDOOR

- a feature in a program that allows someone to access the program with special privileges



f) WORM

- a program that copies and spreads itself through a network

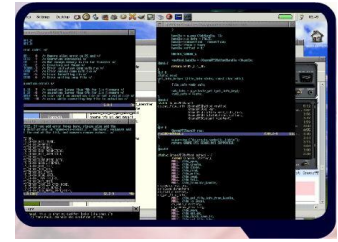


Primary Differences Between Worms And viruses

Worm	Virus
Operates through the network	Spreads through any medium
Spreads copies of itself as a standalone program	Spreads copies of itself as a program that attaches to other programs

HACKER

Hacking is a source of threat to security in computer. It 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.

NATURAL AND ENVIRONMENTAL THREATS

Computers are also threatened by natural or environmental disaster. Be it at home, stores, offices and also automobiles. Examples of natural and environmental disasters:

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



THEFT

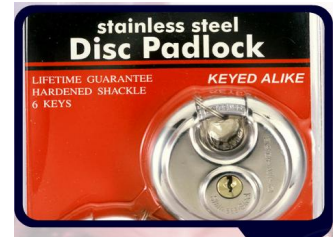
Two types of computer theft:

- 1) Computer is used to steal money, goods, information and resources.
- 2) Stealing of computer, especially notebook and PDAs.



Three approaches to prevent theft:

- 1) prevent access by using locks, smart-card or password
- 2) prevent portability by restricting the hardware from being moved
- 3) detect and guard all exits and record any hardware transported



LESSON 18

SECURITY MEASURES

Today, people rely on computers to create, store and manage critical information. It is important that the computer and the data they store are accessible and available when needed. It is also important that users take measures to protect their computers and data from lost, damage and misused.

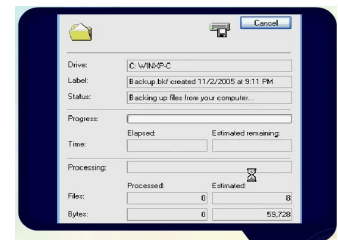
Security measures mean the precautionary measures taken toward possible danger or damage. There are 6 type of security measures.



1) 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.

Depending on the importance of the information, daily, weekly or biweekly backups from a hard disk can be performed.



2) CRYPTOGRAPHY

Cryptography is a process of hiding information by altering the actual information into different representation, for example, an APA can be written as I ?

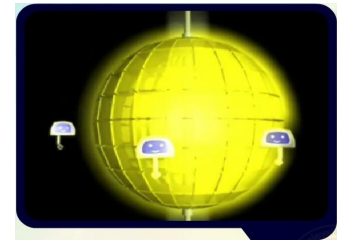


Almost all cryptosystems depend on a key such as a password like the numbers or a phrase that can be used to encrypt or decrypt a message.

The traditional type of cryptosystem used on a computer network is called a symmetric secret key system.

3) ANTIVIRUS

An antivirus program protects a computer against viruses by identifying and removing any computer viruses found in the computer memory, on storage media or incoming e-mail files.



An antivirus program scans for programs that attempt to modify the boot program, the operating system and other programs that normally are read from but not modified.

IDENTIFYING VIRUS

Two technique are used to identify the virus.

VIRUS SIGNATURE	INOCULATING A PROGRAM FILE
<p>Also called a virus definition is a specific pattern of the virus code.</p>	<p>The antivirus program records information such as the file size and file creation date in a separate inoculation file.</p> <p>The antivirus program then uses this information to detect if a virus tampers with the data describing the inoculated program file.</p>

If an antivirus program identifies an infected file, it attempts to remove its virus, worm or Trojan horse. If the antivirus program cannot remove the infection, it often quarantines the infected file. Quarantine is a separate area of a hard disk that holds the infected file until the infection can be removed. This step ensures other files will not become infected. Patents for inventions Utility, design or plant patents that protect inventions and improvements to existing inventions

4) 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.



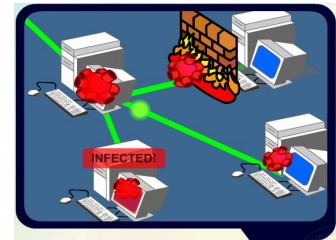
An anti-spyware application program sometime called tracking software or a spybot is used to remove spyware.

Among of the popular anti-spyware programs are:

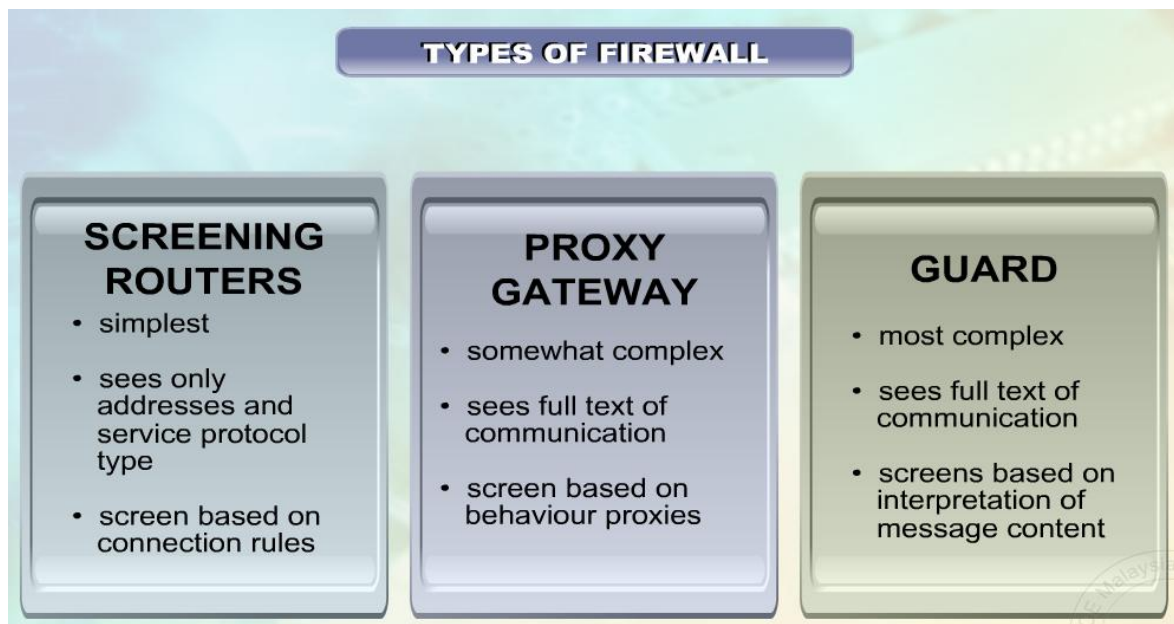
- Spybot Search and Destroy
- Ad-aware
- Spyware Blaster

5) FIREWALL

Firewall is a piece of hardware or software which functions in a networked environment to prevent some communications forbidden by the security policy.



Firewall implement a security policy. It might permit limited access from in or outside the network perimeters or from certain user or for certain activities.



6) HUMAN ASPECTS OF SECURITY MEASURES

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.

The most common problem is the lack of achieving a good information security procedure.



LESSON 19

RELATIONSHIP BETWEEN SECURITY THREATS AND SECURITY MEASURES

Security threats may come from in many forms. For example, when someone is invading your account information from a trusted bank, this act is considered as a security threat.

Security measures can be used to prevent this invader from getting the account information. For example, the bank can use a firewall to prevent unauthorised access to its database.



SECURITY THREATS

Security threats may come from in many forms. For example, when someone is invading your account information from a trusted bank, this act is considered as a security threat.

Security measures can be used to prevent this invader from getting the account information. For example, the bank can use a firewall to prevent unauthorised access to its database.

MALICIOUS CODE THREATS VS. ANTIVIRUS AND ANTI-SPYWARE

Security threats include virus, Trojan horse, logic bomb, trapdoor and backdoor, and worm.

Antivirus and anti-spyware can be used to protect the computer from the threats by:

- limiting connectivity
- allowing only authorised media for loading data and software
- enforcing mandatory access controls
- blocking the virus from the computer program

HACKING VS. FIREWALL

Hacking is an unauthorised access to the computer system done by a hacker. We can use firewall or cryptography to prevent the hacker from accessing our computers.



A firewall permits limited access to unauthorised users or any activities from the network environment. Cryptography is a process of hiding information by changing the actual information into different representation, for example, an APA can be written as 7&*.

NATURAL DISASTER VS. DATA BACKUP

The natural and environmental disasters may include:

- flood
- fire
- earthquakes
- storms
- tornados

Natural disasters may threaten a computer's hardware and software easily. Computers are also sensitive to their operating environment such as excessive heat or the inadequacy of power supply.

The backup system is needed to backup all data and applications in the computer. With the backup system, data can be recovered in case of an emergency.

THEFT VS. HUMAN ASPECTS

Computer theft can be of two kinds:

- can be used to steal money, goods, information and computer resources
- the actual stealing of computers, especially notebooks and PDAs



Measures that can be taken to prevent theft:

- prevent access by using locks, smart-card or password
- prevent portability by restricting the hardware from being moved
- detect and guard all exits and record any hardware transported

BE SUSPICIOUS OF ALL RESULTS

There are many instances where non-programmers develop applications which are not built with proper understanding of software engineering practices.

Data produced by such applications may not be correct and may risk corrupting data received from other sources that are not compatible with the application.



LESSON 20 SECURITY PROCEDURES

Computers should have alarm systems to guard them from any attacks such as viruses and data corruption. The alarm system is the security measures that we take to ensure its safety.

DATA PROTECTION

We need to protect the data in the computer as it may somehow get lost or corrupted due to some viruses or mishap like fire, flood, lightning, machine failures and even human errors.



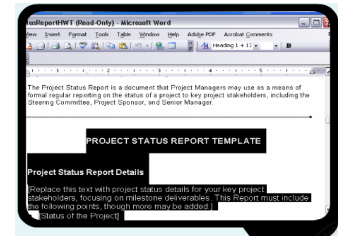
There are a few ways to protect the information namely:

- make backup files
- detect the virus and clean the computer
- warn others on virus attacks

1) BACKUP FILES

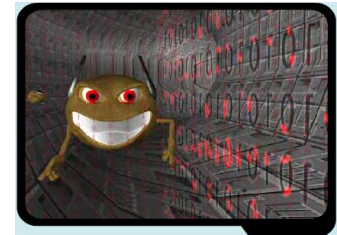
Users can do backups of file systems by:

- keeping the duplicated files in external storage such as in the floppy disk and thumb drive
- do backup frequently



2) DETECT VIRUS AND DO CLEANUP

A computer virus is able to affect and infect the way the computer works. Viruses can be detected when we run an antivirus program. We can also delete the infected files and documents.



3) WARN OTHERS ON VIRUS ATTACK

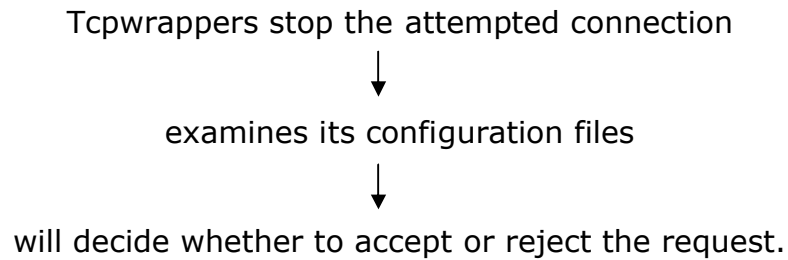
We can warn others on virus attacks or new viruses by sending e-mails to them.



DETECTING ILLEGAL ACCESS TO SYSTEMS

The computer system is able to detect any illegal access to the system by a user who does not have any authorisation. Basically, a corporation will simply use tcpwrappers and tripwire to detect any illegal access to their system. User's access will be reviewed periodically by computer operations. On going internal audits will be made to ensure detection of violations of security and unauthorised modifications to software and data .

TCPWRAPPERS

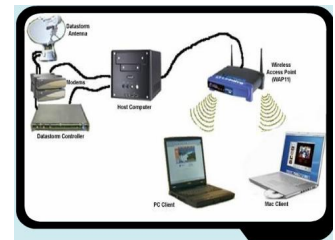


Tcpwrappers will control access at the application level, rather than at the socket level like iptables and ipchains. The system will run tcpwrappers to log access to ftp, tftp, rch, rlogin, rexec and telnet.

TRIPWIRE

Tripwire will detect and report on any changes in the thousands of strategic system files.

The system will run tripwire to determine if system files have changed.



PREVENTING ILLEGAL ACCESS TO SYSTEMS

Have any of you ever been to an airport? Do you know the do's and don'ts when you are at the airport?

There are things that cannot be taken inside the airplane. It is for the purpose of security procedures.

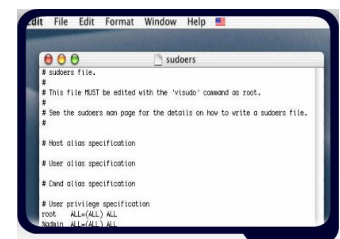
It is the same as computer systems. It would not allow any unauthorised users to simply access the system.

Ways to prevent illegal access to systems:

1. Run anlpasword to make password cracking difficult.
2. Run tcpwrappers to check if the name for an ip address can be provided by DNC
3. Use a callback system to prevent unauthorised use of stolen passwords.

PREVENTING ILLEGAL ROOT ACCESS

To prevent any illegal root access, we should have **Sudo**, so that people can perform on some machine without getting access to the entire root if that is not required. In addition, with Sudo we did not have to give out the root password.



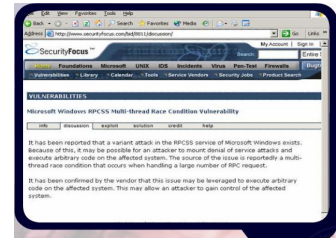
Sudo stands for (Superuser do) and is a program in Unix, Linux and similar operating systems such as Mac OS X that allows users to run programs in the form of another user (normally in the form of the system's superuser).

Sudo allows a permitted user to execute a command as the superuser or another user, as specified in the sudoers file.

PATCH

Patch supplies small updates to software, provided that the source code is available.

Patch is a name of an UNIX utility. It applies a script generated by the different program to a set of files that allows changes from one file to be directly applied to another file.



Resources are not enough to patch all security holes that we hear about through the *bugtraq* list.

(Bugtraq is a full disclosure mailing list dedicated to the issues of computer security. On-topic discussions are new discussions about vulnerabilities, methods of exploitation and how to fix them. It is a high volume mailing list and almost all new vulnerabilities are discussed there.)

LESSON 21 COMPUTER APPLICATIONS IN THE SOCIETY

The computer has change the society today as much as industrial revolution changed society in 18th and 19th century. People interacts directly with computer in education, finance, government, health care, science, publishing, tourism, and industry.

Computers help them to do their work faster and more efficient by using the software application that consist of special program for specific task.



SOFTWARE APPLICATIONS

Software applications are used for many reasons. Such as to enhance the learning process, to help in business activities, to assist the graphics and multimedia project and to facilitate communication.

Area	Examples of software applications
Home and Education	Integrated software, Personal finance, Legal, Tax Preparation, Clip Art/Image Gallery, Home Design/Landscaping and Reference
Business	Word Processing, Spreadsheet, Database, Presentation Graphics, Personal Information Manager, Software Suite, Project Management and Accounting
Graphics and Multimedia	Computer-aided design (CAD), Desktop Publishing, Paint/Image Editing, Video and Audio Editing, Multimedia Authoring and Web Page Authoring
Communication	E-mail, Web Browsers, Chat Rooms, Newsgroups, Instant Messaging, Groupware and Video Conferencing

SOFTWARE APPLICATIONS PACKAGES

Software Application	Examples of Popular Packages
Word Processing	Microsoft Word and Lotus Word Pro
Spreadsheet	Microsoft Excel and Lotus 1-2-3
Database	Microsoft Access and Microsoft Visual FoxPro
Presentation Graphics	Microsoft Power Point and Lotus Freelance Graphics
Personal Information Manager	Microsoft Outlook and Palm Desktop
Software Suite	Microsoft Office and Lotus SmartSuite
Project Management	Microsoft Project and Corel CATALYST
Accounting	MYOB and Peachtree Complete Accounting

HOME AND EDUCATION

Today, computers are used in schools, colleges and universities in order to promote better education by using computers. In the labs, students use software packages to complete their assignments. At the same time, some educators use the computer-based training and web-based training as replacements for lecture presentation.



Some of the software applications that are usually used in schools and universities include Microsoft Office, Adobe Photoshop, Macromedia Flash, AutoCAD, Macromedia Dreamweaver and Macromedia Director.

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 (www.oum.edu.my).

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. Examples of these software applications include MYOB, Intuit Quick Books and Peachtree Complete Accounting.

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. (www.maybank2u.com)



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.

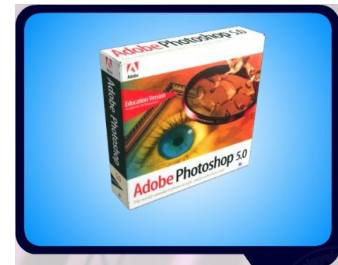


Computers process this data and automatically update inventory, production, payroll and accounting records on the company's network.

Examples of companies using this system are Proton(www.proton.com.my) and Perodua (www.perodua.com.my).

GRAPHICS AND 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.

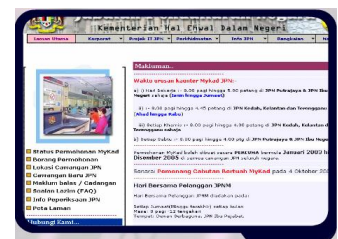


Special software applications are used to assist graphic designers to develop graphics, texts, photographs and composing songs.

Computer-Aided Design, Desktop Publishing, Paint/Image Editing, Video and Audio Editing and Multimedia Authoring are among the popular applications software.

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.

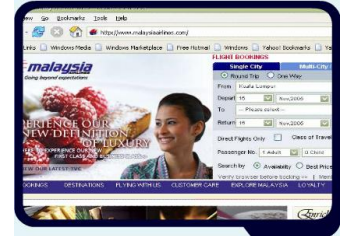
People can access government websites to:

- check information on taxes (www.hasil.org.my)
- apply for permits and licenses (www.jpj.gov.my)
- check for MyKad (www.jpn.gov.my)
- pay parking tickets and check summons (www.jpj.gov.my)
- renew vehicle registration (www.jpj.gov.my)
- register online for IPTA/IPTS application (www.moe.gov.my)

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.



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.



Furthermore, computers and the internet are important sources for people to get all information on medical, nutrition, fitness and other tips from several available websites. The latest development in the medical field is telemedicine. This technology is meant to help professional to conduct live conference in separate locations around the globe.

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
- allowing a deaf person to listen through cochlear implant



LESSON 22

COMPUTER USERS

People around the world rely on computers to do so many things. They are from different backgrounds and are divided in 5 categories.

HOME USER

The computer is a basic necessity. Each home user spends time on the computer for different reasons:

- business
- communication
- entertainment
- education



SMALL OFFICE/HOME OFFICE (SOHO) USER

SOHO users use computer to manage their work effectively. They advertise their products and services through websites. They also take orders from the websites.



To save cost, SOHO connects one printer to many employees to share. SOHO also have their own basic business software such as word processing and spreadsheet software to assist them in documents preparation and their financial tasks.

Small Office or Home Office users include:

- accounting firms, travel agencies, florists and many more

These SOHO users:

- use desktop or notebook computers as well as telephone, handphones and PDAs in completing their tasks and communicating
- work in a small company or work as an individual at home

MOBILE USER

Network services are expanding to serve people across the country and the world. More users are becoming mobile users, who work on computer while they are away from their home or main offices.



Mobile users:

- include real estate agents, insurance agents, meter readers and journalists
- use notebook computers, Internet-enabled PDAs or smart phones
- work with basic business software such as word processing and spreadsheet business software
- use presentation graphics software to create and deliver presentations to a large audience by connecting a mobile computer or device to a video projector

POWER USER

Power users require the capabilities of workstation computers or other types powerful computers. The software that is used by power users is normally expensive because of their specialize design. Their computer have network access connections and internet connections.



Power users:

- include engineers, scientists, architects and virtual reality animators
- use computers with extremely fast processor, bigger storage and customised software
- work with mini computers that uses design to meet the organisational needs
- use software such as CAD, CAM and MATLAB

LARGE BUSINESS USER

Each employee or customer who uses computer in large offices of company is a large business user. Large business users use a large network of computers. Use computers for basic business activities such as preparing bills for millions of customers, preparing payroll and managing thousands of items in the inventory.



Large business users:

- bank, insurance company, hypermarket
- use computers for basic business activities
- have e-commerce that allow customers and vendors to interact and do business transactions online therefore customers, vendors and other interested parties can access information on the web
- have e-mail and web browsers to enable communications among employees, vendors and customers
- provide kiosks in public locations

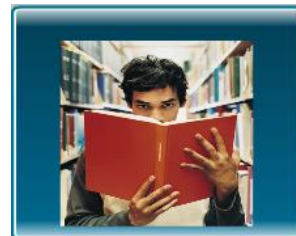
Many employees of large business telecommute, which means they work away from their offices workstation. They also have flexible schedule.

LESSON 23

HOW TO CONDUCT A STUDY

There are five basic steps to follow when we do a study.

1. Get an overview of your topic.
2. Narrow down the topic and form some specific questions related to it.
3. Find study materials related to the topic.
4. Evaluate study materials
5. Write out study papers and cite sources



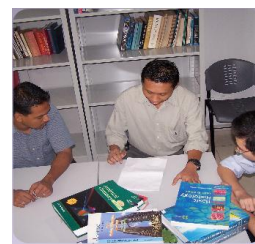
Examples of the terms usually used in a study.

- compare: to examine similarities or differences
- define: to provide clear and concise meaning
- discuss: to examine in detail and present arguments for and against
- explain: to tell how things work or come to be the way they are

STEP 1 - GET AN OVERVIEW OF THE TOPIC

Familiarity

We need to familiarise ourselves with the topic before we start doing a study. This will allow us to spend more time developing a topic rather than using more time learning about the topic.



We also have to get a broader picture of the subject by focusing on the who, when, why, how and where questions.

Reference

Refer to a dictionary, encyclopedia, handbook, textbook, guide or bibliography which can provide an overview of the topic.

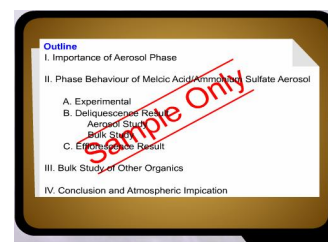
Brainstorming

Spend some time brainstorming about the topic and write down everything that we can think of about the topic.

STEP 2 - NARROW DOWN THE TOPIC

Narrow down the topic by reading the sources and form some specific questions related to the topic. By doing this, we may have awareness of the various aspects that we may want to study. However we need to understand that not all information is reliable and we have to differentiate between facts and opinions. Objective Information

- based on facts which can be verified
- presents results of original study
- often the view from experts in the subject area
- presents analysis of facts from all sides of issue



Subjective Information

- based on what seems to be true
- reflects personal views or judgment
- often the views of individuals or groups
- may present an analysis of the facts from one side of an issue

STEP 3 - FIND STUDY MATERIALS

Study materials are available offline and online. We can search for the information that we want in books, journals, articles or other resource materials found in the library and the Internet.



A list of all the books, journals and electronic materials are available from the library. We can use the online databases to find the most useful materials for our study.

STEP 4 - EVALUATE STUDY MATERIALS

All selected materials need to be evaluated in four aspects:

Aspects	Sample
Relevance	Does this publication help to answer the research question? If it does not find something else which does.
Reliability/Credibility	is the information accurate? has the information been peer reviewed? are the authors and publishers reputable? do they cite their credentials? are there footnotes and a bibliography?
Perspective	is this a primary source (presenting the author's own research and ideas) or a secondary source (summarising and discussing the research and ideas of others)? is the evident biased? Does the author attempt to sway the reader's opinion?
Update	how recent is the information published? how recent has it been updated? have there been new developments on the topic? could the information you are using be misleading because of the publication date?

STEP 5 - WRITING OUT THE STUDY PAPER

When all resources are gathered, start writing the paper and cite all the sources of information used. These may include books, journals, articles and magazines.

LESSON 24

PRESENTING RESULT

A presentation should contain three well-defined sections, they are:

1. Introduction

- is at the beginning of the research
- includes the objectives of the research
- provides a clear statement on why the study was undertaken
- includes the limitations/assumptions and analytical techniques

2. Content

- consists of facts or arguments related to subject matter
- can be presented in an argument format or just as an overview

3. Conclusion

- is a review of content (not repetition of content)
- relates to the statement of objectives in the introduction
- should not introduce new issues
- should contain judgment or decision that has been reached

BASIC NEEDS OF A GOOD STUDY PAPER

There are a variety of ways to write out your research. However, there is a set of basic requirements that must be followed when it comes to submitting or presenting written presentation.

1. General Points

- number all pages
- use one side of A4 paper
- secure all pages with a staple (top left-hand corner)
- don't use paper clips/pins or folders
- must be typed/word processed
- clear and easy to read print-out
- spell check your paper
- supply an estimated word count on the cover sheet
- include your name, course name and teacher's name

2. Style

- double-spaced
- 12 point minimum and 14 point maximum (with the exception of headings and footnotes)
- 2 spaces after a full stop and 1 space following a comma, semi-colon or colon
- no abbreviation such as 'e.g.', '&' or 'etc.' unless it is included in a bracket. Write everything in full: 'for example', 'that is', 'and so on'.
- numerals are used when the number is more than two words; for tabulation; statistical discussion; sums of money; addresses; dates; time; and page, chapter, volume numbers (for example, 2 June, 2000)
- consistency in style for example in writing out headings.

3. Quote

- a direct quote must be placed in quotation
- block quotes are used if a direct quote is more than three lines long.
- if possible, paraphrase information in preference to using direct quotes.
- use quotes and paraphrasing to support argument

4. Clarity

- helps your readers understand your paper by organizing your paper well and don't forget to insert the page numbers
- edit your work means reading through the paper several times before submission and don't just rely on the rough spelling and grammar checks offered by your software.

5. Indicating your intentions

- in a complex study, the introduction of every section should inform the reader what to expect in that section should contain judgment or decision that has been reached.
- the final paragraph in each section should tie the contents of that section together with a short conclusion.
- do not use too many words to say what you are going to do and what you have done, keep to the necessary minimum

PREPARING A PRESENTATION



LESSON 25 DELEGATION OF WORK

WHAT IS DELEGATION?

Delegation is the ability to assign tasks to others with the authority, responsibility and accountability to finish the tasks. This means it is not enough to just give out orders to people but as a team leader you also need to give specific instructions on what to do. Tell your team members that they are responsible for the task given to them and explain to them what would happen to the project if they failed to finish the task.



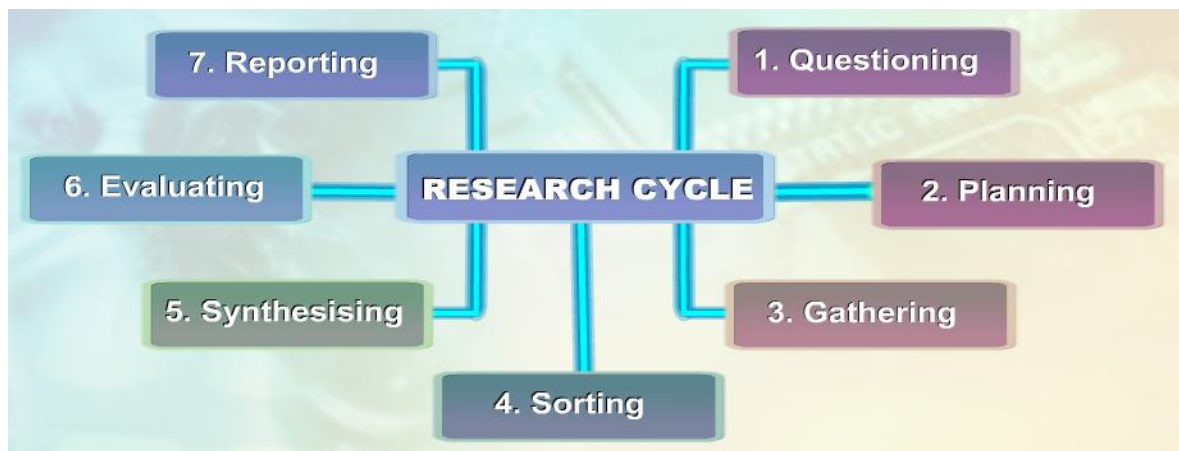
WHY DELEGATE TASKS?

Reasons why should I delegate tasks:

- will be able to save time
- help others to learn new skills, for example, how to negotiate and cooperate
- utilise individual's additional strengths and expertise
- will be able to achieve large goals by dividing them into smaller tasks
- promotes creativity and diversity because others may have better way doing things
- cut down on tasks that can be done just as well by others

WHAT TO DELEGATE?

In order to complete a team project, you will be asked to use your skills in research, presentation and task delegation. When working on a large project you must know what task to delegate and how to assign them.



1. Questioning
 - Discover a problem
 - Form a question to answer the problem
2. Planning
 - Set out steps to find answers
 - Select sources for possible answers
 - Plan a basic draft for reporting
 - Assign tasks to team members
 - Agree on contingency plans
3. Gathering
 - Go to agreed sources of information
 - Collect information
4. Sorting
 - Put similar information together
 - Highlight valuable credible information
5. Synthesizing
 - Discuss information with others
 - Combine different information
6. Evaluating
 - Discusses if the information gathered supports the answer
 - Test out solution and decision that supports the answer
7. Reporting
 - Write or type out the report
 - Create an appropriate graphic or media
 - Prepare for Q & A
 - Prepare research

EXAMPLES OF TASK DELEGATION

Scenarios	Good Techniques
"The head librarian wants us to finish the work by the end of the day, which is about 5 pm."	Set clear task deadline.
"We have to sort out these books according to their subjects. Remember to stick the correct book codes onto the books."	Describe in detail the task objective.
"I will teach you the coding system."	Help team member to perform task if needed.
"Chong, you take the science books and Indra, you take the art books."	Delegate task to those qualified to do the job.
"I don't know the coding system."	Inform limitation of abilities or resource to other team members.
"So, is everybody clear on what needs to be done and when we should meet again later."	Monitor task progress.

LESSON 26

TOPICS FOR STUDY

In order to do the research, you need to follow this 5 steps.



STUDY TOPICS

Form into groups. Discuss with the team members and choose ONE (1) of the study topics below:

1. Copyright and piracy from a moral and legal standpoint.
2. Credit card fraud on the Internet and its implications on the industry/economy/government.
3. Malaysian Cyber Law, Electronic Government Law.

The portfolio will contain:

1. Team journal
 - study project introduction page
 - minutes of team meetings
 - initial project plan/calendar
 - conflict resolution report
2. Initial framework for presentation
3. Final presentation

The purpose of team journal is to keep track the progress of the project.

The team's initial framework is where the team should do some basic study on the topic and decide what should be included in the presentation.

The print out of the final presentation will be given to the teacher for final grading.

SOURCE CITATION CARD

Source Citation			
Type	Book	Where	School Library
Title	Malaysian Cyber Law Chapter 3: Cyber Law explained	Reference	EG 2001.09.23
Author	KS Liew	Page	35-50
		Publish	Kancil, Oct 2004
Summary	Malaysian cyber law covers several aspects:		
	<ol style="list-style-type: none"> 1. Intellectual Property 2. Distribution and Copyright 3. Privacy 4. Freedom of Expression 5. Jurisdiction 		
			NOTE

Source citation card is a note card in which you write the name of the article, author, book name, page numbers, where you found it, why it is good information and a short summary of the important points.

CREATING YOUR PRESENTATION

A presentation should:

- have at least 15 slides (not including the Title slide)
- have a Title slide
 - introduce presentation
 - include names of each member of the team
- use any design templates
- use at least 5 graphics (e.g.: clip art, photographs, word art and drawings)
- have some multimedia
 - use animation on slides (be careful of very noisy ones!)
 - use slide transitions
- use less text on the slides
 - try presenting the information through pictures, graphs, mind maps or any other form of visual (as oppose to textual) presentation
- have a citation slide
 - the last slide must list all of your citations and other related resources (where you got the content)
 - remember to give credit to others!

THE FINAL PRESENTATION

Guidelines:

- each team member must speak during the presentation.
- each team will have 10 minutes to present.
- presenters should face the audience and not just read from the screen or paper.

Tips:

- practice in advance.
- prepare notes on paper or cue cards to help you remember what you need to say during the presentation.
- remember to speak out clearly for people at the back to hear you.
- do not shout!