LATIHAN 6.1

1. *Give the meaning of data, information and information systems.*

DATA
Data is like raw material. It is not organised and has little value. Data can include text, numbers, images, audio and video.

INFORMATION
Information is organised data that is valuable and meaningful to a specific user.

INFORMATION SYSTEM
Information system is a set of a related components that collects data, processes data and provides information.

2. *State the usage of Information Systems in education, business and management.*

A. Information Systems In Education

i. Keep track of students statistic and grades.
ii. Help students and teachers in online learning and discussion – Learning Management System, example : Moodle, University Sains Malaysia and Open University Malaysia.
iii. Store subject content – for Online Learning Portal.

B. Information Systems In Business

i. Carry out online buying and selling :
In retail companies, information systems are used in online buying and selling. Examples of information systems for a retail company are Amazon.com, Lelong.com and Maybank2U.com.

ii. Help plan the delivery of goods and services :
In the transportation industry, information systems are used to help plan the delivery of goods and services. Examples of information systems in the transportation industry are UPS.com, FedEx Express and City-Link.

iii. Make room bookings and for checking the best rates :
In the hotel industry, information systems are used to make room bookings and for checking the best rates. Examples of information systems in the hotel industry are Genting Online booking, Booking.com and Sabah Hotel Booking Center.

C. Information Systems In Management

See employee records : In human resource management, information systems are used to see things like employee records.

Analyse product, services and product prices : In marketing management information systems are used to analyse products, services and product prices that give the best sales.

Process customer ordes, organise production times and keep track of product inventory : In manufacturing management, information systems are used to process customers orders, organise production times and keep track of product inventory.

3. *Define the Information System components*

DATA

Data is very important in information systems. Without data, decision and conclusion cannot be made. The right data in information systems helps us to make the right decision. For example, the stock status report in a book store helps the book store's manager to decide when to reorder their stocks.

HARDWARE

The hardware component in an information system means all computer equipment used to perform input, processing and output functions. Hardware resources also include all media on which data is recorded, such as paper, floppy disks and compact discs.

SOFTWARE

The software component in an information system consists of programs for the computers. These programs allow the computers to carry out most of the instructions related to information processing. There are two types of software: **system software** and **application software.**

System software controls basic computer operations. For example, the Operating Systems are Microsoft Windows, Linux and Macintosh. Application software are the programs that allow users to do specific tasks. Examples of application software are Microsoft Excel, Microsoft Access and SQL Server.

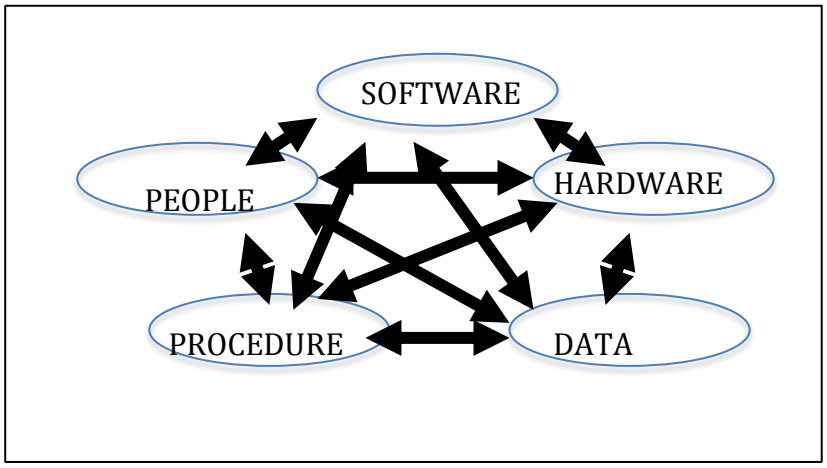
PEOPLE

People involved is information systems personnel and end users.

PROCEDURES

Procedures are operating instructions for the user of an information system. Procedures can be in the form of guidelines in the user manuals.

4. *Describe the interrelation between information system components using a diagram.*



5. *State the usage of each type of information system.*

Management Information System (MIS)

Management Information Systems are used to provide regular information about the daily activities of a business to the manager. Management Information Systems are to help managers make the business processes and activities more efficient compared to doing them manually.

Transaction Processing Systems (TPS)

Transaction Processing Systems are used to record business transaction. Transaction Processing Systems keep track of daily transactions in a database.

Decision Support Systems (DSS)

Decision Support Systems provide managers with information to make the best decisions. Decision Support Systems help to analyse information, recognise problems and making decisions. Most Decision Supports Systems reports are in the form of charts and diagrams.

Executive Information System (EIS)

Executive Information System helps top-level management to plan strategies. An Executive Information System is used to forecast future trends.

Expert System (ES)

Expert system is used to store knowledge and make logical suggestions for the user. Expert System users can be professionals like doctors and scientist. Example : An Expert System can suggest conditions and estimate the probability of having illness

6. *Define bit, byte, field, record, and file*

BIT is Binary digit , represented by 0 for OFF or 1 for ON. the smallest unit of data the computer can store in a database.

BYTE is a collection of bits. Each byte consists of 8 bits. Each byte represents a character.

FIELD is a unit of data consisting of one or more characters (bytes). the smallest unit of meaningful information in the database. Each field has a field name.

RECORD is a collection of related fields.

FILE is a collection of related record

LATIHAN 6.2

1. *Define database and Database Management Systems (DBMS)*

DATABASE

Database is structured collection of information on specific subjects. We can think of a database as an electronic filing system. An example of the database is a telephone book which contains records of names, addresses and contact numbers. A database allows its contents to be easily accessed, updated, stored and retrieved

DATABASE MANAGEMENT SYSTEM (DBMS)

A Database management System is a program that accesses information from a database. A Database Management System provides an interface between the database and the user.

A Database management System enables you to extract, modify and store information from a database. Examples of DBMS are Oracle, SQL Server and Microsoft Access.

2. *List the benefits of using database.*

Minimises Data Redundancy

Most data item stored in only one file. With a database there is no need to repeat recording the same data. This minimises data redundancy. For example, a school database would record a student's name. address and other details only once when the student enroll in the school.

Data Integrity Is Assured

A database ensures that data is correct for all files. When a user modifies data in one of the files in a database, the same data will change automatically in all the files. This is called data integrity.

Data Can Be Shared

A database allows the ease of sharing data. Data can be shared over a network, by a whole organisation.

Information Can Be Accessed Easily

A database makes information access easy. Everyone can access and manage data in a database

3. *State the relationship between attribute (field), row (record) and relation (file).*

FIELD

Field is a specific category of information in a table. In a table, fields are usually shown in columns and it has its own field name at the top. For example, StudentID, Name, MyKad Number, Date of Birth, Gender, Address and Contact Number. All the data within the same field holds the same data type.

RECORD

Record is a collection of fields about one person, place or thing in a table. Records are arranged in rows. The records consist of several data type such as of text, date or numerical data. A record is also known as the row or tuple. For example, we have a total of five records in this table.

FILE

A file is a set of data arranged in columns and rows. They are grouped together for a specific purpose. For example, this is a Student Registration System which records all the students' information

4. *Define the primary key and foreign key.*

The Primary Key

A primary key is the field that uniquely represents each record in a table. These keys must not have null values. Meaning, you must not leave these keys blank.Each table in the database must have at least one primary key.

Define Foreign Key

A foreign key is the field that matches the primary key in another table. It contains the same data as those of the primary key in the other table. Foreign key fields are linked to fields in other tables. While a primary key must have unique values, a foreign key may have duplicate values

5. *State the importance of the primary key.*

i. To helps to avoid duplicated records
ii. To prevents null values being entered in the unique field
iii. It ensures data by uniquely representing each record

6. *Differentiate between the primary key and foreign key.*

Primary Key	Foreign Key
Primary keys must have unique values	Foreign keys may have duplicate values
A primary key links to the data in that table	A foreign key links to a primary key in another table

7. *State the importance of relationship between the primary key and foreign key.*

i. the primary key of one table becomes a foreing key of the other tables
ii. by matching foreign key with a primary key, the data does not need to be entered repeated
iii. a primary key makes creating queries, forms and reports easier
iv. a primary key improves data performance by relating smaller tables into meaningful databases

8. *Define and identify the following database objects/ tools:*

Table

Tables are one of the database objects in Microsoft Access. A Table is a collection of data that is organised as rows and columns. Every database object such as Queries, Forms and Reports are based on one ore more Tables. A database contains at least one Table.

Query

A Query is database object that retrieves specific information from a database. For example, you can retrieve a student's name and address from the database.

Form

A Form is a database object that allows users to add, modify and view information. Form can be created based on the Table or Query. A Form is an organised and formatted view of selected fields from selected Tables or Queries. By using Table, you need to scroll down to fill in the new data. This data entry process will take time. However, when From is used, it is easier as you need to click on the new record button to fill in the new data.

Report

A Report summarises information from the database. A Report is a database object that presents selected information from Tables or Queries, for printing purposes. When designing a Report, consider the point you are making, the audience and the level of information they needed. Reports can be created based on the Table or Query

9. *State the usage of basic operations in data manipulation.*

Data manipulation refers to the operations of accessing, locating, organising, modifying and managing data contained in the database. Basic operations of data manipulation

Data Manipulation	Description
Update	The Update operation is used for changing data in a database Table.
Insert	The Insert operation is used for adding records to a database Table.
Delete	The Delete operation is used for removing records from a database Table.
Retrieve	The Retrieve operation is used for retrieving records from a database Table.
Sort	The Sort operation is used for sorting records in a records in a database Table.
Filter	The Filter operation is used for filtering records from a database table. Instead of displaying all the records in a Table, you can use a filter to display only those records that you want to see or edit.
Search	The Search operation is used for finding record from a database table.

LATIHAN 6.3

1. *Describe the phases of systems development*

ANALYSIS PHASE

During the Analysis Phase, system developers will perform problem analysis by finding out the needs of target users. System developers also identify the input, process and output for the new system.

The Analysis Phase is the first phase of system development. In this phase, the system developers would need to define problems faced by target users. The target users will indicate their requirements. They need to give a description of what a system must do and the main functions of the system. By doing this, the system developers can define the purpose of the system. It would help system developers set the focus of the system

DESIGN PHASE

Based on the needs of target users, the system developers will design an Entity Relationship Diagram (ERD). This phase is known as the Design Phase

IMPLEMENTATION PHASE

Implementation Phase is the phase where system developers create database using database software. The Implementation Phase is the third phase of system development. In the Implementation Phase, the system developers will convert the technical plan and design plan into a computer program. The Implementation Phase is the phase where a system is created

TESTING PHASE

Testing Phase is the fourth phase of system development. It involves the system developer and user in the Testing Phase. The system will be tested by the target users in the Testing Phase. If there is any error detected, the system developers will fix the error.

DOCUMENTATION PHASE

The Documentation Phase is the fifth phase in system development. Documentation refers to the written materials generated throughout phases of system development. Documentation is very important when the system requires changes in the future. Documentation tells new system developers what was done in the program. It helps to reduce the amount of time a new system developer spends learning about existing programs. A number of documents are produced during the development of a new computer application

MAINTENANCE PHASE

The Maintenance Phase is the last phase in system development. The system developers continue to provide support during the Maintenance Phase. They monitor the system performance and make changes when needed. Maintenance refers to the changes in the system by fixing or enhancing its functionality. System developers are involved in the Maintenance Phase.

LATIHAN 6.4

1. *Find out current developments in computer information systems.*

Technological advancements in large database development and high speed digital transmission networks will result in global information systems. These developments will influence how people interact with information. Through the Internet, a user can get fast responses and have two-way communication using video conferencing and e-mail. By using the global information systems, people from all over the world can be equipped with knowledge in many areas.

Web-based applications are delivered to users from a Web server over the Internet. Web-based applications store information in a database system such as Microsoft SQL Server or Oracle