

40. Information Systems

An **Information System** can be defined as a combination of hardware, software, database, network and people (generally trained personnel) organized to facilitate planning, control, coordination, and decision-making in an organization.

Hardware consists of input/output device, processor, and media devices. **Software** consists of various programs and procedures. **Database** consists of data organized in the required structure.

Network consists of hubs, communication media and network devices.

It is often observed that the terms information system and **information technology** are used interchangeably. In a literal sense, information technology is a subset of information systems. The great advancement in information systems is due to the introduction of computers and development in information technology that, according to Information Technology Association of America, is defined as “the study, design, development, application, implementation, support or management of computer-based information systems.”

HARDWARE

Central Processing Unit (CPU)	unité centrale/ processeur
a hard disk	disque dur
Random Access Memory (RAM)	RAM/ mémoire vive
Read only memory (ROM)	mémoire morte
a byte	octet
a personal computer (PC)	ordinateur
a laptop	ordinateur portable
a peripheral (device)	périphérique
a keyboard	clavier
a keypad	clavier numérique
a mouse	souris
a mousepad	tapis de souris
a trackpad	pavé tactile
an ink jet printer	imprimante à jet d'encre
a feeding tray	bac d'alimentation
jam	bourrage
a cartridge	cartouche
a USB key/ drive/ a thumb drive	clé USB
a device driver	pilote de périphérique
resolution	définition
a touch screen	écran tactile
a sensor	capteur
a keystroke	frappe d'une touche
to strike a key	enfoncer une touche
to release a key	relâcher une touche
voice-operated	à commande vocale
voice recognition	reconnaissance vocale
to input/ enter data	saisir des données
to access data	consulter des données
to display	afficher
to switch on/ switch off the computer	allumer/ éteindre l'ordinateur
to blink	clignoter

SOFTWARE

An **operating system** is a set of programs that control the hardware and allow people and applications to communicate with the hardware. Typical functions of the OS are handling input/output operations, running programs managing memory and organizing files and disks. The OS also gives access to networks and allows multitasking.

software engineering	génie logiciel
a software developer	concepteur de logiciels
an operating system (OS)	système d'exploitation
Graphic User Interface (GUI)	Interface Graphique avec l'Utilisateur
a software update	mise à jour logicielle
a software upgrade	amélioration logicielle
a tracking software	logiciel de localisation/ de suivi
word processor	traitement de texte
an add-in	logiciel compagnon
to debug a program	corriger les erreurs d'un programme
bug-ridden programs	programmes criblés d'erreurs
bug-free	sans erreur
beta release	version test
to be down/ out of order	être en panne

A **spreadsheet** program enables users to manage personal and business finances. Spreadsheets or worksheets are mathematical tables which show figures in rows and columns. They are made of cells that can hold 3 types of data: text, numbers and formulae.

a spreadsheet	tableur
a tutorial	dicticiel
a bookmark	un marque page
drag and drop	glisser-déposer
cut and paste	couper-coller
clipboard	presse-papier
definable	paramétrable
to crack a code	casser un code
a back-up copy	une copie de sauvegarde/ une sauvegarde
to file	archiver

Enterprise resource planning (ERP) (= *Progiciel de Gestion Intégré*) is usually referred to as a category of business management software — typically a suite of integrated applications—that an organization can use to collect, store, manage, and interpret data from these many business activities.

DATABASES

A **data structure** is a specialized format for organizing, processing, retrieving and storing data. While there are several basic and advanced structure types, any data structure is designed to arrange data to suit a specific purpose so that it can be accessed and worked with in appropriate ways.

In **computer programming**, a data structure may be selected or designed to store data for the purpose of working on it with various **algorithms**. Each data structure contains information about the data values, relationships between the data and functions that can be applied to the data.

Data Base Management System (DBMS)	Système de Gestion de Base de Données
to port a program	adapter un programme
to parse a program	analyser un programme
to abort/ undo/ cancel	annuler

to run a program
to break a program
to retrieve data
system shutdown

exécuter un programme
interrompre un programme
extraire des données
arrêt du système

A **database** is a data structure that stores organized information. Most databases contain multiple **tables**, which may each include several different fields. For example, a company database may include tables for products, employees, and financial records. Each of these tables would have different **fields** that are relevant to the information stored in the table.

Early databases were relatively "flat," which means they were limited to simple rows and columns, like a **spreadsheet**. However, today's **relational databases** allow users to access, update, and search information based on the relationship of data stored in different tables. Relational databases can also run **queries** that involve multiple databases.

side bar
scroll bar
a pull-down menu
a template
to subscribe with a server
subscription fee
mixed mode

bandeau latéral
bandeau de défilement
menu déroulant
modèle
s'abonner à un serveur
frais d'abonnement
alphanumérique

odd numbers
even numbers
uppercase/ capital
lower-case
case-sensitive
font
wild card
to nest
a character string
digit/ figure
integer
carriage return

nombres impairs
nombres pairs
majuscule
minuscule
sensible à la casse
police de caractère
joker
enchasser
chaîne de caractère
chiffre
nombre entier
retour à la ligne

NETWORKS

Networking allows two or more devices (computers, printers, network access storage, etc.) to exchange information and share resources and **peripherals**.

Local Area Networks (LAN) can be built with 2 main types of architecture: **peer-to-peer** or **client server**. To link a LAN to another network such as the internet for instance, a **router** is needed that forwards data packets.

network management
layout
a backbone
a channel
a node
a gateway
a bridge
a bottleneck
broadband/ wideband
a pulse

administration du réseau
structure/ topologie de réseau
artère principale/ épine dorsale
canal
nœud
passerelle
pont
encombrement
large bande
impulsion

a handshake
Wireless Local Area Network (WLAN)
an access point

protocole de mise en communication
réseau local sans fil
un point d'accès

to route messages
to broadcast
to pump data into a system
bus topology
access time
down time
encryption
ciphering
to encode

acheminer des messages
diffuser
injecter des données dans un système
configuration en bus
temps d'accès
temps mort
cryptage
chiffrement
coder

VOCABULARY EXERCISES

EXERCISE 1: Fill in the blanks.

1. Intel _____ are used in many computers.
2. Each 0 or 1 is called a bit, short for _____.
3. An internal _____ controls the timing within the PC by sending signals to synchronize its circuits and operations.
4. The processor speed is measured in _____.
5. _____ carry signals between different parts of a PC.

EXERCISE 2: Fill in the blanks with the right words from the box.

LAN	nodes	switches	backbone	peer-to-peer
server				

1. All the PCs on a _____ are connected to one _____ which is a powerful PC whose hard disk is shared by everyone.
2. The style of _____ networking permits each user to share resources such as printers or other peripherals.
3. A star topology is a topology for a Local Area Network (LAN) in which all _____ are individually connected to a central connection point, like a hub or a switch.
4. The Internet _____ may be defined by the principal data routes between large, strategically interconnected computer networks and core routers on the Internet.
5. _____ are devices commonly used to connect segments of a LAN.

CORRECTION of the vocabulary exercises

EXERCISE 1: Fill in the blanks.

1. Intel chips are used in many computers.
2. Each 0 or 1 is called a bit, short for binary digit.
3. An internal clock controls the timing within the PC by sending signals to synchronize its circuits and operations.
4. The processor speed is measured in gigahertz.
5. Buses carry signals between different parts of a PC.

EXERCISE 2: Fill in the blanks with the right words from the box.

1. All the PCs on a LAN are connected to one server which is a powerful PC whose hard disk is shared by everyone.
2. The style of peer-to-peer networking permits each user to share resources such as printers or other peripherals.

3. A star topology is a topology for a Local Area Network (LAN) in which all nodes are individually connected to a central connection point, like a hub or a switch.
4. The Internet backbone may be defined by the principal data routes between large, strategically interconnected computer networks and core routers on the Internet.
5. Switches are devices commonly used to connect segments of a LAN.

RESEARCH ON THE TOPIC

EXERCISE 1:

1. Find out what are the main characteristics of data structures.
2. Data structure types are determined by what types of operations are required or what kinds of algorithms are going to be applied. List at least 5 types of data structures.

CORRECTION OF THE RESEARCH

EXERCISE 1:

1. Find out what are the main characteristics of data structures.

Possible characteristics are:

Linear or non-linear: This characteristic describes whether the data items are arranged in chronological sequence, such as with an array, or in an unordered sequence, such as with a graph.

Homogeneous or non-homogeneous: This characteristic describes whether all data items in a given repository are of the same type or of various types.

Static or dynamic: This characteristic describes how the data structures are compiled. Static data structures have fixed sizes, structures and memory locations at compile time. Dynamic data structures have sizes, structures and memory locations that can shrink or expand depending on the use.

From: <https://searchsqlserver.techtarget.com/definition/data-structure>

2. Data structure types are determined by what types of operations are required or what kinds of algorithms are going to be applied. List at least 5 types of data structures.

These types include:

Arrays- An array stores a collection of items at adjoining memory locations. Items that are the same type get stored together so that the position of each element can be calculated or retrieved easily.

Arrays can be fixed or flexible in length.

Stacks- A stack stores a collection of items in the linear order that operations are applied. This order could be last in first out (LIFO) or first in first out (FIFO).

Queues- A queue stores a collection of items similar to a stack; however, the operation order can only be first in first out.

Linked lists- A linked list stores a collection of items in a linear order. Each element, or node, in a linked list contains a data item as well as a reference, or link, to the next item in the list.

Trees- A tree stores a collection of items in an abstract, hierarchical way. Each node is linked to other nodes and can have multiple sub-values, also known as children.

Graphs- A graph stores a collection of items in a non-linear fashion. Graphs are made up of a finite set of nodes, also known as vertices, and lines that connect them, also known as edges. These are useful for representing real-life systems such as computer networks.

Tries- A trie, or keyword tree, is a data structure that stores strings as data items that can be organized in a visual graph.

Hash tables- A hash table, or a hash map, stores a collection of items in an associative array that plots keys to values. A hash table uses a hash function to convert an index into an array of buckets that contain the desired data item.

From: <https://searchsqlserver.techtarget.com/definition/data-structure>