**Topic 4 ICT Concepts**

***digital revolution***

Information and communication technologies (ICT) are a set of technologies developed to improve the efficiency of information use and improve communication. Modern information technology is a technique thanks to which the life of many people has become much simpler and easier. Thanks to ICT, it has become easier for people to communicate at a distance, quickly find various information and learn something new.

The digital era has evolved through four phases, beginning with big, expensive computers and progressing to modern digital world in which small inexpensive digital devices are everywhere.

In the first phase computers were huge, complex and expensive devices. They existed in limited numbers, primarily housed in big corporations and government agencies. The second stage was presented by personal computing which is characterized by small, standalone computers powered by local software. The third phase of the digital revolution materialized as computers became networked and when the Internet was opened to public use. Cloud computing characterized the fourth phase of the digital revolution. Cloud computing provides access to information, applications, communications and storage over the Internet.

***data processing (data vs information)***

Data refers to the symbols that represent people, events, things, and ideas. In everyday conversation people use the terms data and information interchangeably. Nevertheless, some technology professionals make a distinction between the two terms. They define data as is any raw facts or observations that describe a particular phenomenon that represents people, events, things and ideas. Data becomes information when it is presented in a format that people can understand and use. Data is used by machines, such as computers, information is used by humans. Information is simply data that has a particular meaning within a specific context. Information may be data that has been processed in some way. When we speak of data processing, the input is data, the output is useful information. So, data processing is a series of actions or operations that convert data into useful information.

***digital devices (types)***

Now commonly used computer categories include personal computers, servers, mainframes and supercomputers. A personal computer is a microprocessor-based computing device designed to meet the computing needs of an individual. It provides access to a wide variety of local and cloud-based applications. The term server has several meanings. It can refer to computer hardware, to a specific type of software, or to a combination of hardware and software. In any case, the purpose of a server is to serve computers on a network by supplying them with data. A mainframe computer is a large and expensive computer capable of processing data for hundreds or thousands of users. Mainframes are generally used by businesses or governments to provide centralized storage, processing and management for large amounts of data. A computer falls into the supercomputer category if it is one of the fastest computers in the world. Because of the speed, supercomputers can tackle complex tasks and compute-intensive problems that just would not be practical for other computers.

***hardware components (component system, clamshell, slate devices)***

Computer hardware is a collective term used to describe any of the physical components of an analog or digital computer. The term hardware distinguishes the tangible aspects of a computing device from software, which consists of written, machine-readable instructions or programs that tell physical components what to do and when to execute the instructions.

Computer have three main hardware sections:

· The CPU – a microprocessor chip which used for processes data and coordinates activities of other chips; CPU or central processing unit have three typical parts: the control unit, which examines instructions from memory and executes them; the arithmetic and logic unit(ALU), which performs arithmetic and logical operations; the registers, high-speed units of memory used to store and control data.

· The main memory – holds the instructions and data which are being processed by the CPU. Have a two main sections: RAM(Random Access Memory) and ROM(Read Only Memory); We have many types of storage: magnetic disk and optical disc, hard disk – magnetic disk with a large storage capacity, flash memory - is solid rewritable memory: it is non-volatile.

· Peripherals are the physical units attached to the computer.

***the Issue of e-waste***

E-waste contains a list of chemicals that are harmful to people and the environment. When electronics are mishandled during disposal, these chemicals end up in our soil, water, and air. We can solve the problem of e-waste by being more mindful about where our e-waste ends up. We can limit how much we produce and the impact it has on the environment. With the flood of e-waste growing around the world, recycling alone will not be enough. In order to reduce e-waste, manufacturers need to design electronics that are safer and more durable, repairable and recyclable. Most importantly, this means using less toxic materials.