Computer Science T2

M1 Midterm Exam

1.1. Technology around us

Tools are objects that help us change or improve our environment. When we use several tools together to complete a task, we call them **gear** or **equipment**.

A **product** is the result we get from using a tool. For example, a product could be juice, a pencil, or a book. Sometimes, a product can also be a tool, because we can use tools to make other tools.

Everything that helps us solve problems or meet our needs, from the past to the present and into the future, is called **technology**.

Tools for measuring	Tools for cutting	Tools for connecting things together	Tools for making holes
Rulers Measuring tape Protractor	Cutter Scissors Saw Pliers	Latex glue Rubber glue Hot glue Screwdriver	Hole puncher Hand drill Electrical drill

1.2. Waste technology

Solid waste is everything we throw away, such as garbage, food scraps, and waste from sewage systems. It can be divided into four main types based on its physical characteristics:

- Compostable waste - Recyclable waste - Toxic waste - General waste

Compostable waste is any waste that is capable of decomposition (i.e. food, greenery, paper). It can be used as a fertilizer for plants.

Recyclable waste is waste material that can be reused, such as glass, paper, plastic, cans...

Toxic waste is waste that contains or is harmful with various types of toxic substances (i.e. batteries, chemicals, light bulbs, spray cans). This waste can harm people and animals.

General waste is waste other than compostable, recyclable and toxic waste. It is difficult to degrade and not good to reuse (i.e. plastic snack wraps, instant noodle wrappings, foam boxes....)

Because we have different types of waste, it's important to manage it properly. We can do this by **reducing**, **reusing** or **recycling** waste.

Reducing waste, we will try to create less waste by refusing or avoiding items or packages that can create a lot of waste. For example, bringing your own bag to store, don't use one-time only plastic, refuse products that are bad for nature...

Reusing waste is a good way to make use of available resources. It is when we take a thing that we already have used and use it again.

Recycling waste is a process where we take recyclable material such as paper, glass, plastic, steel and process it back into raw materials that can be used again.

2.1. Technology system

A **system** is a group of two or more components that work together to achieve the same objective. We have two types of systems:

Human system **Natural system**

Human system is a system that we humans made. They were mostly made to fix a problem or some of our needs. (electric trains, cars, plant watering system)

Natural systems are those systems that we can find in nature (trees producing oxygen, human breathing system, our immune system)

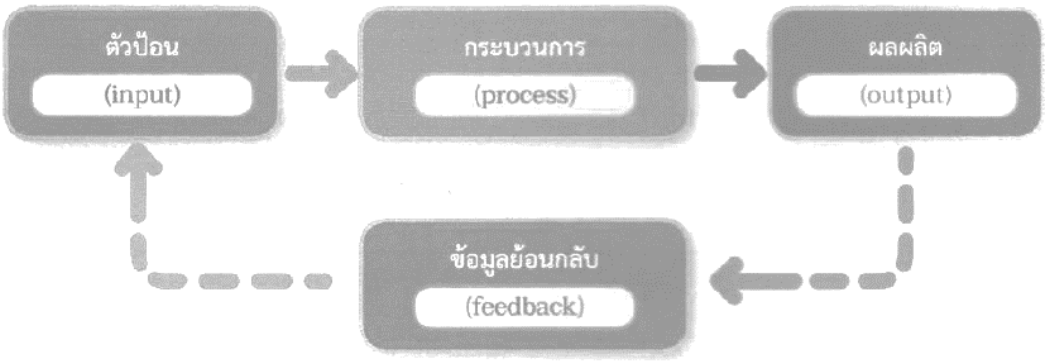
For the technology to work we need different components that are working together for the same objective. Which means it need to work as a system, or a **technological system.** Technological system has elements such as **input, process, output** and **feedback.** They all work together in a unity.

Input – is something that is taken in or operated on by any process or system

Process – some kind of work, activity or operation that the system performs to achieve the objective

Output – result from the systems process, it can also be a waste that is made from the process

Feedback – data that is used to control and regulate the system in order to achieve the objective



3. Materials in everyday life

In everyday life we use different types of materials. Each material has different quality and properties. Because of that we need to know which material is suitable for our product.

Most of the materials that we use can be found in the nature. For example:

-Wood -Plastic -Metal

-Rubber -Glass -Paper

All materials have different attributes and are used in different environments.

Wood is the material found in the stems and roots of trees. It is an organic material. **Wood is strong and durable** but also lightweight if compared to metal. We divide wood into two categories: **Natural or solid wood and Processed wood**

Natural wood is wood that comes directly from trees and hasn't been treated with chemicals.
Processed wood is a type of wood that is made by humans, often by treating or combining natural wood with other materials.

A metal is a material that are good conductors of electricity and heat. We divide metal into two categories: **Ferrous and non-ferrous metals**

Ferrous metals means that it has a large amount of iron in it.
Non-ferrous metals type of metal, and alloys that don`t contain iron.

Plastic is a material made from synthetic or semi-synthetic fibers that can be shaped into solid forms. We divide them into two categories: **Thermoplastic and Thermosetting plastic.**

Thermoplastic becomes liquid when we heat it and becomes solid when it is cols.
Thermosetting plastic is a liquid or soft solid and when heated becomes a solid object.

Rubber is a stretchy and sticky material made from latex, which comes from rubber trees. We divide rubber into two categories: **Natural and Synthetic rubber.**

Natural rubber is obtained from the latex sap of trees. Found in nature.
Synthetic rubber is a type of rubber that is made from chemicals to act as a replacement for natural rubber.