

M1 Computer Science

Term 1 Final Exam – Short

1. Making decisions based on choices

Information is data that has meaning and is useful.

Data is raw facts, numbers, words, images and sounds that have no meaning. It is divided into two groups

- **Quantitative data** – data in form of numbers
- **Qualitative data** – data in form of text

A **source** of data is a place where we get our data. The source can be anything, for example people, animals, things, places, events...

Data processing means changing data into useful information. There are two types of processing:

- **Hand processing** – we use paper, pens and human force to process the data
- **Tool processing** – we use tools such as typewriters, calculators, computer... to process the data

Data processing has **3 main components**:

- **Input** – data that we have collected
- **Process** – processing of the data
- **Output** – the result of processing, which can also become input for another process

Making **decisions** is a basic activity in our daily life. A decision is a choice we make between two or more options

Different choices can lead to different results.

The decision-making process is as follows:

1. Understand the goal of the decision
2. Gather information and relevant knowledge
3. List the possible options
4. Check every option by using criteria
5. Decide on best option

2. Abstract Concepts

Abstract concept or **abstraction** is a choosing only the information we need to solve a problem. We focus on important information and ignore the unnecessary information.

Five steps of using abstraction:

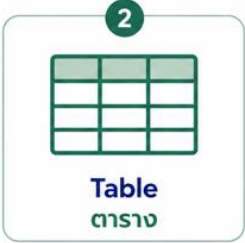
1. Read the question first
2. Understand the goal
3. Keep information that helps
4. Remove information that doesn't help
5. Organize and solve the problem

3. Organizing information

Organized information helps us:

1. Understand faster
2. Find patterns
3. Check mistakes
4. Explain carefully

We can show information as:

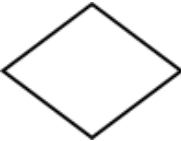
 List รายการ	 Table ตาราง	 Diagram แผนผัง
We use list when information is short, order matters and when we need simple steps	Tables help us compare, calculate and organize information clearly	Diagrams help us see places, connections and paths clearly

4. Flowcharts

A **flowchart** is a diagram that shows a process, system or computer algorithm in order

We use flowcharts to:

- See the steps clearly
- Find mistakes more easily
- Explain solutions to other people
- Prepare for computer programs

Start/End	Process	Decision	Data
			
Shows where the process begins or finishes.	Shows an action or task that needs to be done.	Shows a question or condition where the process can take different paths, such as Yes/No .	Shows information that is entered into or received from the process.