Flowcharts & Decision Tables

☰ Chapter No.	4
▼ Status	Completed

- An algorithm is a sequence of steps that can be carried out to perform a task

- ▼ Flowcharts
    - A flowchart is a common way of visually representing an algorithm
    - ▼ 4 Standard Symbols Used in Flowcharts
        - ▼ Terminator
            - Rectangle with rounded corners
            - Represents the beginning or end of a set of steps, and usually contains either the START or STOP command
        - ▼ Data
            - Parallelogram
            - Represents the step of either receiving input data from outside the algorithm using the INPUT command or producing output from within the algorithm using the OUTPUT command
        - ▼ Decision
            - Diamond
            - Represents a step involving a question
            - The outgoing arrows represent the possible outcomes to the question and are usually labelled "Yes" and "No"
            - Only one of these outgoing arrows should be followed when performing the algorithm
        - ▼ Process
            - Rectangle

        - Represents a step involving an action or operation
        - Usually involves changing the value of a variable or performing more complex actions

    ▼ 4 Rules Adhered to By Flowcharts

    1. A flowchart must start with one terminator symbol and end with one terminator symbol.
    2. The data symbol must have one entry point and one exit point.
    3. The decision symbol must have one entry point but may have more than one exit point.
    4. The flow lines should not cross one another

▼ Decision Tables

- A decision table is a visual way to model logic
- Possible combinations of conditions are considered before deciding on the final action required
- The '-' symbol is used when the condition can be either true or false and the action will be the same
- To check for redundancies, we inspect every action and check if all the conditions are required for that action to take place

▼ Example of Decision Table

▼ With All Possible Conditions

Serving NS

Aa - 9	- 7	-	- 6	- 5	- 8	- 2	- 1	- 4	- 3
Conditions	Male	Y	Y	Y	Y	N	N	N	N
Conditions	SGP/PR	Y	Y	N	N	N	N	Y	Y
Conditions	Healthy	Y	N	Y	N	N	Y	N	Y
Actions	Serve NS	✓							
Actions	Don't Serve NS		✓	✓	✓	✓	✓	✓	✓

▼ Simplified (No Redundancies)

Serving NS (No Redundancies)

Aa - 5	- 3	-	- 2	- 1	- 4
Conditions	Male	Y	N	-	-
Conditions	SGP/PR	Y	-	N	-
Conditions	Healthy	Y	-	-	N
Actions	Serve NS	✓			
Actions	Don't Serve NS		✓	✓	✓

- Decision tables are used to analyse situations where the conditions and actions are more complex
- They can be also be used to define outputs dependent on inputs, and are hence useful for program testing