

# 8

## Foundations of Coding – Mastering the Basics



### LEARNING OUTCOMES

At the end of the chapter, students will be able to:

- ▶ Understand coding and programming
- ▶ Identify the steps involved in coding
- ▶ Define algorithm
- ▶ Explain the characteristics of an algorithms
- ▶ Outline the disadvantages of algorithms
- ▶ Define flowchart
- ▶ Differentiates between advantages and disadvantages of flowcharts
- ▶ Identify the symbols in flowchart
- ▶ Write algorithm and designing flowcharts

### CHAPTER NOTES

- ▶ Programming is the process of writing instructions in a programming language to create an application.
- ▶ Each language has its own syntax, rules, and capabilities, but the fundamental principles of coding remain consistent across languages.
- ▶ The steps involved in designing a program are: problem definition, algorithm design, writing code, compilation/interpretation, testing and debugging, documentation, maintenance and updates.
- ▶ Algorithms provide systematic and reliable instructions to solve problems efficiently and accurately.
- ▶ Complex algorithms can be difficult to design and understand, leading to potential errors and inefficiencies in problem-solving.
- ▶ Successful algorithm development requires careful planning, testing, and ongoing evaluation.
- ▶ A flowchart is a graphical representation of a process, algorithm, or workflow.
- ▶ Flowcharts visually simplify complex processes, making it easier to understand and communicate the sequence of steps and decisions in an algorithm or system.
- ▶ Flowcharts can become overly complex and hard to follow for intricate processes, potentially causing confusion and hindering clear communication.
- ▶ Flowcharts use symbols like rectangles for processes, diamonds for decisions, and arrows for connecting steps to represent and illustrate the sequence of actions and choices in a process.