

Section 09.1 - Computational Thinking Skills

Layer 6: High-Order Language

Syllabus Content Section 09: Algorithm Design and Problem Solving

S09.1.1 Show an understanding of abstraction ▾

- Need for and benefits of using abstraction
- Describe the purpose of abstraction,
- Produce an abstract model of a system by only including essential details

Abstraction: Look at a complex problem, and Filter out / Remove information that is not required to solve the problem.
Abstraction gives us the power to deal with complexity

| steps of abstraction

- Problem Definition
- Identify the inputs and outputs of our solution
- Identify the main components of our problem
- Identify potential for code reusability by
 - Using existing libraries,
 - Defining functions and procedures,
 - Using Object Oriented concepts such as the use of Classes and objects.
- Design the programming algorithms

S09.1.2 Describe and use decomposition ▾

- Break down problems into sub-problems leading to the concept of a program module (procedure / function)
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Decomposition: Breaking down your task into smaller tasks, Used to explain a process more clearly, Leads to structured programming (using procedures and functions)