

COMPUTATIONAL PROBLEM SOLVING

BY

MRS. DEVI MANO
ASSISTANT PROFESSOR

Unit 1

The Process of Computational Problem Solving

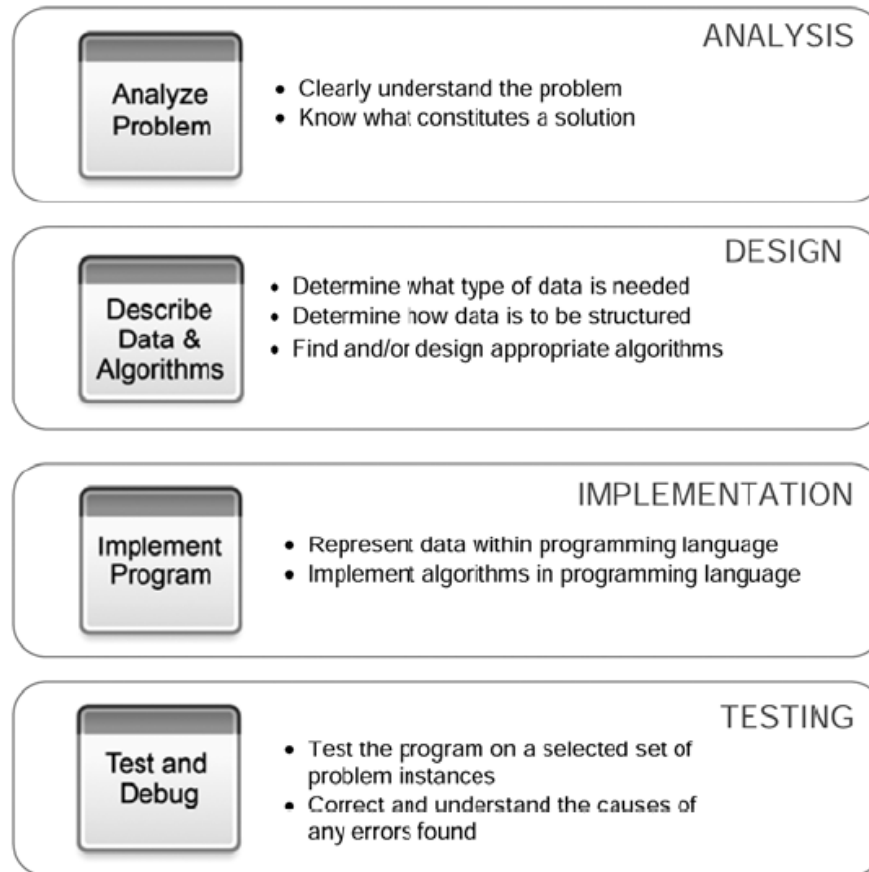


FIGURE 1-22 Process of Computational Problem Solving

Problem Analysis

- **Understanding the Problem**
- **Knowing What Constitutes a Solution**
 - *A solution*
 - *An approximate solution*
 - *A best solution*
 - *All solutions*

Program Design

- **Describing the Data Needed**

- man, cabbage, goat, and wolf

man cabbage goat wolf

[W, E, W, E]

- **Describing the Needed Algorithms**

- Algorithms that work well in general but are not guaranteed to give the correct result for each specific problem are called heuristic algorithms

- Design decisions provide *general details of the data representation* and the algorithmic approaches for solving a problem.

Program Implementation



- specifying which programming language to use, or how to implement the program.

Program Testing



1. Programming errors are pervasive, persistent, and inevitable.
2. Software testing is an essential part of software development.
3. Any changes made in correcting a programming error should be fully understood as to why the changes correct the detected error.

FIGURE 1-25 Truisms of Software Development