

- **Decomposition**
- **Abstraction**

Decomposition

- For large programs, monolithic structure is not reasonable.
- The program must be decomposed into small independent programs, called modules, that together provide the desired function.

How to decompose large programming problems into smaller ones ??

Goal of Decomposition

- **create modules that are themselves small programs that interact with one another in a simple, well-defined ways.**

When we decompose a problem:

Factor it into separate subproblems in such a way:

- Each subproblem is at the same level of detail
- Each subproblem can be solved independently
- The solutions to the subproblems can be combined to solve the original problem.

Abstraction

- way to do decomposition productively by changing the level of detail to be considered
- Abstracting and then decomposing...

Decomposition: used to break software into components

Abstractions: assist in making a good choice of components

Kinds of Abstractions

- Procedural abstractions
- Data abstractions
- Iteration abstractions
- Type hierarchy