

# DAC 0521 MET-M Writeup

## Programming Elements

Concept	Purpose	Support
Variables	Identifying Data	Data Types
Branching	Making Decisions	Control Structures
Procedures	Reusing Code	Parameterized Functions

## Programming Techniques

Concept	Purpose	Support
Modularization	Sharing Implementation	Calling Conventions
Abstraction	Hiding Implementation	User-defined Types
Polymorphism	Generalizing Implementation	Virtual Dispatch

Variable - It enables a program to identify some data of a particular type and to access or modify its current state (value). The value of a variable is stored in its own location within the program memory and this location is identified by its logical (effective) address which is determined using

1. Direct Addressing - The memory address (offset) of a value is linked to the symbolic name (label) given to its variable at the time of program implementation (coding). It provides a more efficient but less flexible (static) mechanism for referencing some data in the memory and it is used for supporting a global variable which is available to the entire program code.
2. Indirect Addressing (Indirection) - The memory address of a value is evaluated from an expression at the time of program execution (runtime). It provides a more flexible (dynamic) but less efficient mechanism for referencing some data in the memory and it is used for supporting an array which identifies multiple values of same size sequentially packed in the memory and a local variable which is only available to a subsection of program code.