FACULTY OF ENGINEERING & TECHNOLOGY

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Topics Covered

Data types
CLASSES OF DATATYPES

Data types

- A data type represents a type of the data which you can process using your computer program
- Below are some more examples and specifics for the various data types.
  - Numbers
  - Booleans (true or false)
  - Characters ('a', 'b', ... 'z', '1', '2', ... '9', '!', '^', etc)
  - Arrays (a lists of data (of the SAME TYPE!))
  - Structures are a way to create more complex "Data Types" than the basics.

CLASSES OF DATATYPES

- **Primitive data types**
  - Primitive data types are typically types that are built-in or basic to a language implementation
- **Machine data types**
  - All data in computers based on digital electronics is represented as bits (alternatives 0 and 1) on the lowest level
- **Boolean type**
  - The Boolean type represents the values true and false
- **Numeric types**
  - The integer data types, or "non-fractional numbers"
  - Floating point data types, usually represent values as high-precision fractional values
  - Fixed point data types are convenient for representing monetary values
  - Bignum or arbitrary precision numeric types lack predefined limits

CLASSES OF DATATYPES

- **Composite types**
  - Composite types are derived from more than one primitive type.
  - An array (also called vector, list, or sequence) stores a number of elements and provide random access to individual elements.
  - Record (also called tuple or struct) Records are among the simplest data structures
  - Union. A union type definition will specify which of a number of permitted primitive types may be stored in its instances,
  - A set is an abstract data structure that can store certain values, without any particular order, and no repeated values
  - An object contains a number of data fields, like a record, and also a number of subroutines for accessing or modifying them, called methods.

- **Enumerations**
  - The enumerated type has distinct values, which can be compared and assigned, but which do not necessarily have any particular concrete representation in the computer's memory; compilers and interpreters can represent them arbitrarily.