DATA TYPES

A data type is a set of objects and a set of operations on those objects which create, build-up, destroy, modify and pick apart instances of the objects.

OR

A data object is a class of data objects together with a set of operations for creating and manipulating them.

A programming Languages necessarily deals more commonly with data types Such as the class of arrays, integers, or file and the operations provided for manipulating, arrays, integers or files.

Eg:-

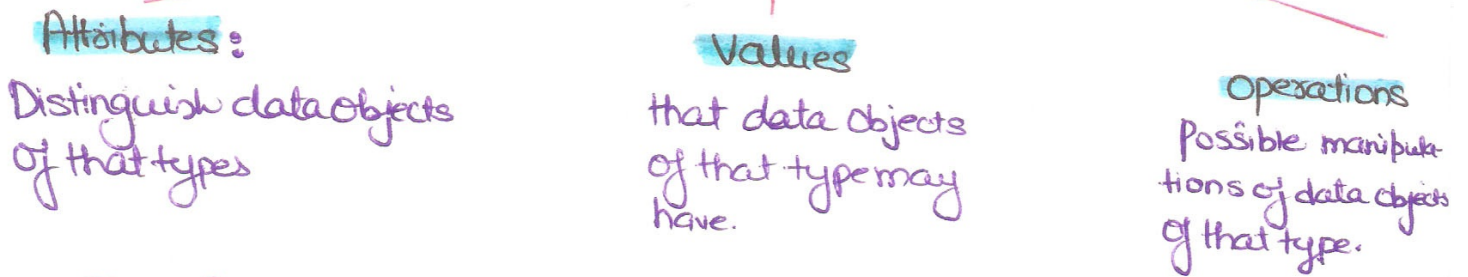**In LISP** major data type is the binary tree (called an S-expression) and basic operations are CAR, CDR, and CONS.

FORTRAN 77	ALGIOL	Pascal	Ada
INTEGER	integer	integer	INTEGER
REAL	real	real	FLOAT
LOGICAL	Boolean	Boolean	BOOLEAN
CHARACTER		Char	CHARACTER
DOUBLE PRECISION			
COMPLEX			

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The basic elements of a ==specification== of a data types

Attributes:
Distinguish data objects of that types

Values
that data objects of that type may have.

Operations
Possible manipulations of data objects of that type.

Eg:- Array data type

==Attribute== :- • Numbers of dimensions
• the Subscript range for each dimension and
• the data type of Components

Value : • It would be sets of numbers that form valid values for array components.

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Operations : • It may include Subscripting to select individual array Components
○ Create Arrays,
○ Change their Shape
○ Performing arithmetic on pairs of arrays.

The basic elements of the implementation of a data types:-
1. ==Storage representation== : It is used to represent the data Objects of the data type in the Storage of the Computer during program execution.

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2. **Algorithms or procedures :** The manner in which the operations defined for the data type are represented in terms of particular algorithms or procedures that manipulates the choosen storage representation of the data objects.