

- Declaration
- Initialisation
- Assignment
- Operator/operation
- Identifier
- Literals
- Constant
- Constructs

DECLARATION: It's an instruction for the computer to find enough space, as per the data type, reserve that space, lock it, find its address and map that address to given name.

E.g: DECLARE a : INTEGER
DECLARE studentName: STRING
DECLARE stuFee: CURRENCY.

INITIALISATION: When a variable is declared, it reserves some space already in it, which is leftover of the previous program in that very space. This data is unwanted and not required as it is garbage for us. So, to get this garbage cleaned or value is assigned for the very first time. This act of assigning a value to the newly created (declared) variable is called "Initialisation".

E.g: a ← 0, a = 0

Initialisation

Default values:

Numbers:

INTEGER, REAL, CURRENCY
They are initialised with zero (0).
 $a = 0$, $Count = 0$, $Total = 0$.

* Most important * Exception: If the variable is going to get involved in multiplication or division then this variable will be initialised with 1.
 $Speed = 1$
 $Distance = 1$
 $Time = 1$
 $Speed = distance / time$

Variables used for maximum/min values in programs, like Highest, Lowest, tallest, min, max etc, are initialised as follow:

Maximum side is initialised with -1000. Like:

Highest = -1000

fastest = -1000

maximum = -1000

Minimum side is initialised with 1000.

Lowest = 1000

slowest = 1000

minimum = 1000

Data Type

Initialisation

REAL Weight = 0.0
INTEGER Count = 0
CURRENCY Price = 0.0 } * Most important

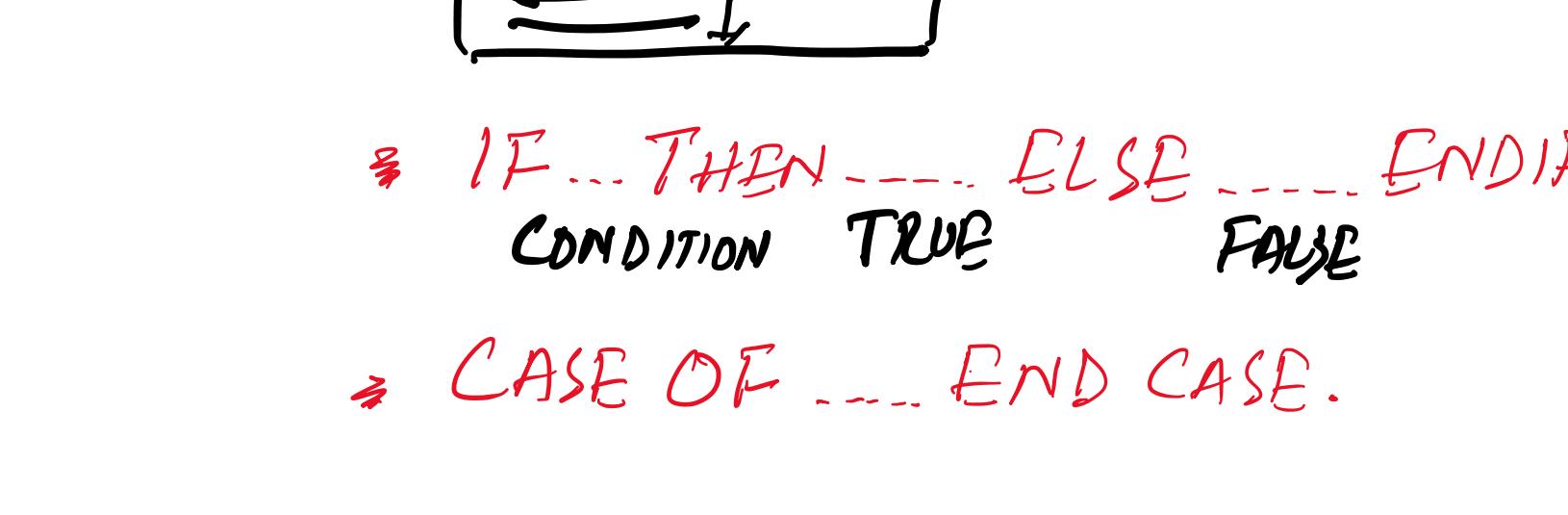
Character grade = ""
String/Text SchoolName = "" } Null

Boolean graduated = #False#

Date & time variables are NOT INITIALISED.
If there is a requirement then current date & time are used for initialisation values.

Assignment

Assignment operator



$x = 1$ ✓ Correct
 $1 = x$ ✗ Incorrect

$a \leftarrow 9$

$name \leftarrow "ZAFAR"$

Identifier: It is any name chosen for a program, variable, constant, array etc.

Naming Conventions

Rules for choosing identifier

1. Identifier can only have digits, alphabets & an underscore.

2. Identifier can't start with a digit.

3. No special symbols or spaces are allowed.

4. No keywords are allowed, Like: IF, INTEGER, FOR, STRING etc.

5. An identifier can't be greater than 255 characters.

myName ✓

thisSchool ✗

your-age ✓

Experience ✓

Name# ✗

1Army ✗

Student3 ✓

4Grade ✗

Email-Address ✗

Literals: These are the values being assigned to the identifiers. E.g: $a \leftarrow 0$, my-Name $\leftarrow "Azhar"$, graduated $\leftarrow \#False\#$

Constant: CONSTANT pi $\leftarrow 3.142$
CONSTANT taxRate $\leftarrow 21.35$

These identifiers don't change during the execution of program. If it is tried to change then system gives an error.

Constructs:

SEQUENCE

SELECTION / DECISION

IF ... THEN ... ELSE ... ENDIF

CONDITION TRUE FALSE

CASE OF ... END CASE.

- Iteration /

- Repetition /

- Loop

- FOR ... NEXT

- WHILE ... END WHILE

- REPEAT ... UNTIL

Diagram illustrating constructs:

Programs are designed using common building blocks known as constructs. These programming constructs form basis of all programs.

There are 3 basic building blocks or constructs:

- Sequence: it is the order in which instructions occur and are processed.

- Selection: it determines which path a program takes when it is running.

- Iteration: it is repeated execution of a section of code when program is running.

There are two types of iterations:

- Definite iteration; also known as count-based loops.

E.g: FOR ... NEXT

- Indefinite iteration; also known as condition-based loops.

E.g: WHILE ... END WHILE

- REPEAT ... UNTIL