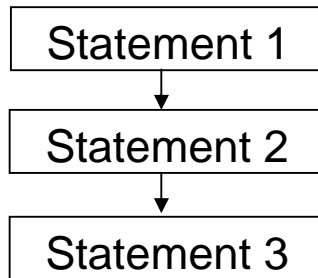# Chapter - 5
Visual Basic Control Structures

CONTROL FLOW
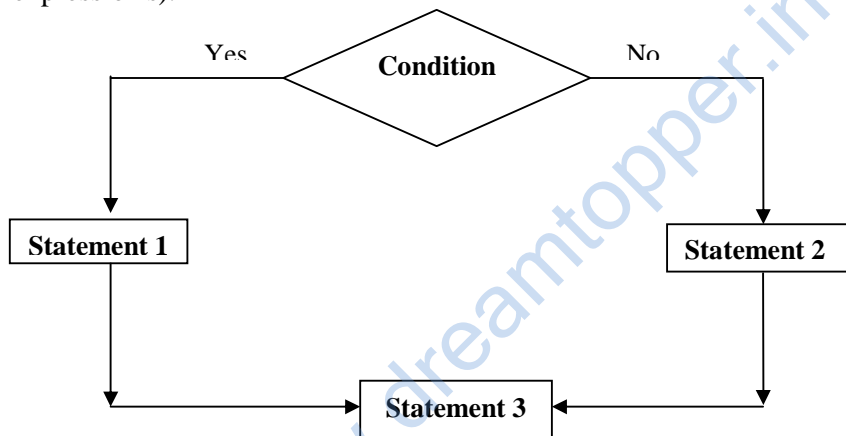
1) SEQUENTIAL:

It means the statements are being executed sequentially. This represents default flow of statements.

```
Statement 1
   ↓
Statement 2
   ↓
Statement 3
```
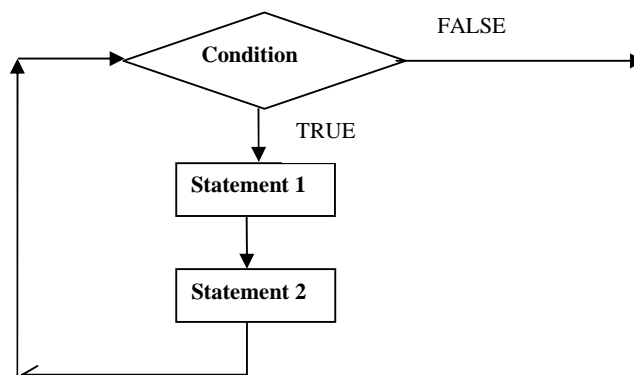
2) SELECTION (Decision construct)

Selection construct select their course of action depending upon the result of a condition's) or Boolean expression's).

```
            Yes      ◇ Condition ◇      No
             ┌──────────────────────────┐
        Statement 1                 Statement 2
             └──────── Statement 3 ───────┘
```

3) ITERATION (Repetition)/ Looping :

Iteration means repetition of a set-of-statement depending upon a condition test. A loop is a set of statements that are repeated a certain number of times. The block of statements written in between the loop gets executed as many number of times as the user wants

```
        ◇ Condition ◇ ──── FALSE ────→
              │ TRUE
         Statement 1
              ↓
         Statement 2
```

Rules for using Iteration: The 3 steps involve in a loop are:

- Initialization   - of counter variable
- Test condition   - for testing the value of the counter variable
- Updation   - Increase/decrease the value of counter variable

Two Forms of <u>SELECTION CONSTRUCT</u> -

- ✓ **Two Way Branching**
  IF Statement
  - o **If …. Then ….. End If**
  - o **If …. Then ... Else …. End If**
  - o **Nested If**
  - o **If…. Then …. Else If …. End IF**
  - o **IIF (exp1, <true>, <false>)**

- ✓ **Multi Way Branching**
  Select Case : It can be used with the following 3 forms:
  - ➢ **Exact Match**
  - ➢ **A Relational Case Match**
  - ➢ **A Range of Case Match**

Various Forms of <u>LOOPING CONSTRUCT</u> –

- ▪ **Entry controlled / Pre tested / Top tested Loops :**
  Condition is tested first then if it is true the body of loop executes.
  <u>*NOTE:*</u> *This type of loops executed for zero or more times.*

  - o While ….. Wend
  - o Do while ….. Loop
  - o Do Until ….. Loop
  - o For …… Next

- ▪ **Exit controlled / Post tested / Bottom tested Loops :**
  Body of loop executed once and then condition is tested, if it is true body of loop continues.
  <u>*NOTE:*</u> *This type of loops executed at least once.*

  - o Do ….. Loop While
  - o Do ….. Loop Until

- ▪ For Each ….. Next

<u>ARRAY:</u> Arrays is a group of homogenous elements.
- • An array is a collection of variables of the <u>same data type</u> that are referenced by a common name.

Arrays are of Two Types:

1) Fixed / Static size Array: Those arrays in which the no. of elements is fixed and does not vary.
2) Dynamic size Array : Dynamic arrays are those arrays whose no. of elements can be varied.
Declaration of Array:
    Fixed size   -   Dim ArrayName(size) as DataType Eg: Dim arr(4) as Integer
    Dynamic size -   Dim ArrayName( ) as DataType   Eg: Dim arr1( ) as Integer

Zero – based and One – based Indexing :

If an array is declared as arr(4) it means we count these element from 0 to 4 ie. 5 elements, so this is known as Zero – based Indexing.
And if an array is declared as arr(1 to 5) it means we count these element from 1 to 5 ie. 5 elements, so this is known as One – based Indexing.

* * *