

CHAPTER 3: Class X CONTROL STRUCTURE

4. Define control structure. How many control structures are available in BASIC, discuss briefly.

Ans: Control structures are used to control the flow of a program. There are three types of Control Structures.

- (a). Sequence (b). Selection (c). Loop structure

In Sequence Structure instructions are executed according to the increment order of line numbers. eg 10,20,30

Selection Structure: (IF THEN) OR (IF THEN ELSE)

It is used to select alternate program instructions to execute. IFTHEN, and IFTHEN.....ELSE statements are used to implement the *selection structure*.

Loop (FORNEXT) and (WHILE WEND): Loop structure is used to repeat the set of instructions up to **fixed number of times** or until given **condition is satisfied**. There are two types of loops **Counter & Controlled** loop structures.

5. Define Nested Loop. Write Syntax of FOR...NEXT & WHILE...WEND loop with the help of examples

Ans: A loop within another loop is called nested loop.

Syntax:	FOR variable = x TO y [STEP z] Statements ... NEXT [Variable]	WHILE expression Statements ... WEND	
Example:	10 FOR K = 1 TO 100 STEP 2 20 PRINT K 30 NEXT K 40 END	10 N = 1 20 WHILE N < 100 30 PRINT N 40 N = N + 1	50 WEND 60 END

6. What does it mean by transfer of control? Describe conditional & unconditional transfer of control.

It means to jump from one part of the program to another, conditionally or unconditionally.

Unconditional Transfer of Control: GOTO statement is used for unconditional transfer of control.

It transfers the control to a specific line without any condition like GOTO 80. (It send control Line# 80)

Conditional Transfer of Control: (ON n GOTO): The conditional transfer of control causes the jump from **one part** of the program to **another** depending on a **certain condition**. E.g

10 INPUT "Enter 1-ADD, 2- SUB, 3-MULTIPLY"; n.	40 PRINT A + B : END
20 ON n GOTO 40,50,60	50 PRINT A – B : END
30 INPUT A : INPUT B	60 PRINT A × B : END

7. Differentiate WHILE...WEND and FOR...NEXT loop. Which one is better in a situation where you don't know the number of iteration prior to the execution of the loop?

FOR NEXT Loop

1. It is pre-test loop
2. Number of repetitions is known in advance.
3. Number of repetition depends on variable value.
4. It is called counter loop.

Exp:
10FOR A= 1 TO 10
20PRINT "PIPS"
30NEXT A
40END

WHILE – WEND Loop

- 1 It is post-test loop
- 2 Number of repetitions is not known in advance.
- 3 Number of repetition depends on a certain condition.
- 4 It is called controlled loop.

Exp:
10 A\$ = "Y"
20 WHILE A\$ = "Y"
30 PRINT "PIPS"
40 INPUT A\$
50 WEND

8. write a program to calculate the area of a triangle. The program should get the values for base and altitude of the triangle from the user, and display the result. [Area=1/2 x base x altitude]

10 CLS	40 AR = 1/2 * B * A
20 INPUT "Enter Value For Base" ; B	50 PRINT "AREA = " AR
30 INPUT "Enter Altitude " ; A	60 END

9. Write a program to calculate area and circumference of a circle. The program should get the radius of the circle from the user and display result. [Area=3.14xradius x radius, and circ = 2x3.14 x radius]

10 CLS	
20 INPUT "ENTER RADIUS"; R	50 PRINT "Area = ";AR
30 AR = 3.14 * R	60 PRINT "Radius = "; CI
40 CI = 2 * 3.14 * R	70 END

10. Write a program to print first ten odd numbers using WHILE...WEND loop.

```
10 CLS
20 ODN=1
30 WHILE ODN < 11
40   PRINT ODN
50   ODN = ODN + 2
60 WEND
70 END
```

11. Write a program to print the sum of squares of first five even numbers using FOR.NEXT LOOP

```
10 CLS
20 FOR N = 2 TO 10 STEP 2
30   PRINT N
30   SQ = SQ + N*N
40 NEXT
50 PRINT "SUM OF SQUARES OF 5 NUMBERS =" SQ
60 END
```

12. Program to find the larger of two numbers. The program should get the numbers from the user.

```
10 CLS
20 INPUT "ENTER 1ST NUMBER" ; N1
30 INPUT "ENTER 2ND NUMBER" ; N2
40 IF N1 > N2 THEN PRINT N1 "IS GREATER NO. " ELSE PRINT N2 "IS GREATER NO"
50 END
```

13. Write a program to print the table of a given number. The program should get the number from the user.

```
10 CLS
20 INPUT "ENTER ANY NUMBER"; N
30 FOR K = 1 TO 10
40 PRINT N "X" K "=" N*K
50 NEXT
60 END
```

14. Write a program that should accept obtained marks of a student in an examination. It should then calculate the percentage and assign a grade to the student.

```
10   10 CLS
11   20 INPUT "Enter Your Name"; NS
12   30 INPUT "Enter Your Roll No."; RN
13   40 INPUT "Enter you Class & Section "; CS
14   50 INPUT "Enter Comp Marks (100)"; CM
15   60 INPUT "Enter Phy Marks (100)"; PHM
16   70 INPUT "Enter Chem Marks(100)"; CHM
17   80 INPUT "Enter Math Marks(100)"; MATM
18   90 INPUT "Enter Eng Marks(150). "; ENGM
19   100 INPUT "Enter Urdu Marks(150)"; URDM
20   110 INPUT "Enter Isl Marks(75)"; ISM
21   120 INPUT "Enter P-Std Marks(75)"; PSTM
22   130 TMOBT= CM+ PHM+ CHM+ MATM+ ENGM+ URDM+ISM+PSTM
23   140 PTM = (TMOBT * 100) / 850
24   150 PRINT "TOTAL MARKS OBTAIN =" TMOBT
25   160 PRINT "PERCENTAGE MARKS ="PTM
26   170 IF PTM >= 80 THEN PRINT "GRADE A1"
27   180 IF PTM >=70 AND PTM < 80 THEN PRINT "GRADE A"
28   190 IF PTM >=60 AND PTM < 70 THEN PRINT "GRADE B"
29   200 IF PTM >=50 AND PTM < 60 THEN PRINT "GRADE C"
30   210 IF PTM >=40 AND PTM < 50 THEN PRINT "GRADE D"
31   220 IF PTM < 40
      THEN PRINT "GRADE F"
230   END
```