LESSON – 9 : LOOPING STATEMENTS

A. Fill in the blanks:

1. **Looping** means repeated execution of a set of statements in a program.

2. The **Counter** variable keeps track of the number of times a process is executed.

3. The control variable is assigned an **Initial** and **Final** value in FOR …NEXT statement.

4. FOR statement is always used along with the **NEXT** statement.

5. All the statements, which are to be executed in a loop, come in between **FOR…NEXT**

6. The **STEP** statement increments/decrements the value of the control variable.

B. State True or False:

1. Looping technique reduces the number of instructions. True

2. For statement increments the value of the control variable by one. False

3. The same control variable can be used in different loops. False

4. In Nested loop, the innermost loop will be executed first then the outer loop. True

5. There can be maximum of 9 loops within a loop. **True**

6. WEND clause is used with FOR statement. **False**

7. STEP value can never be negative. **False**

8. The condition in If...Then...Else statement is given by the relational operators. **True**

C. Application Based Questions:

1. Ritu is making a program using FOR...NEXT statement. She wants to give increment to the counter by the value 5 but she is not able to apply the clause. Which clause will you suggest to her to use with FOR...NEXT?

Ans. STEP 5

2. Raman's teacher asked him to name the variable, which keeps count of the number of repetitions performed in a loop but he is unable to recollect the same. Help Raman to answer this query.

Ans. Counter Variable/ Control Variable

3. The teacher asked Priya to make a program in QBasic and print the series 2, 5, 10, ..., 101. She wants that the program should run for 10 times. What logic will you suggest to her to apply to get the desired output.

Ans. FOR A = 1 TO 10
        B = A ^ 2 + 1

PRINT B

NEXT A

END

D. Multiple Choice Questions:

1. Which variable keeps track of the 'number of times' a particular instruction has been included in a loop?

Ans. (a) Control

2. Which value is optional and can either be positive or negative?

Ans. (b) Step

3. Which statement combines the initialization and checking steps of counters in a single statement?

Ans. (b) FOR

4. Which statement gives the increment to control variable and directs the program control back to FOR statement?

Ans. (a) Next

5. Which statement shifts the control back to the WHILE statement?

Ans. (b) Wend

E. Answer the following:

1. Explain the term looping.

Ans. Looping means repeated execution of a statement or a set of statements in a program.

2. Define the FOR...NEXT looping statement.

Ans. In FOR...NEXT looping statement the control variable is assigned an initial value and the final value with FOR statement. The Next statement increments the value of the control variable by one and transfers the control back to the FOR statement.

3. What is the use of STEP statement in FOR...NEXT?

Ans. By default, the NEXT statement increments the value of the control variable by 1, but we can increase or decrease the value as per our choice using STEP statement. STEP value is optional and can either be positive or negative.

4. What is nested loop?

Ans. The use of a loop statement within another loop statement is known as nested loop. The FOR...NEXT which lies outside or encloses the second FOR...NEXT statement is called Outer Loop. The one, which lies inside is called Inner Loop.

5. What is the difference between WHILE...WEND and DO UNTIL?

Ans. (i) WHILE.... WEND statement is executed repeatedly while a given condition remains true whereas DO UNTIL statement is executed till a given condition becomes true.

(ii) In WHILE.... WEND statement, first condition is checked, if condition is true then only loop is executed. In DO UNTIL statement, first a set of statements is executed then condition is checked whether to repeat the execution of loop again or stop.

6. Which variable stores the sum of the numbers entered during the execution of a loop?

Ans. Accumulator stores the sum of the numbers entered during the execution of a loop eg. Sum=Sum + N
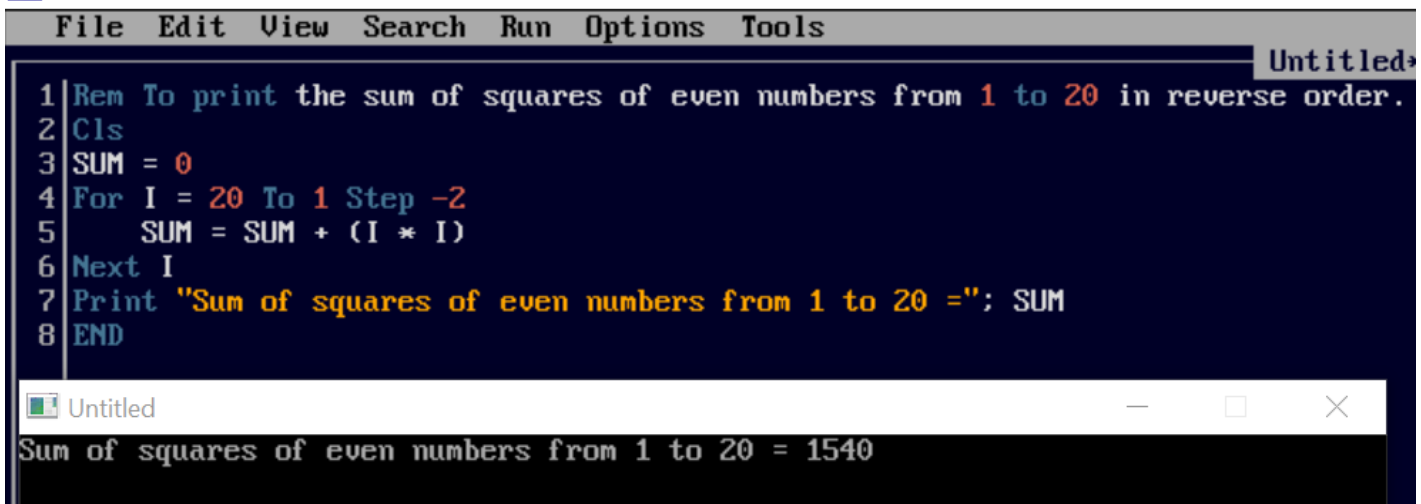
ACTIVITY SECTION

A. Make programs for the following statements.

1. To print the sum of squares of even numbers from 1 to 20 in reverse order.

Ans.

```
QB64 x64
File   Edit   View   Search   Run   Options   Tools
                                                        Untitled
1 Rem To print the sum of squares of even numbers from 1 to 20 in reverse order.
2 Cls
3 SUM = 0
4 For I = 20 To 1 Step -2
5     SUM = SUM + (I * I)
6 Next I
7 Print "Sum of squares of even numbers from 1 to 20 ="; SUM
8 END
```
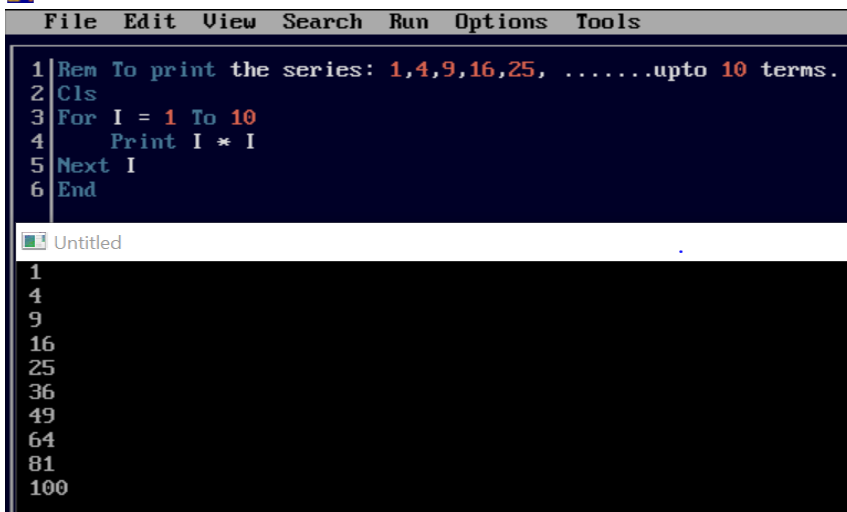
```
Untitled                                              —   □   ✕
Sum of squares of even numbers from 1 to 20 = 1540
```

2. To print the series: 1,4,9,16,25, ...upto 10 terms.

```
QB64 x64
File   Edit   View   Search   Run   Options   Tools
1 Rem To print the series: 1,4,9,16,25, .......upto 10 terms.
2 Cls
3 For I = 1 To 10
4     Print I * I
5 Next I
6 End
```

```
Untitled
1
4
9
16
25
36
49
64
81
100
```

3.To print first 10 multiples of 6,7 and 8.

```
File   Edit   View   Search   Run   Options   Tools

1 Rem To print first 10 multiples of 6,7 and 8.
2 Cls
3 For I = 6 To 8
4     For J = 1 To 10
5         Print I; "*"; J; "="; I * J
6     Next J
7 Next I
8 End
```
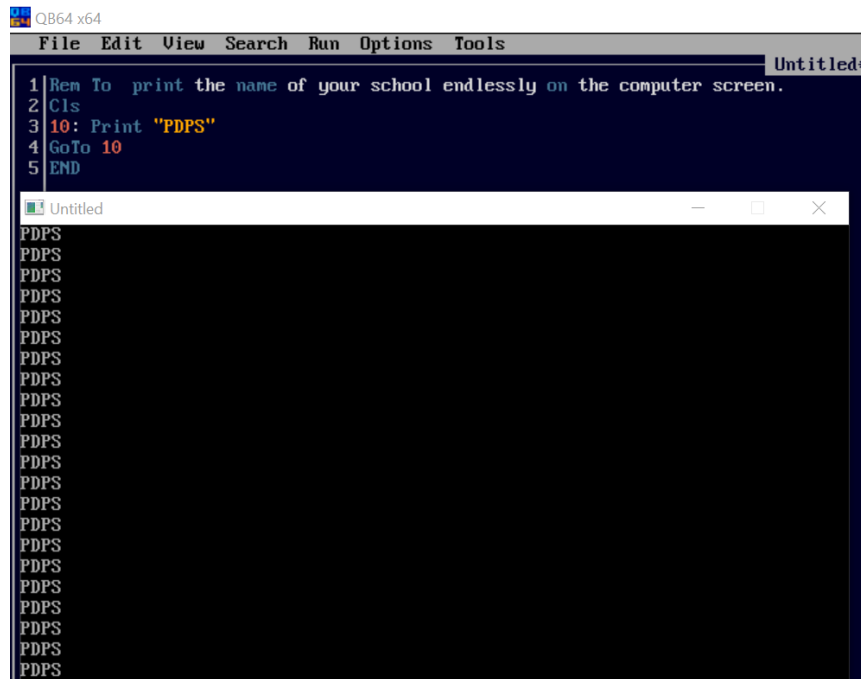
Untitled

```
6 * 8 = 48
6 * 9 = 54
6 * 10 = 60
7 * 1 = 7
7 * 2 = 14
7 * 3 = 21
7 * 4 = 28
7 * 5 = 35
7 * 6 = 42
7 * 7 = 49
7 * 8 = 56
7 * 9 = 63
7 * 10 = 70
8 * 1 = 8
8 * 2 = 16
8 * 3 = 24
8 * 4 = 32
8 * 5 = 40
8 * 6 = 48
8 * 7 = 56
8 * 8 = 64
8 * 9 = 72
8 * 10 = 80

Press any key to continue
```

Ans.

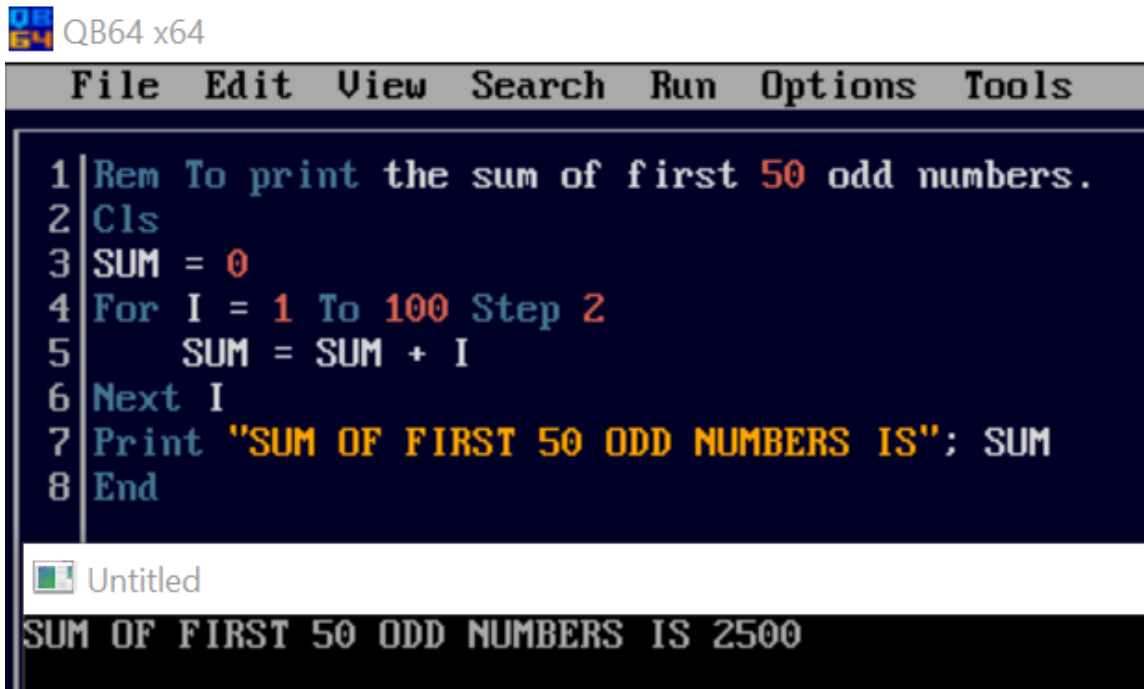# 4. To print the name of your school endlessly on the computer screen.

Ans.

```
QB64 x64
File  Edit  View  Search  Run  Options  Tools
                                                     Untitled*
1 Rem To  print the name of your school endlessly on the computer screen.
2 Cls
3 10: Print "PDPS"
4 GoTo 10
5 END
```

```
Untitled                                    —    □    ×
PDPS
PDPS
PDPS
PDPS
PDPS
PDPS
PDPS
PDPS
PDPS
PDPS
PDPS
PDPS
PDPS
PDPS
PDPS
PDPS
PDPS
PDPS
PDPS
PDPS
PDPS
```

5. To print the sum of first 50 odd numbers.

Ans.

```
QB64 x64
File    Edit    View    Search    Run    Options    Tools

1 Rem To print the sum of first 50 odd numbers.
2 Cls
3 SUM = 0
4 For I = 1 To 100 Step 2
5     SUM = SUM + I
6 Next I
7 Print "SUM OF FIRST 50 ODD NUMBERS IS"; SUM
8 End
```

```
Untitled
SUM OF FIRST 50 ODD NUMBERS IS 2500
```

6. To print report cards of 30 students of your class.

Ans.

File   Edit   View   Search   Run   Options   Tools

```
1 Rem To print report cards of 30 students of your class.
2 Cls
3 For I = 1 To 30
4     Print "REPORT CARD OF ROLL NO."; I
5 NEXT I
6 End
```

Untitled

```
REPORT CARD OF ROLL NO. 8
REPORT CARD OF ROLL NO. 9
REPORT CARD OF ROLL NO. 10
REPORT CARD OF ROLL NO. 11
REPORT CARD OF ROLL NO. 12
REPORT CARD OF ROLL NO. 13
REPORT CARD OF ROLL NO. 14
REPORT CARD OF ROLL NO. 15
REPORT CARD OF ROLL NO. 16
REPORT CARD OF ROLL NO. 17
REPORT CARD OF ROLL NO. 18
REPORT CARD OF ROLL NO. 19
REPORT CARD OF ROLL NO. 20
REPORT CARD OF ROLL NO. 21
REPORT CARD OF ROLL NO. 22
REPORT CARD OF ROLL NO. 23
REPORT CARD OF ROLL NO. 24
REPORT CARD OF ROLL NO. 25
REPORT CARD OF ROLL NO. 26
REPORT CARD OF ROLL NO. 27
REPORT CARD OF ROLL NO. 28
REPORT CARD OF ROLL NO. 29
REPORT CARD OF ROLL NO. 30

Press any key to continue
```