

## Lesson- 8: Graphics in QBasic

### **A. Fill in the blanks:**

1. Basic was designed by professor John G. Kemeny and Thomas E.Kurtz in 1964.
2. Input command allows us to enter information when the program is being executed.
3. A variable is a meaningful name of data storage location in computer memory.
4. IF....THEN statement is used to make decisions based on comparisons.
5. A string variable contains value, symbols or text within double quotes and is represented by an alphabet followed by dollar sign.
6. The line statement is used to draw a straight line.

### **B. State True or False**

1. The circle statement is used draw a circle. True
2. Play feature in QBasic is used to generate a movie. False
3. In high resolution mode, the computer screen is divided into 320\*200 pixels. False
4. BASIC stands for Beginners All Purpose Symbolic Instructions Code. True
5. Integer constants are only positive numbers. False
6. Draw statement works similar to Line statement. True

7. To draw vertical lines, y-axis co-ordinates will remain the same for both starting and ending points of the line. False

8. The background colour code for Gray colour is 7. True

### **C. Applications based questions**

1. Kareena wants to draw lines in eighth different directions but she is unable to do so. Suggest to her the command to perform this task.

Ans) screen 7

Color 4, 14

Cls

Pset(80,80)

Draw "U60D120U60"

Draw" E60G120E60"

Draw "R60L120R60"

Draw" F60H120F60"

END

2. Kabir wants to draw a box filled with colour using the Line statement but he is unable to recollect the keyword for making a filled box. Help him to finish this task.

Ans)

SCREEN 7

COLOR 5,15

LINE (60,60)-(130,100), 6, BF

END

3. The computer teacher has asked Swati to draw vertical line in QBasic. Which co-ordinate will you suggest to her to set the same for both starting and ending points of the line?

Ans. X-axis

#### **D. Multiple Choice Questions:**

1. The \_\_\_\_\_ statement, displays messages or output of a program.

Ans) print

2. We use \_\_\_\_\_ statements to draw lines, figures and patterns of different shapes.

Ans) Line

3. To draw a fill box, the letter \_\_\_\_\_ is used with co-ordinates.

Ans) BF

4. \_\_\_\_\_ statement is used to set the screen resolution

Ans) Screen

5. No graphics can be created in \_\_\_\_\_ mode.

Ans) Screen 0

### **E. Answer the following:**

1. What is the use of INPUT statement?

Ans) The input command is used to enter values ( text, number) while the program is being executed. This command waits for the user to enter information and then assigns the values accordingly.

2. What is the difference between IF...THEN and IF...THEN...ELSE statements?

Ans) If...then statement is used to make decisions based on the results of comparisons while IF...THEN.... ELSE is a conditional decision-making statement. If the condition given after IF is true, statements specified after THEN is executed. But if the condition is false, the statements specified after ELSE will be executed.

3. What do you understand by the term Screen modes?

Ans) There are many screen modes that can be used in QBasic. Every mode has a different resolution and supports different number of colours.

For example, screen 1 supports 4 colours and screen 2 supports 2 colours.

4. What is the difference between B and BF options used with Line statement?

Ans) B indicates the box option and BF indicates the box filled option.

5. How can we draw a rectangle? Explain with an example.

Ans) We can draw rectangle using line statement.

Screen 7

Color 5, 15

Cls

Line (60, 60) -(130,100),6, B

END

6. What is the use of PSET statement?

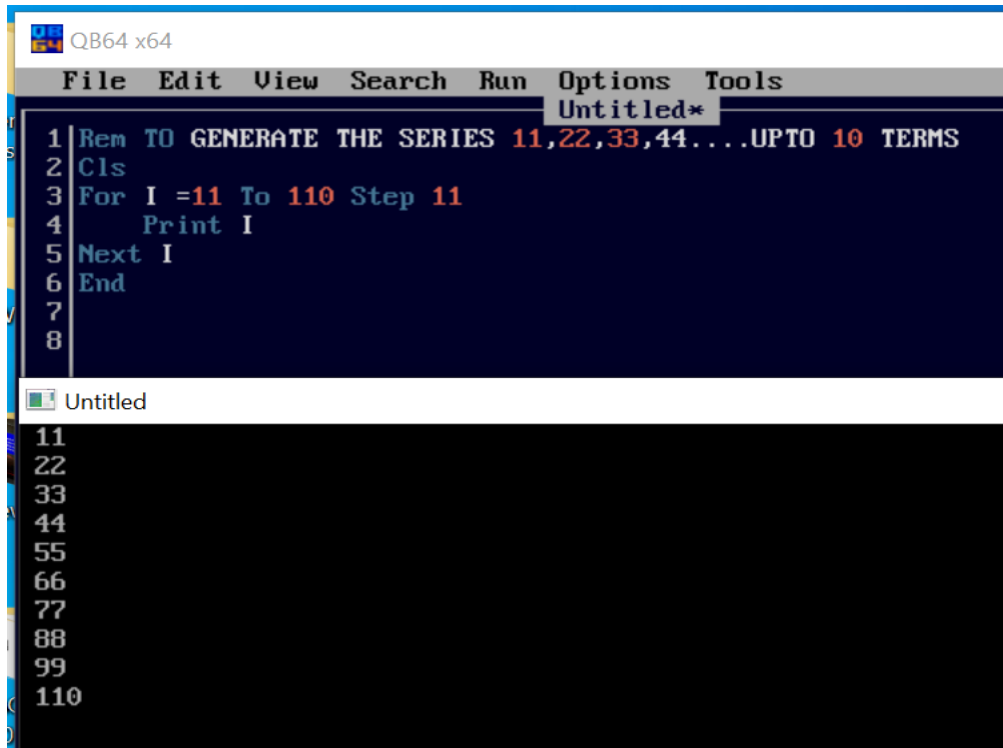
Ans) to set a point from where a particular drawing should start on the screen, PSET statement is used, PSET (X, Y), C, where X refers to column and Y refers to row coordinate and C refers to colour code.

### **ACTIVITY SECTION**

**A. WRITE PROGRAMS TO GENERATE THE FOLLOWING SERIES:**

**(I) 11,22,33,44.....UPTO 10 TERMS.**

Ans. (i) Generating the series 11,22,33,44.....upto 10 terms using For ... Next statement.



```
QB64 x64
File Edit View Search Run Options Tools
Untitled*
1 Rem TO GENERATE THE SERIES 11,22,33,44....UPTO 10 TERMS
2 Cls
3 For I =11 To 110 Step 11
4   Print I
5 Next I
6 End
7
8

Untitled
11
22
33
44
55
66
77
88
99
110
```

---

(ii) Generating the series 11, 22, 33, 44.....upto 10 terms using While...wend.

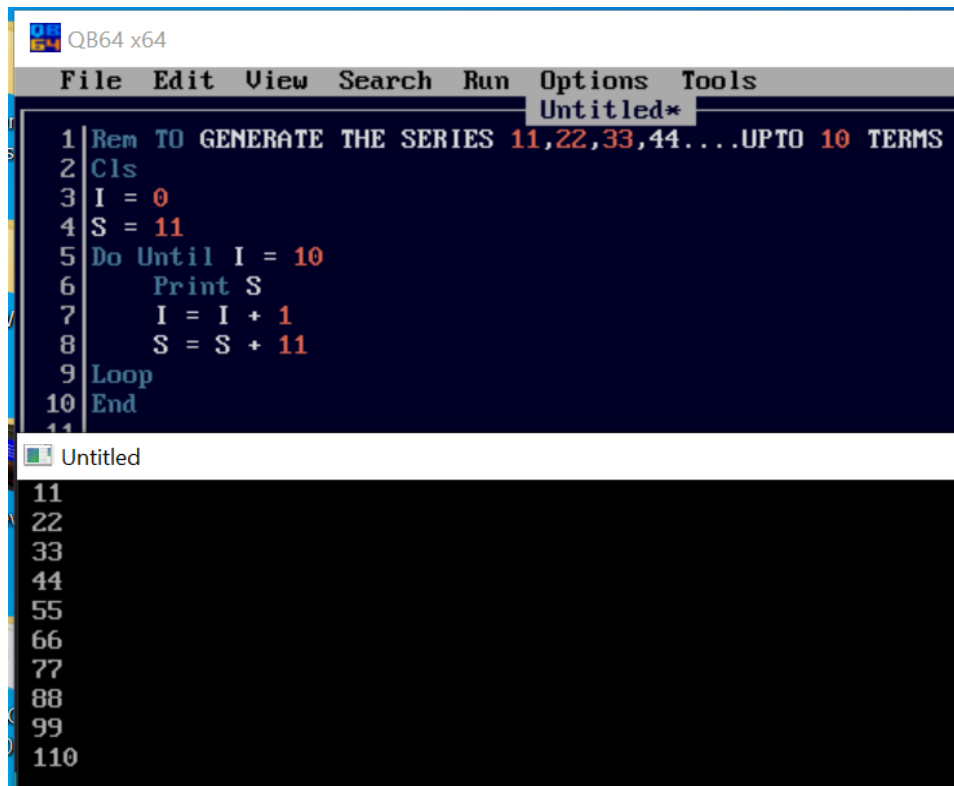
The screenshot shows a QB64 x64 IDE window with a menu bar (File, Edit, View, Search, Run, Options, Tools) and a title bar (QB64 x64). The main window is titled 'Untitled\*' and contains the following BASIC code:

```
1 Rem TO GENERATE THE SERIES 11,22,33,44....UPTO 10 TERMS
2 Cls
3 I = 0
4 S = 11
5 While I < 10
6   Print S
7   I=I+1
8   S = S + 11
9 Wend
10 End
```

Below the code editor, there is a separate window titled 'Untitled' showing the output of the program:

```
11
22
33
44
55
66
77
88
99
110
```

(iii) Generating the series 11, 22, 33, 44.....upto 10 terms using Do Until.....Loop.



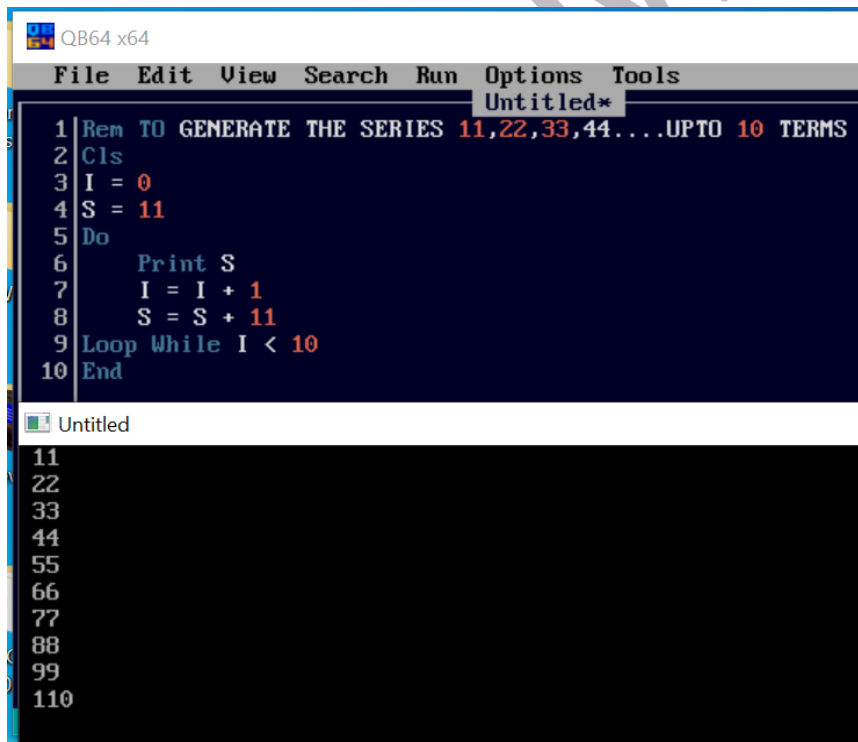
QB64 x64

```
File Edit View Search Run Options Tools
Untitled*
1 Rem TO GENERATE THE SERIES 11,22,33,44....UPTO 10 TERMS
2 Cls
3 I = 0
4 S = 11
5 Do Until I = 10
6     Print S
7     I = I + 1
8     S = S + 11
9 Loop
10 End
```

Untitled

```
11
22
33
44
55
66
77
88
99
110
```

(iv) Generating the series 11, 22, 33, 44.....upto 10 terms using Do.... Loop While statement.



QB64 x64

```
File Edit View Search Run Options Tools
Untitled*
1 Rem TO GENERATE THE SERIES 11,22,33,44....UPTO 10 TERMS
2 Cls
3 I = 0
4 S = 11
5 Do
6     Print S
7     I = I + 1
8     S = S + 11
9 Loop While I < 10
10 End
```

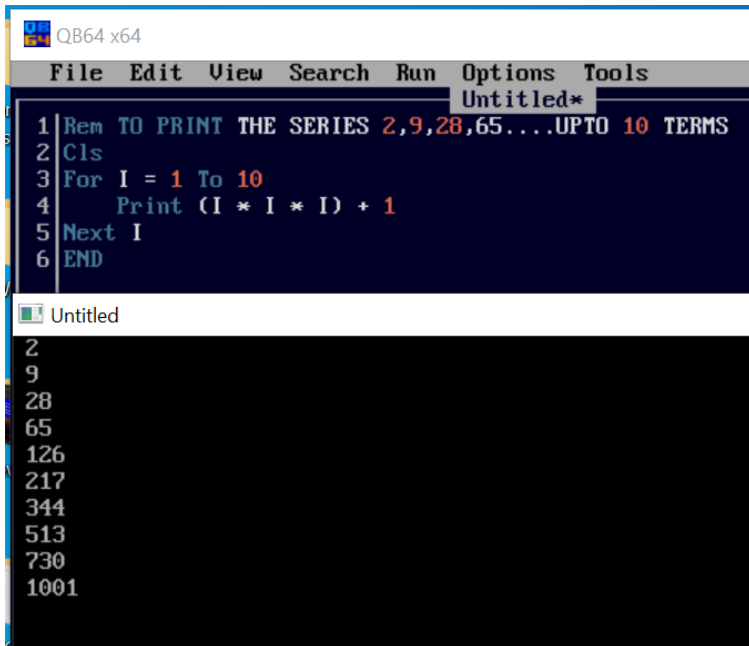
Untitled

```
11
22
33
44
55
66
77
88
99
110
```



(II) 2, 9, 28, 65..... upto 10 terms.

Ans. (i) Generating the series 2, 9, 28, 65..... upto 10 terms using For ... Next statement.

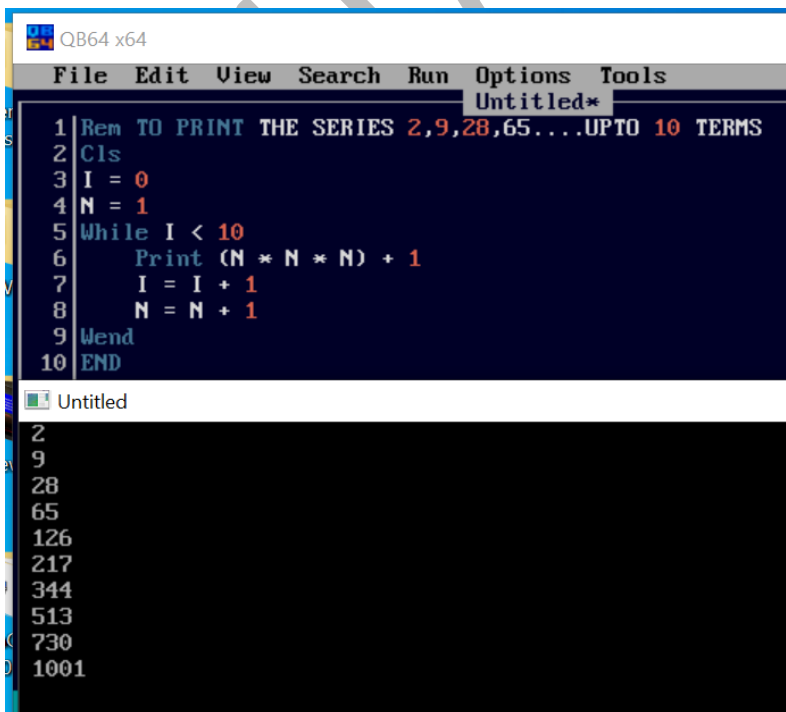


```
QB64 x64
File Edit View Search Run Options Tools
Untitled*
1 Rem TO PRINT THE SERIES 2,9,28,65...UPTO 10 TERMS
2 Cls
3 For I = 1 To 10
4     Print (I * I * I) + 1
5 Next I
6 END
```

Untitled

```
2
9
28
65
126
217
344
513
730
1001
```

(ii) Generating the series 2, 9, 28, 65..... upto 10 terms using While.....WEND.

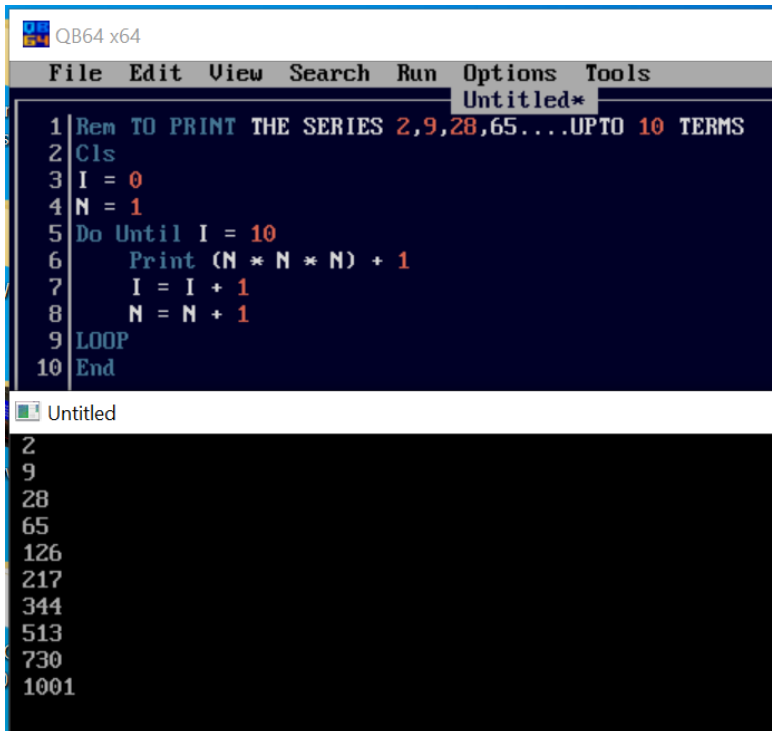


```
QB64 x64
File Edit View Search Run Options Tools
Untitled*
1 Rem TO PRINT THE SERIES 2,9,28,65...UPTO 10 TERMS
2 Cls
3 I = 0
4 N = 1
5 While I < 10
6     Print (N * N * N) + 1
7     I = I + 1
8     N = N + 1
9 Wend
10 END
```

Untitled

```
2
9
28
65
126
217
344
513
730
1001
```

(iii) Generating the series 2, 9, 28, 65..... upto 10 terms using Do Until....Loop.

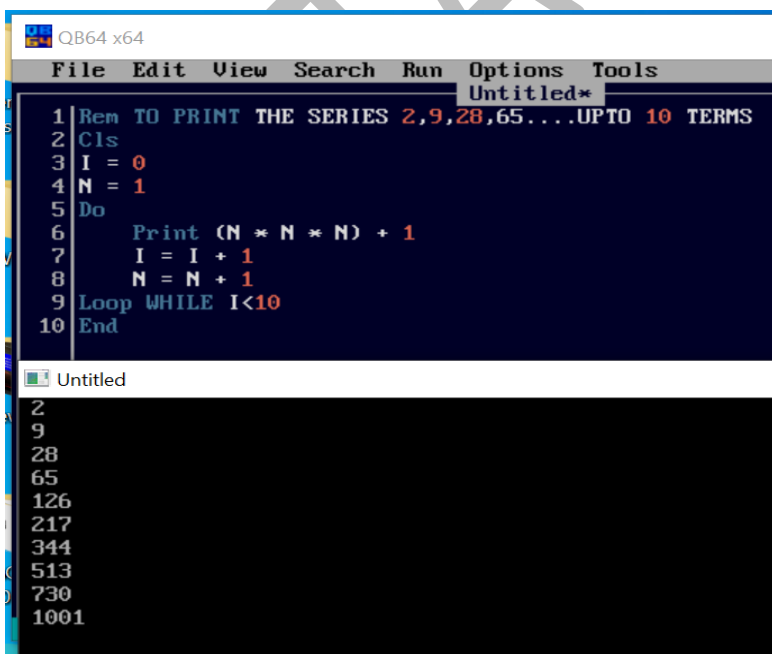


```
1 Rem TO PRINT THE SERIES 2,9,28,65....UPTO 10 TERMS
2 Cls
3 I = 0
4 N = 1
5 Do Until I = 10
6     Print (N * N * N) + 1
7     I = I + 1
8     N = N + 1
9 Loop
10 End
```

Untitled

2  
9  
28  
65  
126  
217  
344  
513  
730  
1001

(iv) Generating the series 2, 9, 28, 65..... upto 10 terms using Do....Loop While statement.



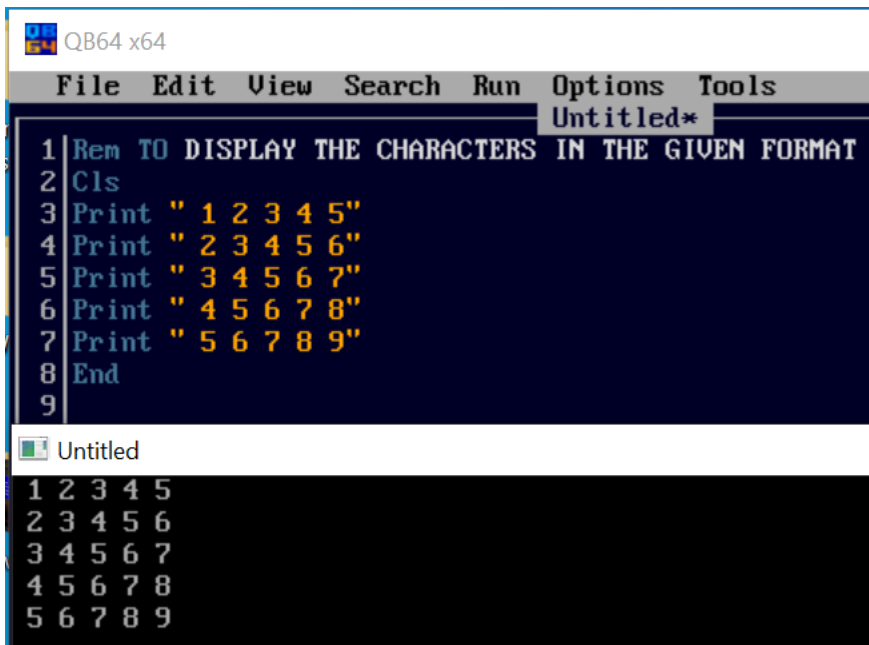
```
1 Rem TO PRINT THE SERIES 2,9,28,65....UPTO 10 TERMS
2 Cls
3 I = 0
4 N = 1
5 Do
6     Print (N * N * N) + 1
7     I = I + 1
8     N = N + 1
9 Loop While I < 10
10 End
```

Untitled

2  
9  
28  
65  
126  
217  
344  
513  
730  
1001

B. Write programs to display the characters in the given format:

(i)



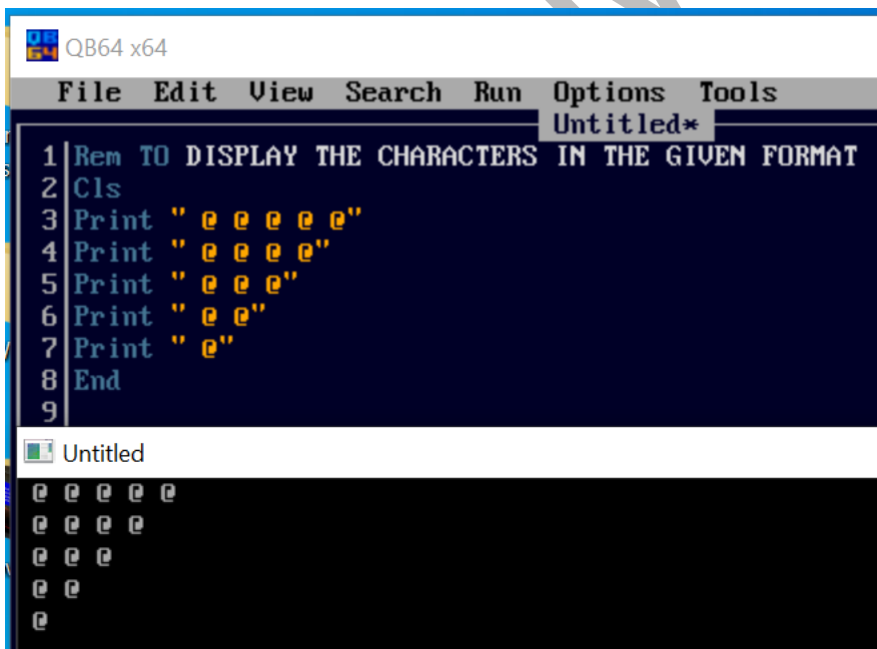
The image shows a QB64 x64 IDE window with a menu bar (File, Edit, View, Search, Run, Options, Tools) and a title bar (QB64 x64). The main window displays a BASIC program in a dark blue editor. The program is as follows:

```
1 Rem TO DISPLAY THE CHARACTERS IN THE GIVEN FORMAT
2 Cls
3 Print " 1 2 3 4 5"
4 Print " 2 3 4 5 6"
5 Print " 3 4 5 6 7"
6 Print " 4 5 6 7 8"
7 Print " 5 6 7 8 9"
8 End
9
```

Below the editor, a console window titled "Untitled" shows the output of the program:

```
1 2 3 4 5
2 3 4 5 6
3 4 5 6 7
4 5 6 7 8
5 6 7 8 9
```

(ii)



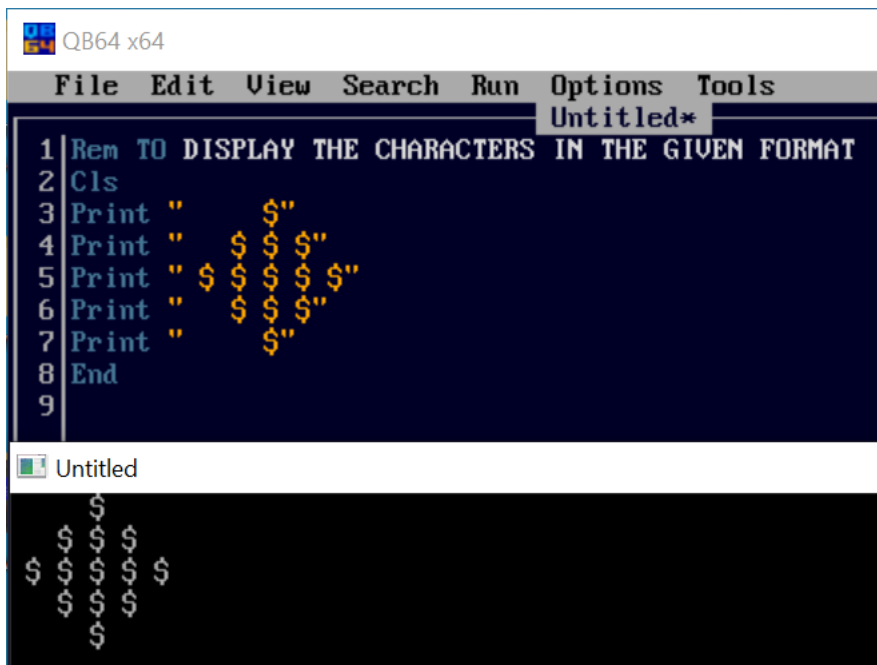
The image shows a QB64 x64 IDE window with a menu bar (File, Edit, View, Search, Run, Options, Tools) and a title bar (QB64 x64). The main window displays a BASIC program in a dark blue editor. The program is as follows:

```
1 Rem TO DISPLAY THE CHARACTERS IN THE GIVEN FORMAT
2 Cls
3 Print " @ @ @ @ @ "
4 Print " @ @ @ @ "
5 Print " @ @ @ "
6 Print " @ @ "
7 Print " @ "
8 End
9
```

Below the editor, a console window titled "Untitled" shows the output of the program:

```
@ @ @ @ @
@ @ @ @
@ @ @
@ @
@
```

(iii)



A screenshot of the QB64 x64 IDE. The menu bar includes File, Edit, View, Search, Run, Options, and Tools. The window title is 'Untitled\*'. The code editor contains the following lines:

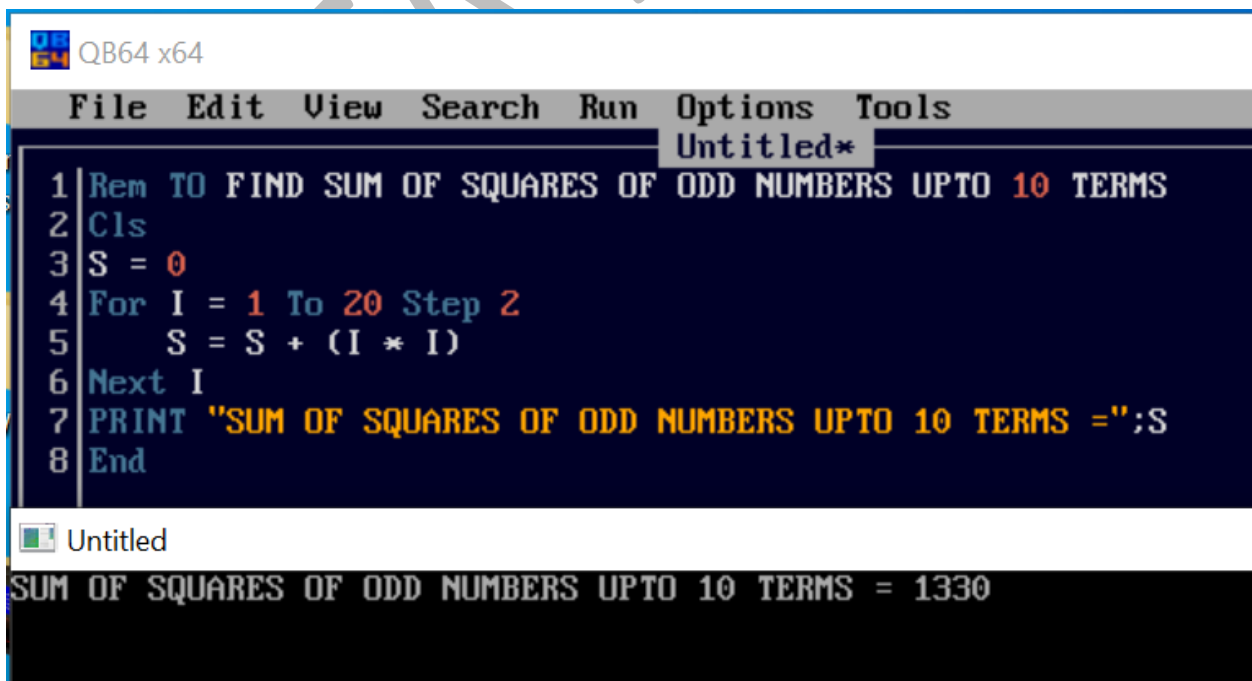
```
1 Rem TO DISPLAY THE CHARACTERS IN THE GIVEN FORMAT
2 Cls
3 Print "      $"
4 Print "    $$$$"
5 Print "  $$$$$$"
6 Print " $$$$$$"
7 Print "  $"
8 End
9
```

The output window shows the result of the program:

```
      $
    $$$$
  $$$$$$
 $$$$$$
  $
```

C. Write programs for the following:

(I) To find the sum of squares of odd numbers upto 10 terms.



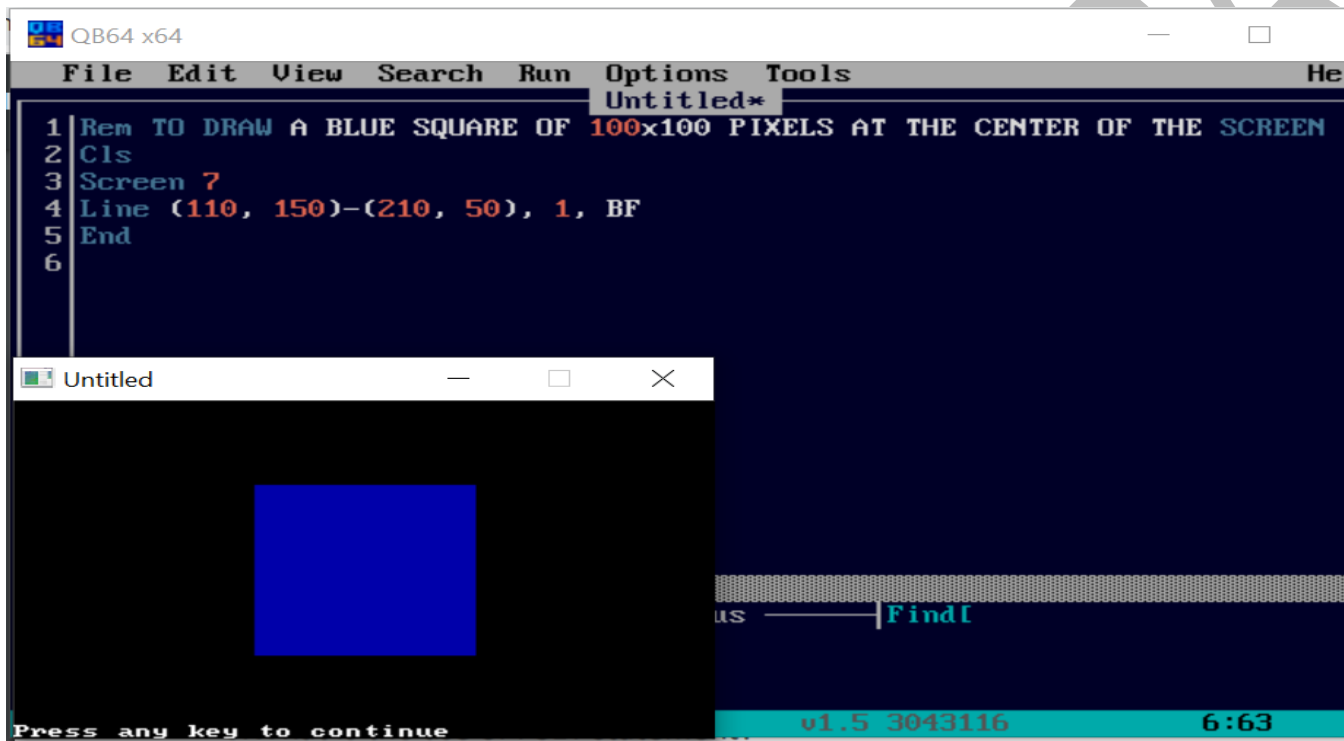
A screenshot of the QB64 x64 IDE. The menu bar includes File, Edit, View, Search, Run, Options, and Tools. The window title is 'Untitled\*'. The code editor contains the following lines:

```
1 Rem TO FIND SUM OF SQUARES OF ODD NUMBERS UPTO 10 TERMS
2 Cls
3 S = 0
4 For I = 1 To 20 Step 2
5   S = S + (I * I)
6 Next I
7 PRINT "SUM OF SQUARES OF ODD NUMBERS UPTO 10 TERMS =";S
8 End
```

The output window shows the result of the program:

```
SUM OF SQUARES OF ODD NUMBERS UPTO 10 TERMS = 1330
```

(II) To draw a square of 100X100 pixels whose centre lies at the center of the screen. Fill the square with blue colour.

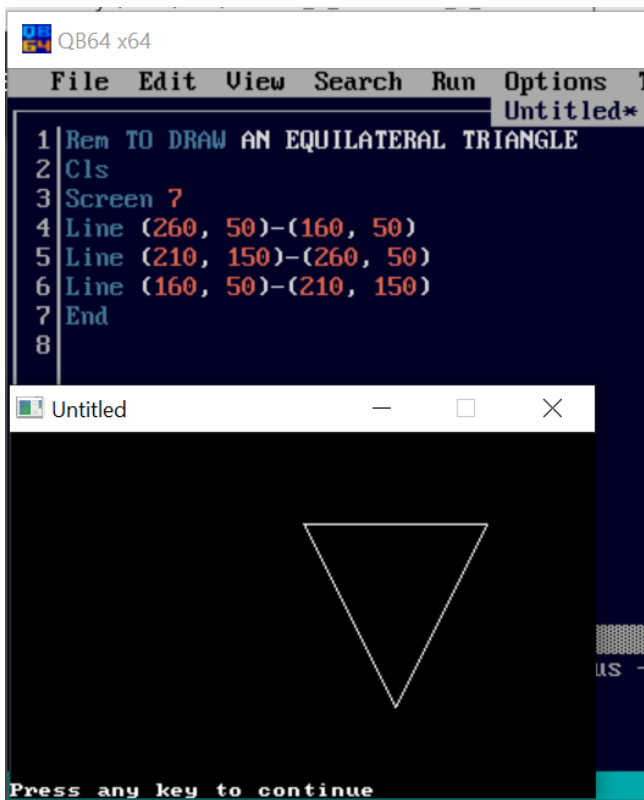


The screenshot shows the QB64 x64 development environment. The main window, titled 'Untitled\*', contains the following BASIC code:

```
1 Rem TO DRAW A BLUE SQUARE OF 100x100 PIXELS AT THE CENTER OF THE SCREEN
2 Cls
3 Screen 7
4 Line (110, 150)-(210, 50), 1, BF
5 End
6
```

Below the code editor is a smaller window titled 'Untitled' which displays the result of the program: a solid blue square centered on a black background. The status bar at the bottom of the QB64 window indicates 'v1.5 3043116' and '6:63'. A prompt 'Press any key to continue' is visible at the bottom left of the main window.

(III) To draw an equilateral triangle.



```
1 Rem TO DRAW AN EQUILATERAL TRIANGLE
2 Cls
3 Screen 7
4 Line (260, 50)-(160, 50)
5 Line (210, 150)-(260, 50)
6 Line (160, 50)-(210, 150)
7 End
8
```

Press any key to continue

(IV) To draw three concentric circles with equal distance between them.

