



## **K. J. Somaiya College of Engineering, Mumbai-77**

A Constituent College of Somaiya Vidyavihar University

**Batch: D2      Roll No.: 25**

**Experiment / assignment / tutorial No. 4**

**Grade: AA / AB / BB / BC / CC / CD / DD**

**Signature of the Staff In-charge with date**

**TITLE:** Program to print patterns

**AIM:** Program to print patterns for 'n' rows using nested loop

**Expected OUTCOME of Experiment:**

**Books/ Journals/ Websites referred:**

1. Programming in C, second edition, Pradeep Dey and Manas Ghosh, Oxford University Press.
2. Programming in ANSI C, fifth edition, E Balagurusamy, Tata McGraw Hill.
3. Introduction to programming and problem solving , G. Michael Schneider ,Wiley India edition.
4. <http://cse.iitkgp.ac.in/~rkumar/pds-vlab/>

**Problem Definition:**

The program is to print a pattern as given by the user. The program makes use of a nested loop to print a pattern of characters, numbers or alphabets.

**Example:**

Input: number of rows = 4, number of columns = 4



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Output:

```
      5
     4 5
    3 4 5
   2 3 4 5
  1 2 3 4 5
```

### Algorithm:

**STEP 1: START**

**STEP 2: Input number of lines to be printed from the user.**

**STEP 3: Initiate a for loop to iterate from 1 to number entered by user.**

**STEP 4: Initiate a nested for loop to print spaces.**

**STEP 5: Initiate a for loop to print the required series.**

**STEP 6: END**

Output(s):

```
1 #include <stdio.h>
2 void main()
3 {
4     int i, j, k;
5     int num, temp;
6     printf("Enter number of lines to be printed: ");
7     scanf("%d", &num);
8     for(i = 1; i <= num; i++)
9     {
10         temp = num - i + 1;
11         for(j = 1; j <= (num - i); j++)
12             printf(" ");
13         k = num;
14         for(j = 1; j <= i; j++)
15             printf("%d", k);
16         k = k - 1;
17         printf("\n");
18     }
19 }
```

```
Enter number of lines to be printed: 8
8
78
678
5678
45678
345678
2345678
12345678
Process returned 8 (0x8)   execution time : 1.429 s
Press any key to continue.
```



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**Conclusion:** Using nested for loop we can print any sort of triangular series.

### Post Lab Descriptive Questions

Write a program to print the following:

```
1
2   4
3   6   9
4   8   12  16
5   10  15  20  25
6   12  18  24  30  36
7   14  21  28  35  42  49
8   16  24  32  40  48  56  64
9   18  27  36  45  54  63  72  81
10  20  30  40  50  60  70  80  90  100
```

```
1 #include <stdio.h>
2 void main()
3 {
4     printf("\n");
5
6     int i, j;
7     int result;
8     for(i = 1; i <= 10; i++)
9     {
10        for(j = 1; j <= i; j++)
11        {
12            result = i * j;
13            printf("%d\t", result);
14        }
15        printf("\n");
16    }
17 }
18
```

Process returned 0 (0x0) execution time : 0.016 s  
Press any key to continue.

**Code:**  
#include <stdio.h>  
void main()



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```
{  
    int i,j;  
    int result;  
    for(i = 1; i <= 10; i ++)  
    {  
        for(j = 1; j <= i; j ++)  
        {  
            result = i * j;  
            printf("%d \t", result);  
        }  
        printf("\n");  
    }  
}
```

**Date:** \_\_\_\_\_

**Signature of faculty in-charge**