Programming Fundamentals

Lab Report

Lab03

Group Members Name & Reg #:	**Muhammad Haris Irfan** **(FA18-BCE-090)**
Class	Programming Fundamentals CSC103 (**BCE-2B**)
Instructor's Name	Dilshad Sabir

In Lab Tasks

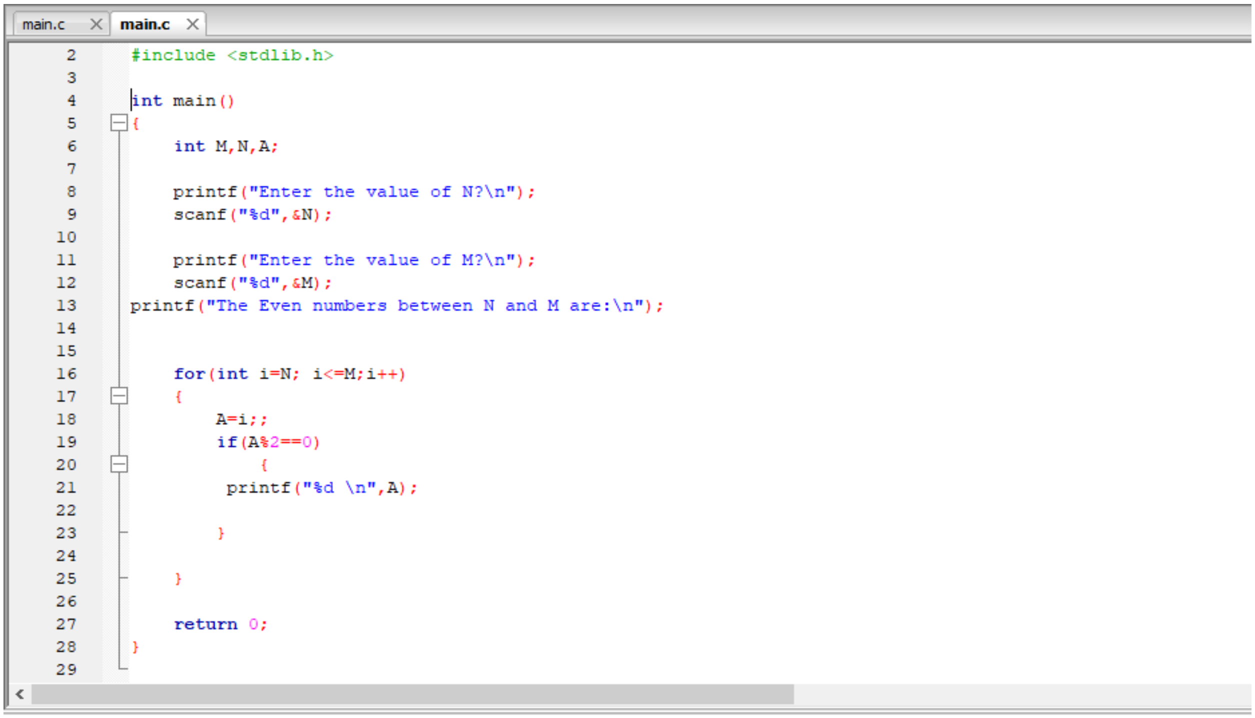
Question no: 1

Write a program that prints all even numbers from N to M, where N and M are user input integers?

Solution:

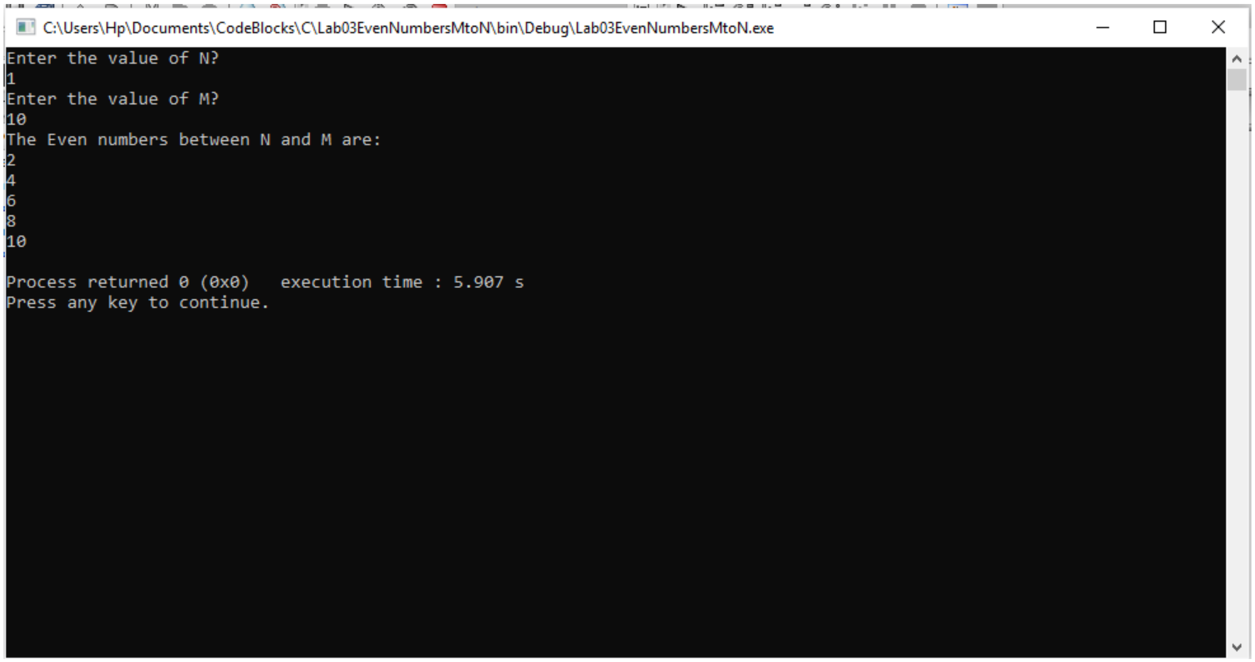
In this Program, I took two inputs from the user named N and M, and Printed All the Even Numbers present from N to M, to check the even numbers I used the mod operator here with an if statement, the even numbers are saved in another variable and are printed.

Code and results attached below



```
#include <stdlib.h>

int main()
{
    int M,N,A;

    printf("Enter the value of N?\n");
    scanf("%d",&N);

    printf("Enter the value of M?\n");
    scanf("%d",&M);
printf("The Even numbers between N and M are:\n");


    for(int i=N; i<=M;i++)
    {
        A=i;;
        if(A%2==0)
            {
         printf("%d \n",A);

        }

    }

    return 0;
}
```

I tested my program with N as 1 and M as 10, the result is attached below,



C:\Users\Hp\Documents\CodeBlocks\C\Lab03EvenNumbersMtoN\bin\Debug\Lab03EvenNumbersMtoN.exe

```
Enter the value of N?
1
Enter the value of M?
10
The Even numbers between N and M are:
2
4
6
8
10

Process returned 0 (0x0)   execution time : 5.907 s
Press any key to continue.
```

Hence the result shows that our program works.

QUESTION NO:2

Write C programs that output the following patterns exactly. Use as ***few lines of code as possible***. You are free to use **integers**, **loops**, and **conditional statements** (e.g if/else)**.** No functions or arrays are allowed.

a.

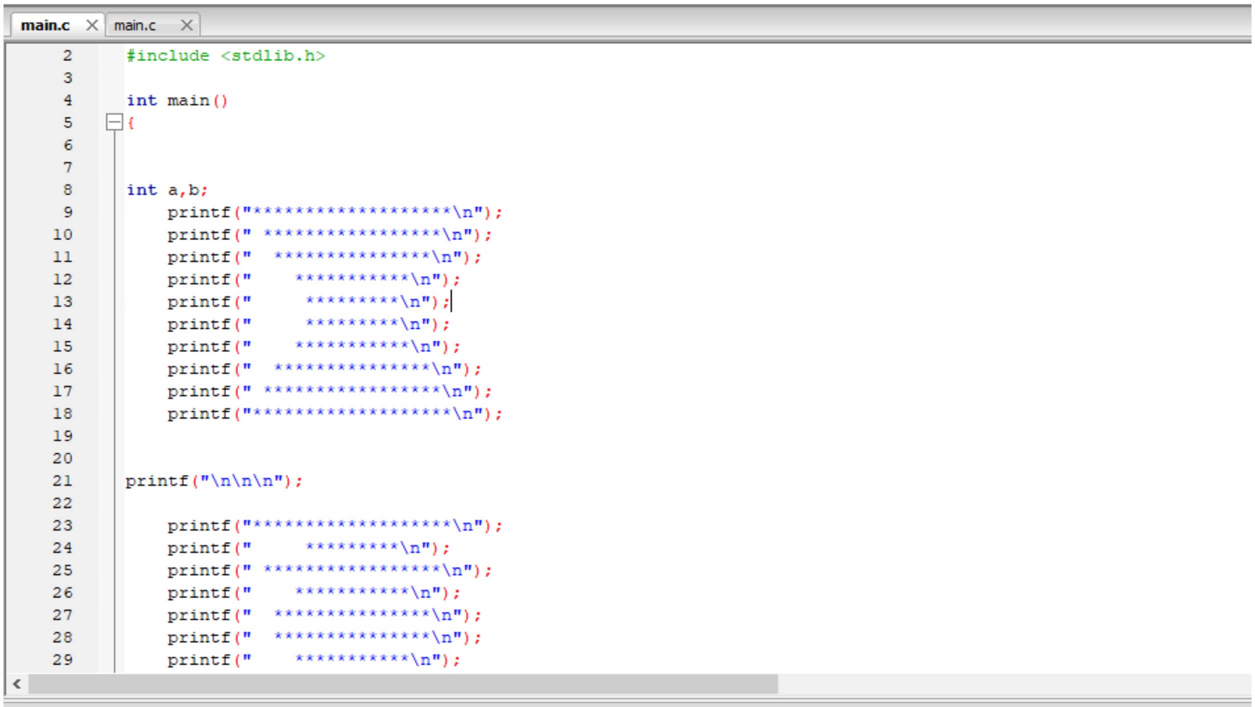
```
*******************
 *****************
  ***************
   *************
    ***********
     *********
     *********
    ***********
   *************
  ***************
 *****************
 *******************
```

b.

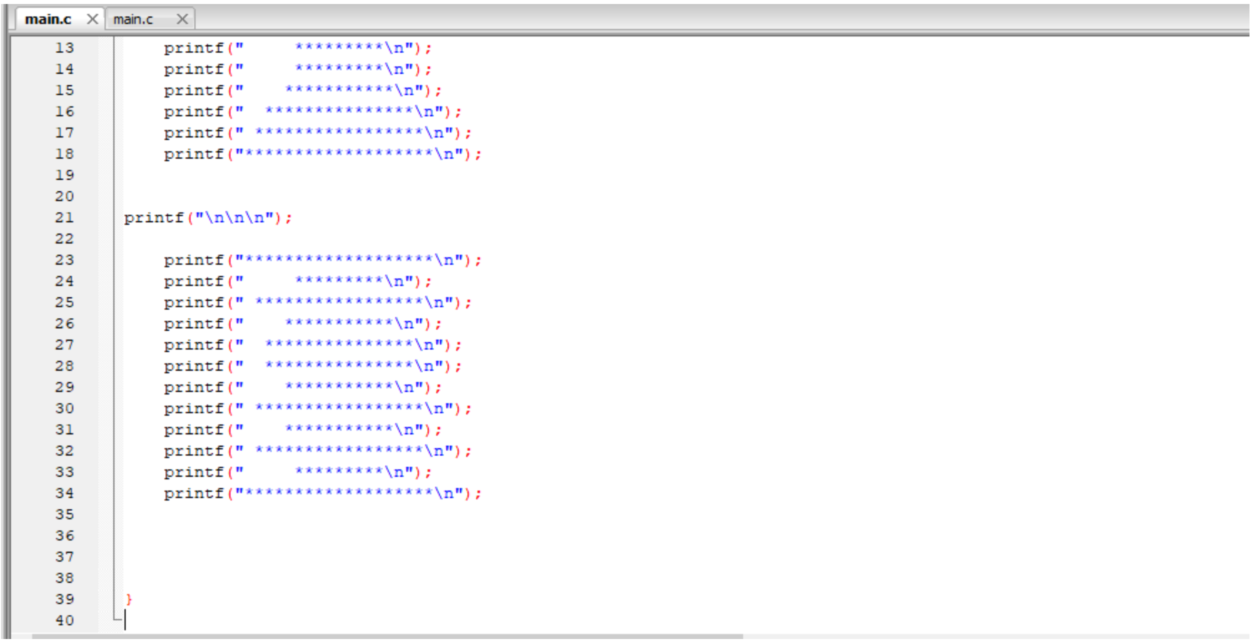
```
*******************

     *********

 *****************

    ***********

  ***************

   *************

   *************

  ***************

    ***********

 *****************

     *********

*******************
```

Solution:

In this Question I used multiple print statemets to print the exact same pattern on the console, the code and result is attached below,

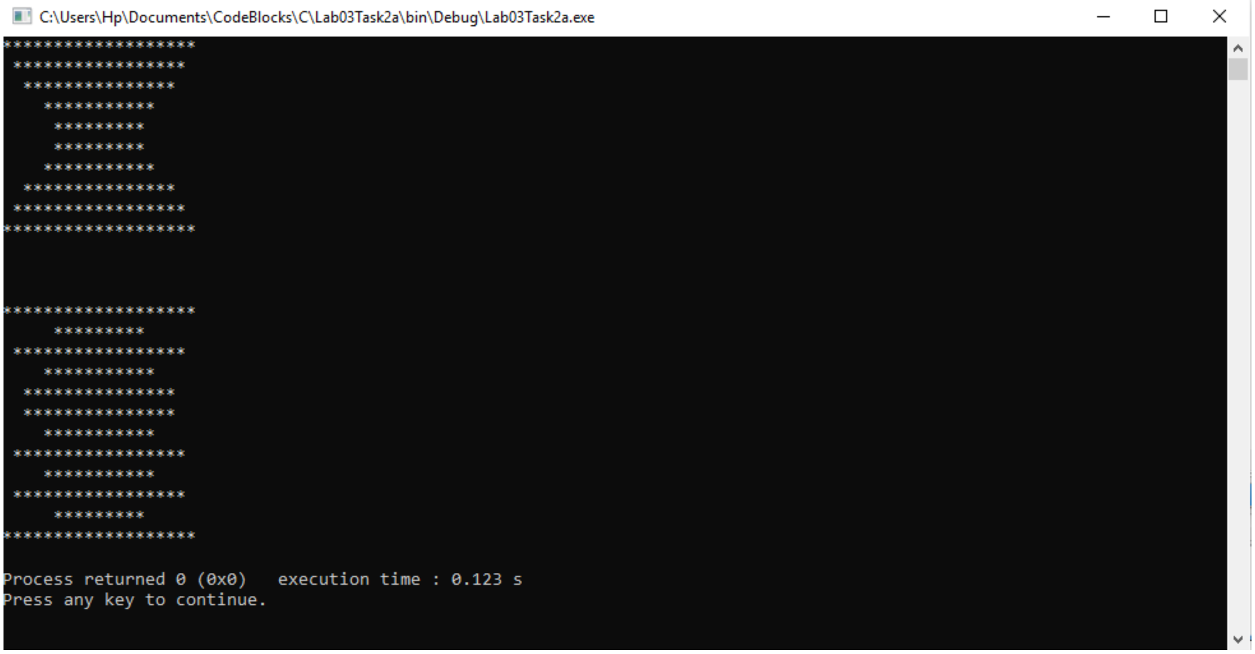


```c
#include <stdlib.h>

int main()
{


int a,b;
    printf("*******************\n");
    printf(" *****************\n");
    printf("  ***************\n");
    printf("    ***********\n");
    printf("     *********\n");
    printf("     *********\n");
    printf("    ***********\n");
    printf("  ***************\n");
    printf(" *****************\n");
    printf("*******************\n");


printf("\n\n\n");

    printf("*******************\n");
    printf("     *********\n");
    printf(" *****************\n");
    printf("    ***********\n");
    printf("  ***************\n");
    printf("  ***************\n");
    printf("    ***********\n");
```



```c
    printf("     *********\n");
    printf("     *********\n");
    printf("    ***********\n");
    printf("  ***************\n");
    printf(" *****************\n");
    printf("*******************\n");


printf("\n\n\n");

    printf("*******************\n");
    printf("     *********\n");
    printf(" *****************\n");
    printf("    ***********\n");
    printf("  ***************\n");
    printf("  ***************\n");
    printf("    ***********\n");
    printf(" *****************\n");
    printf("    ***********\n");
    printf(" *****************\n");
    printf("     *********\n");
    printf("*******************\n");




}
```

The Console Result is Attached below:



C:\Users\Hp\Documents\CodeBlocks\C\Lab03Task2a\bin\Debug\Lab03Task2a.exe

```
*******************
 *****************
  ***************
    ***********
     *********
     *********
    ***********
  ***************
 *****************
*******************



*******************
     *********
 *****************
    ***********
  ***************
  ***************
    ***********
 *****************
    ***********
 *****************
     *********
*******************

Process returned 0 (0x0)   execution time : 0.123 s
Press any key to continue.
```

Hence the same patterns Verify the working of the Program.

POST LAB

Question:

a

```
******************
 *****************
  ***************
   *************
    ***********
     *********
     *********
    ***********
    *************
  ***************
 *****************
 *******************
```

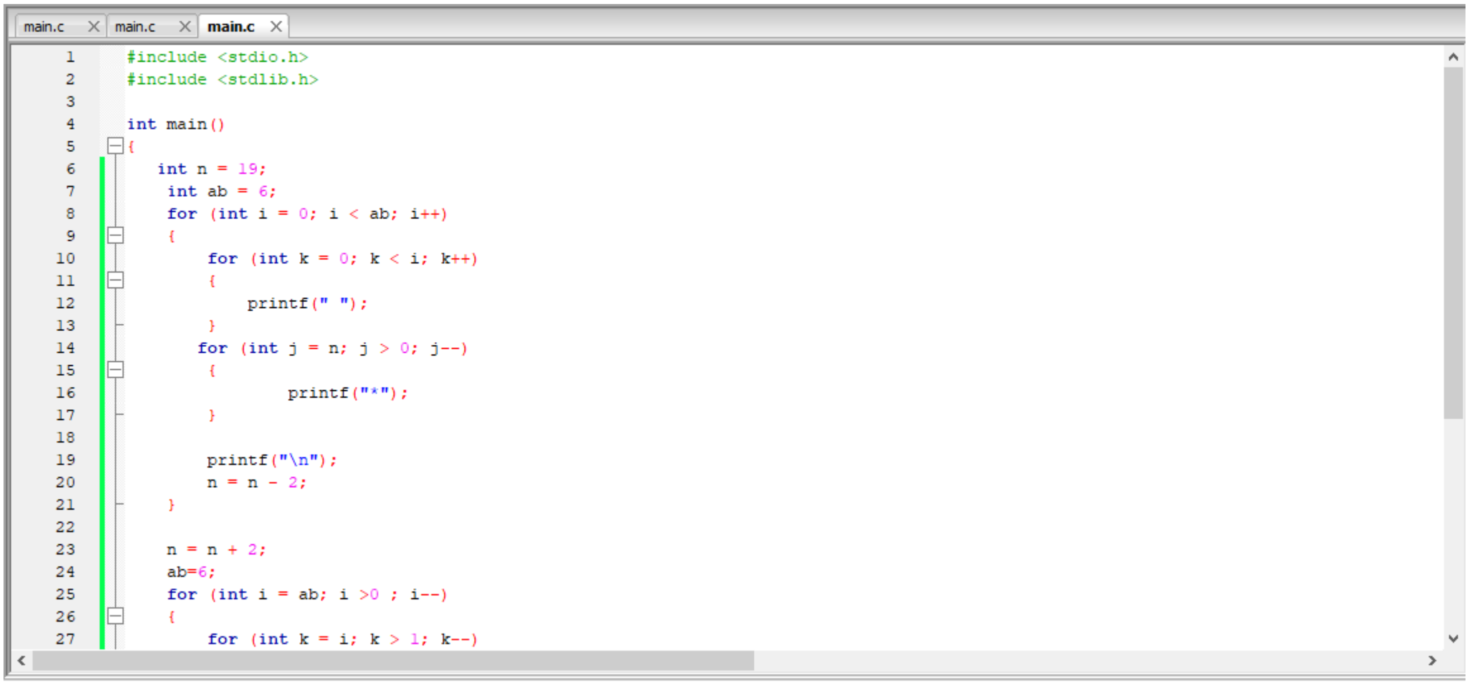
b.

```
*******************
      *********
  *****************
     ***********
   ***************
    *************
    *************
   ***************
     ***********
 *****************
      *********
*******************
```

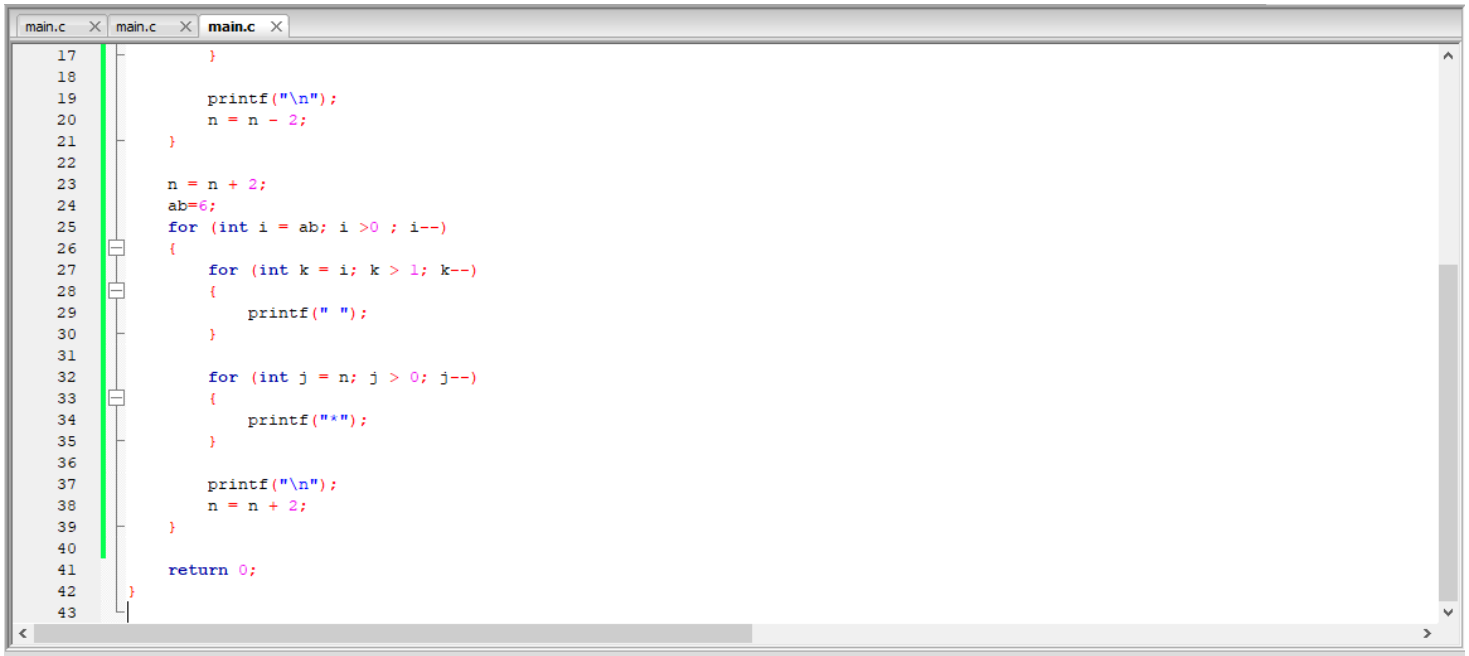
Solution:

Part A

I am attaching my code below for this program, it was a very tough program to write, I used nested for loops for this program, codes and their results are attached below:

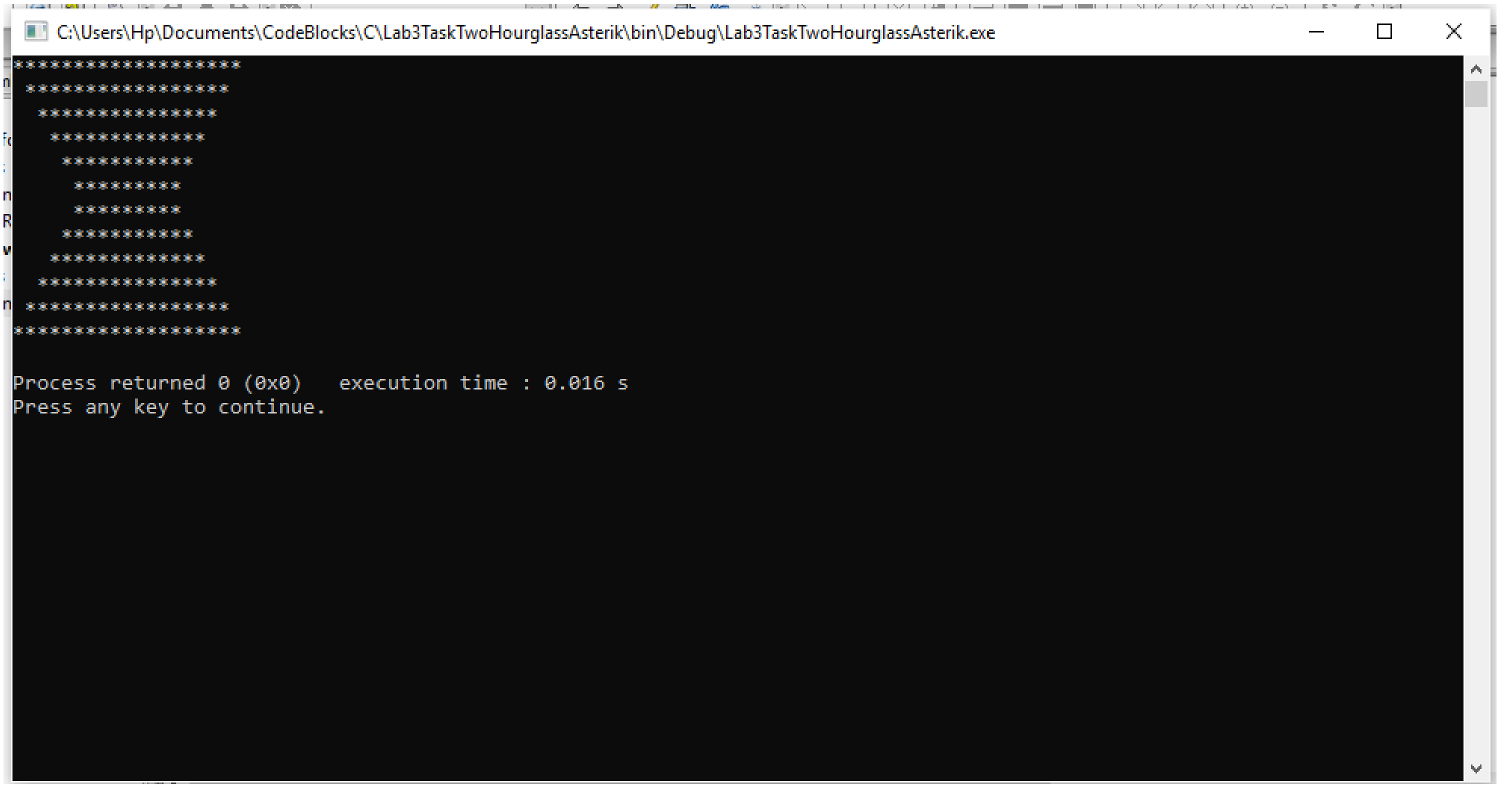


```c
#include <stdio.h>
#include <stdlib.h>

int main()
{
   int n = 19;
    int ab = 6;
    for (int i = 0; i < ab; i++)
    {
        for (int k = 0; k < i; k++)
        {
            printf(" ");
        }
       for (int j = n; j > 0; j--)
        {
                printf("*");
        }

        printf("\n");
        n = n - 2;
    }

    n = n + 2;
    ab=6;
    for (int i = ab; i >0 ; i--)
    {
        for (int k = i; k > 1; k--)
```



```c
        }

        printf("\n");
        n = n - 2;
    }

    n = n + 2;
    ab=6;
    for (int i = ab; i >0 ; i--)
    {
        for (int k = i; k > 1; k--)
        {
            printf(" ");
        }

        for (int j = n; j > 0; j--)
        {
            printf("*");
        }

        printf("\n");
        n = n + 2;
    }

    return 0;
}
```

In the above code I have used one nested (for loop) for the upper portion of our pattern and another nested for loop for the lower portion of our pattern, the console result is displayed below,



C:\Users\Hp\Documents\CodeBlocks\C\Lab3TaskTwoHourglassAsterik\bin\Debug\Lab3TaskTwoHourglassAsterik.exe

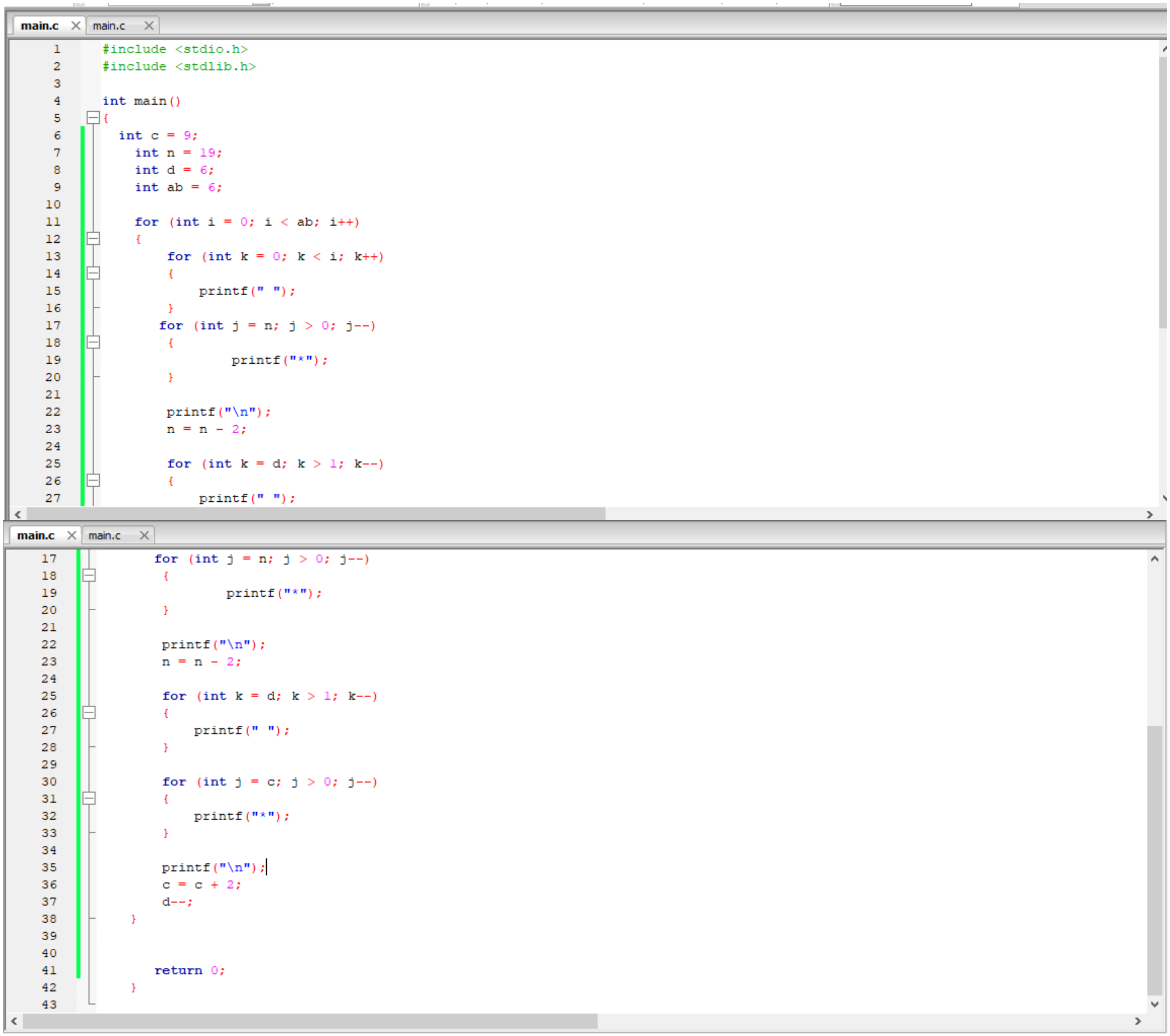
```
*******************
 *****************
  ***************
   *************
    ***********
     *********
     *********
    ***********
   *************
  ***************
 *****************
*******************

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

Hence, This Verify our pattern using For Loop.

Part B

The Code for Part B is attached below, this code consists of multiple for loops nested inside a for loop, writing a program for this code was very challenging, finally I am able to make the same pattern,

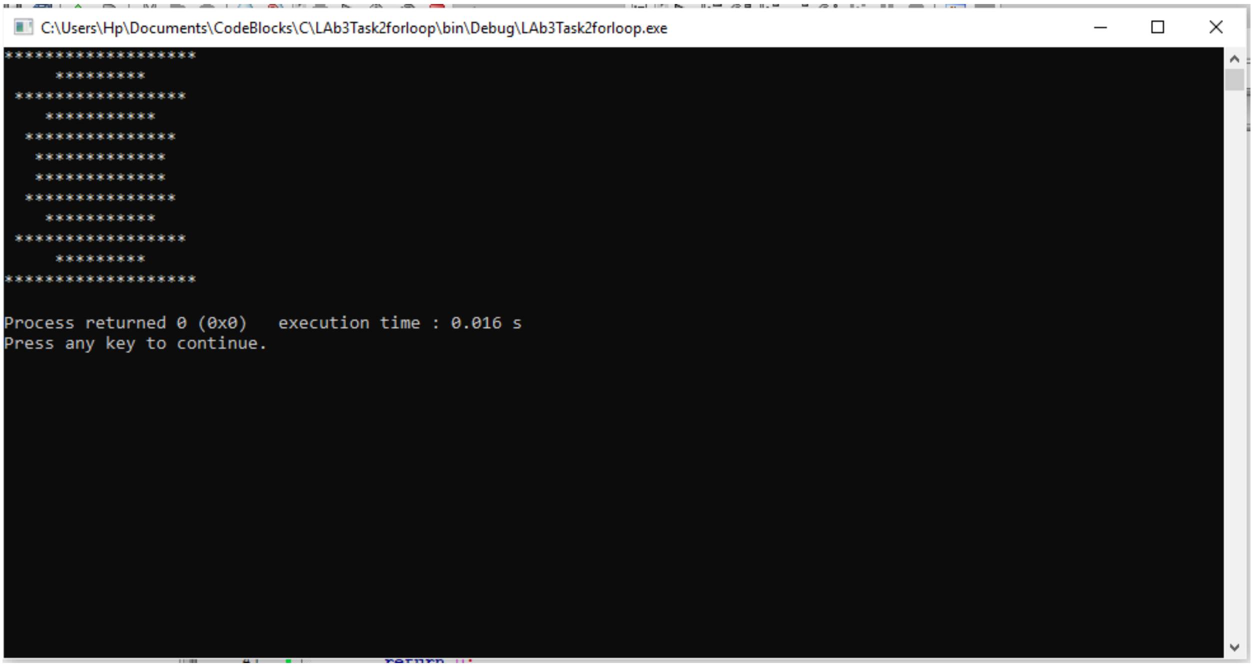
CODE:



```
#include <stdio.h>
#include <stdlib.h>

int main()
{
  int c = 9;
    int n = 19;
    int d = 6;
    int ab = 6;

    for (int i = 0; i < ab; i++)
    {
        for (int k = 0; k < i; k++)
        {
            printf(" ");
        }
       for (int j = n; j > 0; j--)
        {
                printf("*");
        }

        printf("\n");
        n = n - 2;

        for (int k = d; k > 1; k--)
        {
            printf(" ");
```

```
       for (int j = n; j > 0; j--)
        {
                printf("*");
        }

        printf("\n");
        n = n - 2;

        for (int k = d; k > 1; k--)
        {
            printf(" ");
        }

        for (int j = c; j > 0; j--)
        {
            printf("*");
        }

        printf("\n");
        c = c + 2;
        d--;
    }


       return 0;
    }
```

The output of this code is attached below,


C:\Users\Hp\Documents\CodeBlocks\C\LAb3Task2forloop\bin\Debug\LAb3Task2forloop.exe

```
*******************
     *********
 *****************
    ***********
  ***************
   *************
   *************
  ***************
    ***********
 *****************
     *********
*******************

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

Hence, output verifies that our code using for loops is correct.

THE END