



Green University of Bangladesh

Department of Computer Science and Engineering (CSE)

Faculty of Sciences and Engineering

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LAB REPORT NO # 05

Course Title: Structured Programming Lab

Course Code: CSE 104

Section: CSE 213 - DB (PC)

Lab Experiment Name(s):

- Lab Report of Problem-Solving Using Loops in C

Student Details

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Lab Date: 05 March 2022

Submission Date: 12 March 2022

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[For Teacher's use only: Don't write anything inside this box]

Lab Report Status

Marks:	Signature:
Comments:	Date:

1. TITLE OF THE LAB EXPERIMENT

Lab Report of Problem-Solving Using Loops in C

2. OBJECTIVES

Doing this experiment we will learn about loops in the C language and we will be able to solve complex problem using loops.

3. PROCEDURE

Problem 1: Check if number is prime or not from existing algorithm.

First we declare the necessary variables in int function and take input from the user a valid integer by using printf and scanf function. We use mod to check if the remainder is 2 or 0. If the count is 2 it is a prime number otherwise it is not a prime number.

Problem 2: All Fibonacci numbers bellow n

First we declare necessary variables and take valid input from the user. We take user input for necessary nth terms. The logic of Fibonacci is – the 3rd number will be the addition of 1st and 2nd number the loop will going on until the number is equal or less than nth terms.

Problem 3: Pascal's triangle until given row.

At first, we declare necessary variables and take valid user input. We use for loop in. Then we use nested loop to solve this problem.

4. IMPLEMENTATION & TEST RESULT

Problem 1: Check if number is prime or not from existing algorithm.

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

int main()
{
    int n, i, count = 0;
    printf("Enter a number: \n");
    scanf("%d", &n);

    for (int i = 1; i <= n; i++) {
        if (n % i == 0) {
            count++;
        }
    }

    if (count == 2) {
        printf("%d is a prime number", n);
    }
    else {
        printf("%d is not a prime number", n);
    }

    return 0;
}
```

```
"C:\Users\shahi\OneDrive\Documents\Test Code\prime or not.exe"
Enter a number:
47
47 is a prime number.
Process returned 0 (0x0)   execution time : 1.766 s
Press any key to continue.
```

Problem 2: All Fibonacci numbers bellow n

```
#include <stdio.h>

int main()
{
    int num1=0, num2=1, num3, count, n_terms;

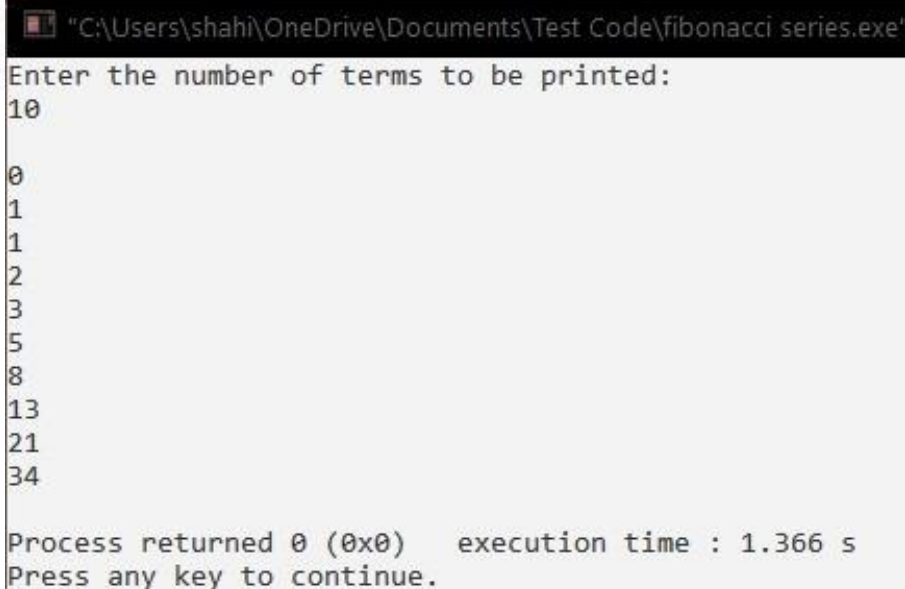
    printf("Enter the number of terms to  
be printed : \n");
    scanf ("%d", &n_terms);

    printf ("%d %d \n", num1, num2);

    for (count = 3; count <= n_terms; count++)
    {
        num3 = num1 + num2;
        printf ("%d \n", num3);

        num1 = num2;
        num2 = num3;
    }

    return 0;
}
```



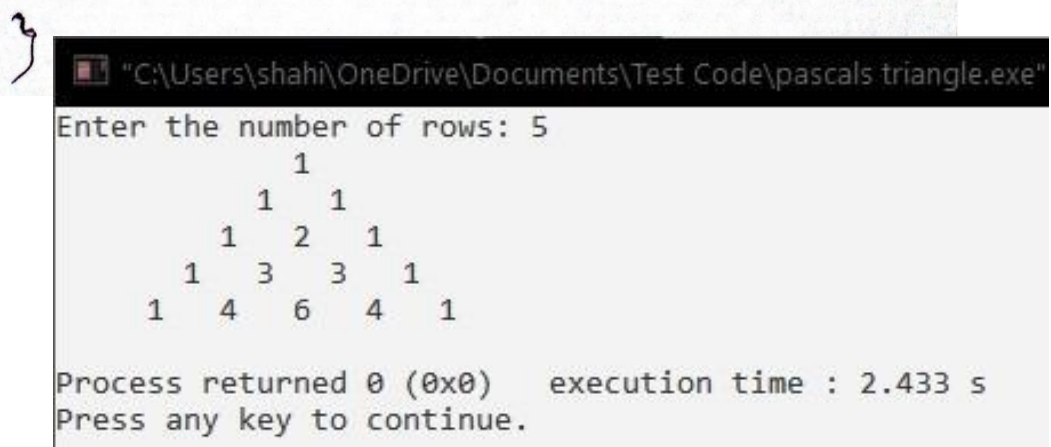
The screenshot shows a Windows command prompt window titled "C:\Users\shahi\OneDrive\Documents\Test Code\fibonacci series.exe". The program prompts the user to "Enter the number of terms to be printed:" and the user enters "10". The program then outputs the first 10 Fibonacci numbers: 0, 1, 1, 2, 3, 5, 8, 13, 21, and 34. At the bottom, it displays "Process returned 0 (0x0) execution time : 1.366 s" and "Press any key to continue."

```
"C:\Users\shahi\OneDrive\Documents\Test Code\fibonacci series.exe"
Enter the number of terms to be printed:
10
0
1
1
2
3
5
8
13
21
34
Process returned 0 (0x0) execution time : 1.366 s
Press any key to continue.
```

Problem 3: Pascal's triangle until given row.

```
#include <stdio.h>

int main()
{
    int rows, col=1, space, i, j;
    printf("Enter the number of rows:");
    scanf("%d", &rows);
    for (i=0; i<rows; i++) {
        for (space=1; space<=rows-i; space++)
            printf(" ");
        for (j=0; j<=i; j++) {
            if (j==0 || i==0)
                col=1;
            else
                col=col*(i-j+1)/j;
            printf("%4d", col);
        }
        printf("\n");
    }
    return 0;
}
```



```
"C:\Users\shahi\OneDrive\Documents\Test Code\pascals triangle.exe"
Enter the number of rows: 5
    1
   1 1
  1 2 1
 1 3 3 1
1 4 6 4 1

Process returned 0 (0x0)   execution time : 2.433 s
Press any key to continue.
```

6. ANALYSIS AND DISCUSSION

- 1) We have solved those problems using CodeBlocks IDE and there were no errors occurred. And we can successfully print the output of those problems.
- 2) We have faced a little bit difficulty while performing pascals problem showing the wrong results but then we have passed errors and corrected our program and it gives correct result.
- 3) Solving these 3 problems, we have initially learned some of the advanced level of complex problems in C language using different loops.

7. SUMMARY

From the given experiments, we have learned the use of different loops in various complex problems and their usage varies from problem to problem and how to use some advance complex problems using loops.