Green University of Bangladesh Department of Computer Science and Engineering(CSE)

Faculty of Sciences and Engineering Semester: (Fall , Year:2022), B.Sc. in CSE (Day)

LAB REPORT NO : 5
Course Code : CSE 104
Course Title : Structured Programming Lab
Section : DC

Student Details

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Lab Date : 13-11-2022
Submission Date : 28-11-22
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[For Teachers use only: Don't Write Anything inside this box]

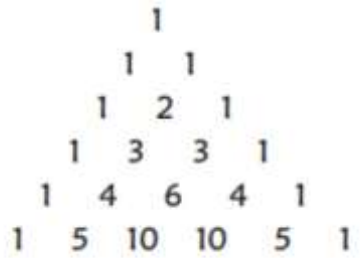
Lab Report Status

Marks:.....
Comments:

Signature:
Date:.....
.

Problem 1:

•***Title:*** **Display Pascal's Triangle until a given row. For instance, if a user selects row = 6, the pascal triangle for the choice would be something like below:**



Objectives:

- To be familiar with scanf and printf functions.
- To be familiar with logical expression.
- To be familiar with the combination part of math and power function.
- To be familiar with for loop.

Input & Output:

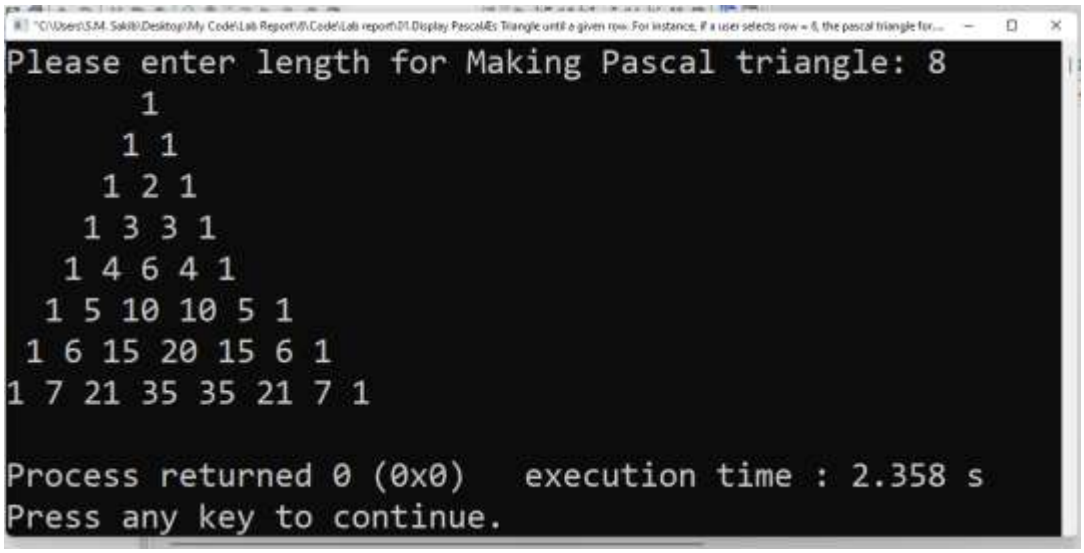
At first, we have to read a value which is the number from the user. Then the program uses some mathematical expressions to make **Pascal's Triangle.**

Implementation:

```c
#include <stdio.h>
int factorial(int a){
    int c=1;
    for(int i=1;i<=a;i++){
        c*=i;
    }
    return c;
}

int combination(int a,int b){
//n! / r! * (n - r)!
    int c;
    c=((factorial(a))/((factorial(b)*(factorial(a-b)))));
    return c;
}
int main(){
    int len;
    printf("Please enter length for Making Pascal triangle: ");
    scanf("%d",&len);
    for(int i=0;i<len;i++){
            for(int j=1;j<(len-(i));j++){
                printf(" ");
            }
        for(int j=0;j<=i;j++){
            printf("%d ",combination(i,j));
        }
        printf("\n");
    }
return 0;
}
```

Test Result:



Discussion: When I write the program I have to learn how Pascal's triangles are made..Then I apply logic and write the program…

Problem 2:

•***Title:*** **Write a program in C to count the total number of duplicate elements in an array.**

Objectives:

- To be familiar with scanf and printf functions.
- To be familiar with if else conditions.
- To be familiar with logical expression.
- To be familiar with array.

Input & Output:

At first, the program read the array length and array element. And count the duplicate and finally the program print the total duplicate in the array.

Implementation:

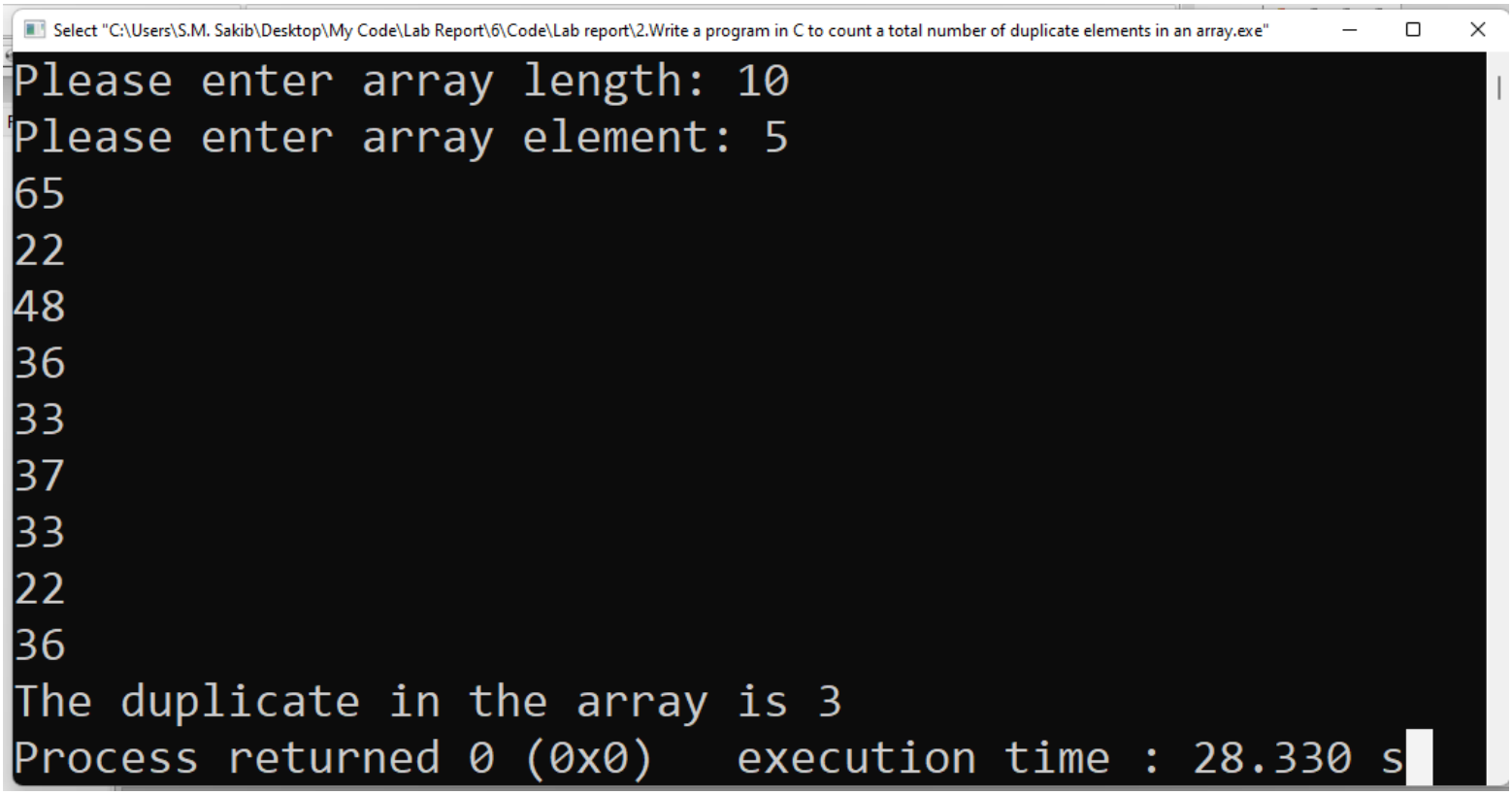
```c
//Write a program in C to count a total number of duplicate elements in an array.

#include <stdio.h>
int main(){
    int a,c=0;
    printf("Please enter array length: ");
    scanf("%d",&a);
    int arr[a+2];
    printf("Please enter array element: ");
    for(int i=0;i<a;i++){
        scanf("%d",&arr[i]);
    }
    for(int i=0;i<a;i++){
            int b=0;

        for(int j=i+1;j<a;j++){
            if(arr[i]==arr[j]){

                b++;
            }
        }
    if(b>0){
        c++;
    }
    }
    printf("The duplicate in the array is %d",c);
    return 0;
}
```

Test Result:



Discussion: When I solve the problem I don't face any problem....

Problem 3:

•***Title:*** ***Write a program in C to separate odd and even integers in separate arrays.***

Objectives:

- To be familiar with scanf and printf function.
- To be familiar with for loop.
- To be familiar with if else condition.
- To be familiar with array.

Input & Output:

This program are input the array length and array from user..Then if the number is dvide by 2 it go to even array else it go go to odd array and print it..

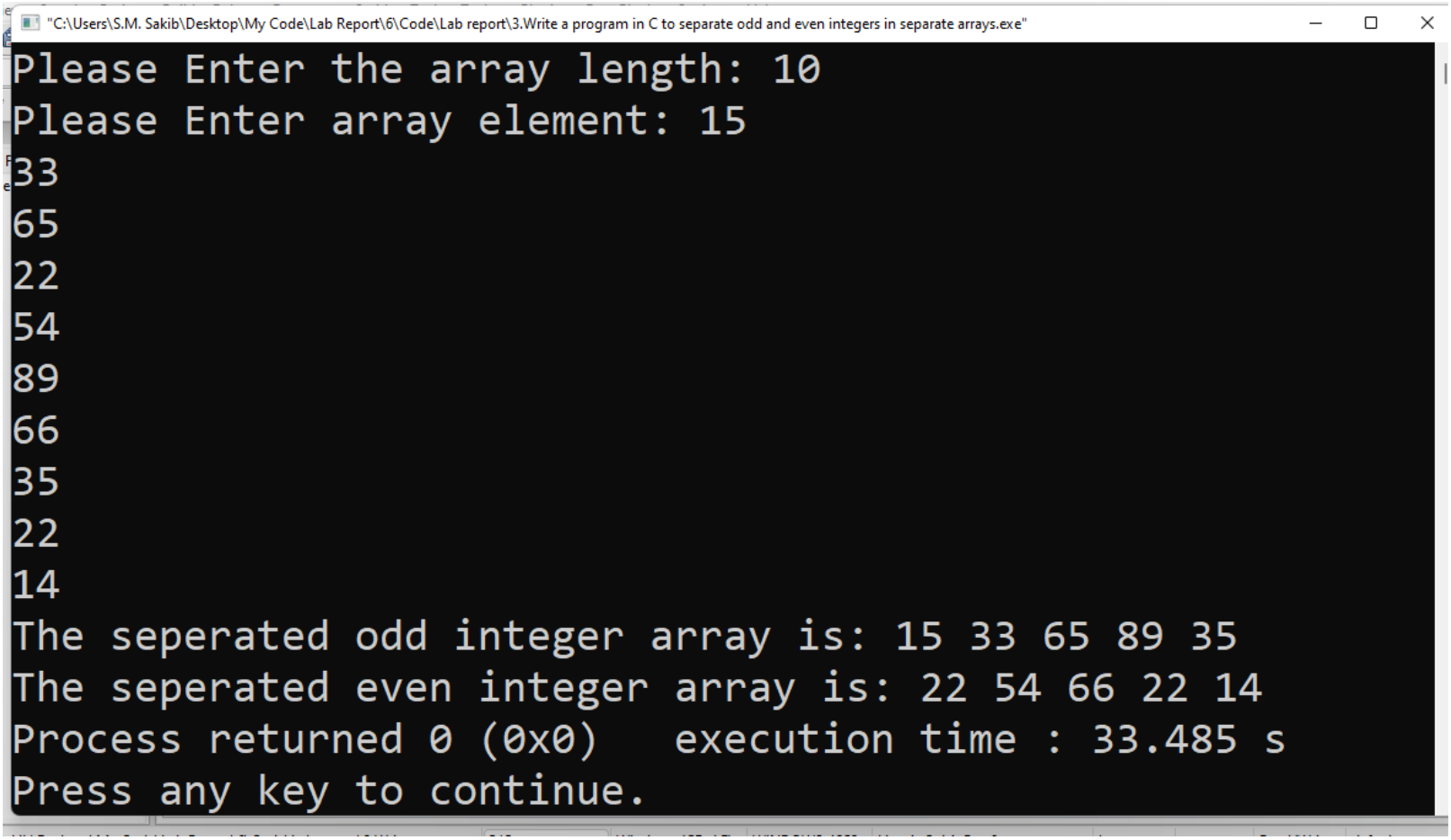
Implementation:

```c
//Write a program in C to separate odd and even integers in separate arrays.
#include <stdio.h>
int main(){
    int a;
    printf("Please Enter the array length: ");
    scanf("%d",&a);
    int arr[a+2],oddarr[a],evenarr[a];
    printf("Please Enter array element: ");
    for (int i=0;i<a;i++){
        scanf("%d",&arr[i]);
    }
    int count=0;
    printf("The seperated odd integer array is: ");
    for(int i=0;i<a;i++){
        if(arr[i]%2!=0){
            oddarr[count]=arr[i];
            printf("%d ",oddarr[count]);
            count++;
        }
    }
    printf("\n");
    count=0;
    printf("The seperated even integer array is: ");
    for(int i=0;i<a;i++){

        if(arr[i]%2==0){
            evenarr[count]=arr[i];
            printf("%d ",evenarr[count]);
            count++;
        }

}
}
```

Test result:



Discussion: When I solve this programme I don't face any problem.