NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF MECHANICAL AND MANUFACTURING ENGINEERING

CS-114 - Fundamental of Programing

LAB MANUAL # 6 (Lab task)

ME -15 (C)

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1. **Generate the Fibonacci sequence using nested loops.**

Code:

```
#include<iostream>
using namespace std;
int main()
{
    int x,y,z,S=0;
    cout<<"Enter the range of fibonacci sequence ";  //to get the range of fibonacci sequence
    cin>>z;
    for(int i=1;i<=z;i++)      //loop runs upto the range of fibonacci sequence
    {
        x=0,y=1;               //x and y will be declared again after one complete iteration
        for(int j=1;j<=i;j++)  //to show the fibonacci sequence using nested loop
        {
            S=x+y;
            cout<<S<<" ";
            x=y;
            y=S;

        }
        cout<<endl;
    }

  return 0;
}
```

Result:

```
Enter the range of fibonacci sequence 8
1
1 2
1 2 3
1 2 3 5
1 2 3 5 8
1 2 3 5 8 13
1 2 3 5 8 13 21
1 2 3 5 8 13 21 34

--------------------------------
Process exited after 2.555 seconds with return value 0
Press any key to continue . . .
```

2. **Create Pascal's triangle with nested loops.**

Floyd's Triangle:

Code:

```
Enter the number of rows 9
1
2 3
4 5 6
7 8 9 10
11 12 13 14 15
16 17 18 19 20 21
22 23 24 25 26 27 28
29 30 31 32 33 34 35 36
37 38 39 40 41 42 43 44 45

--------------------------------
Process exited after 3.716 seconds with return value 0
Press any key to continue . . .
```

Result:

```
#include<iostream>
using namespace std;
int main(){
    cout<<"Enter the number of rows "; //number of rows upto which the triangle will be shown
    int x=1,y;
    cin>>y;
    for(int i=1;i<=y;i++){              //for loop to run upto specified number of rows
        for(int j=1;j<=i;j++){          //to show outputs of numbers in triangle
            cout<<x<<" ";
            x++;                       //after each iteration value of x will be increased by 1
        }
        cout<<endl;
    }
    return 0;
}
```

Pascal's Triangle:

Code:

```
#include<iostream>
using namespace std;
int main(){
    int x,y,z;
    cout<<"Enter the number of rows ";  //to get the range or number of rows of pascal triangle
    cin>>y;
    for(int i=0;i<=y;i++)               //loop for rows which will be entered by user
    {
        x=1;
        for(int j=0;j<=y-i;j++)        //for spaces to be shown in triangle
        cout<<" ";
        for(int k=0;k<=i;k++)          //to show output
        {
        cout<<x<<" ";
        x=x*(i-k)/(k+1);              //formula to calculate the numbers of row
    }
    cout<<endl;
    }
    return 0;
}
```

Result:

```
Enter the number of rows 9
          1
         1 1
        1 2 1
       1 3 3 1
      1 4 6 4 1
     1 5 10 10 5 1
    1 6 15 20 15 6 1
   1 7 21 35 35 21 7 1
  1 8 28 56 70 56 28 8 1
 1 9 36 84 126 126 84 36 9 1

--------------------------------
Process exited after 2.433 seconds with return value 0
Press any key to continue . . .
```