PROGRAMMING FUNDAMENTAL

LAB-9

TASK 1

```cpp
#include<iostream>
using namespace std;
int main()
{   //   Variable Declaration
    int startValue;
    int endValue;
    // For input
    cout<<"Enter starting integer : ";
    cin>>startValue;
    cout<<"Enter the ending integer : ";
    cin>>endValue;
    // for calculation
    for(int i = startValue; i<=endValue;i++)
    {
        for(int j = i;j<=endValue;j++)
        {
            cout<< "("<<i<<" , "<<j<<")"; //For output
        }
        cout<<endl;     //for next line
        endValue--;     // Decreement
    }
}
```

```cpp
#include<iostream>

using namespace std;

int main()

{

    int height , width;

    cout<<"Please enter the height : ";

    cin>>height;

    while(height%2!=0)

    {

        cout<<"ERROR! Enter Even Height ";

        cin>>height;

        while(height<4)

        {

            cout<<"ERROR! Enter the Height greater or equal to 4 ";

            cin>>height;

        }

    }

    cout <<"Please enter the width : ";

    cin >>width;

    while(width%2!=0)

    {

        cout<<"ERROR! Enter Even width ";

        cin>>width;

        while(width<6)

        {

            cout<<"ERROR! Enter the Width greater or equal to 6 ";

            cin>>width;
```

```cpp
        }
    }
    for (int i = 1; i <= height; i++)
    {
        if (i == 1 || i == height)
        {
            for (int j = 1; j <= width; j++)
            {
                cout << "*";
            }
            cout << endl;
        }

        if ( i > 1 && i < height)
        {

            for (int j = 1; j <= width; j++)
            {

                if (j == 1 || j == width)
                {
                    cout << "*";
                }
                else
                {
                    cout << " ";
                }
            }
            cout << endl;
```

```cpp
        }

    }

    return 0;

}
```

```cpp
#include<iostream>

using namespace std;

int main()

{

    int num, b = 0 , c = 1 , d = 1 ;

    int   g = 2;

    cout<<"Enter the positive Odd Integer : ";

    cin>>num;

    while(num%2==0)

    {

        cout<<"ERROR!!Please Enter Odd integer ";

        cin>>num;


        while(num<3)

        {

            cout<<"Enter integer greater than 3 ";

            cin>>num;

        }

    }

    int p=num;

    for(int i = 1; i<=num; i++)

    {
```

```cpp
if(i<=(num/2)+1)
{
    for(int j = 1; j<=(num/2)-b; j++)
    {
        cout<<" ";
    }
    for(int k = 1; k<=d; k++)
    {
        cout<<"*";
    }
    cout<<endl;
    b++;
    d+=2;
}
else
{
    for(int m = 1; m<=c; m++)
    {
        cout<<" ";
    }
    for(int n= 1 ; n<=p-g; n++)
    {
        cout<<"*";
    }
    cout<<endl;
    g+=2;
    c++;
}
}
```

```cpp
        return 0;

}
```

```cpp
#include<iostream>
using namespace std;
int employees();
int days(int missedDays);
double calculateAvrg(int employees, int days);
int main()
{
    int employee=employees();
    int missedDays =days(employee);
    cout<<"Average Number of Days a Complany's Employees absent are = "<<calculateAvrg(employee,missedDays);
}
int employees()
{
    int numberOfEmployees;
    cout<<"Enter the number of Employees in the Company  : ";
    cin>>numberOfEmployees;
    while(numberOfEmployees<1)
    {
        cout<<"Enter the number of Employees greater than 1 : ";
        cin>>numberOfEmployees;
    }
    return numberOfEmployees;
```

```cpp
}
int days(int missedDays)
{
    int total = 0;
    int days;
    for(int i = 1; i<=missedDays;i++)
    {
        cout<<"Enter the missed days of Employee "<<i<<" ";
        cin>>days;
        while(days<0)
        {
            cout<<"Enter again missed days : ";
            cin>>days;
        }
        total+=days;
    }
    return total;
}
double calculateAvrg(int employees, int days)
{
    double average;
    average = static_cast<double>(days)/(employees);
    return average;
}
```

```cpp
#include<iostream>
using namespace std;
```

```cpp
// function prototypes
bool isValid (int num, int start , int end);
int getlength();
int getwidth();
void calculateArea (int length,int width, int& area);
void displayArea (int area);
int main()
{
    int area;
    int l=getlength();
    int w =getwidth();
    calculateArea(l,w,area);
    displayArea(area);
}
bool isValid (int num, int start , int end)  //function definition
{
    if( num >= start && num <= end )
    return 1;
    else
    return 0;

}
int getlength()   //function definition
{
    int length;   // variable declaration
    cout<<"Enter the Length of Rectangle from range (5-500) : ";
    cin>>length;
    while(!(isValid(length,5,500)))
    {
```

```cpp
        cout <<"Enter the length again in range of (5-500) : "  ;
        cin >> length ;


    }
    return length;
}
int getwidth()    //function definition
{
    int width;    // variable declaration
    cout<<"Enter the Width of Rectangle from range (8-200) : ";
    cin>>width;
    while(!(isValid(width,8,200)))
    {
    cout << "Enter the width again in range (8-200) : " ;
    cin >>width ;
     }
    return width;
}
void calculateArea (int length,int width, int& area)
{
    area = length*width;


}
void displayArea (int area)
{
    cout<<"Area of Rectangle are "<<area;
}
```