Lab # 05

Task 01:

```cpp
// 1. Filled stars
// 2. Hollow stars
// 3. Pyramid

#include<iostream>
using namespace std;
int main(){
    int choice = 0;
    cout << "Welcome to star pattern generator."<<endl;
    cout << "Choose the type of star pattern you want to print."<<endl;
    cout << "1. Filled Stars"<<endl;
    cout << "2. Hollow Stars"<<endl;
    cout << "3. Pyramid"<<endl;
    cout << "Enter your choice: ";
    cin >> choice;

    //Filled stars (L)
    if(choice == 1){
        int rows = 0;
        cout << "Enter no. of rows: ";
        cin >> rows;
        for(int i = 1; i <= rows; i++){
            for(int j = 1; j <= i; j++){
                cout << "*";
            }
            cout << endl;
        }
    }

    //Hollow L shape
    else if(choice == 2){
        int rows = 0;
        cout << "Enter no. of rows: ";
        cin >> rows;
        for(int i = 1; i <= rows; i++){
            for(int j = 1; j <= i; j++){
                if(i == 1 || i == rows || j == 1 || j ==i){
                    cout << "*";
                }
                else{
                    cout << " ";
                }
```

```
            }
            cout << endl;
        }
    }

    //normal pyramid
    else if(choice == 3){
        int rows = 0;
        cout << "Enter no. of rows: ";
        cin >> rows;
        for(int i = 1; i <= rows; i++){
            for(int j = rows; j >= i; j--){
                cout << " ";
            }
            for(int k = 1; k <= i; k++){
                cout << "* ";
            }
            cout << endl;
        }
    }

    else{
        cout << "Invalid choice"<<endl;
    }

}
```

Output:

```
PS D:\Hasan\cpp\university\lab05> g++ task01.cpp
PS D:\Hasan\cpp\university\lab05> ./a.exe
Welcome to star pattern generator.
Choose the type of star pattern you want to print.
1. Filled Stars
2. Hollow Stars
3. Pyramid
Enter your choice: 1
Enter no. of rows: 6
*
**
***
****
*****
******
PS D:\Hasan\cpp\university\lab05> g++ task01.cpp
PS D:\Hasan\cpp\university\lab05> ./a.exe
Welcome to star pattern generator.
Choose the type of star pattern you want to print.
1. Filled Stars
2. Hollow Stars
3. Pyramid
Enter your choice: 2
Enter no. of rows: 5
*
**
* *
*  *
*****
PS D:\Hasan\cpp\university\lab05> g++ task01.cpp
PS D:\Hasan\cpp\university\lab05> ./a.exe
Welcome to star pattern generator.
Choose the type of star pattern you want to print.
1. Filled Stars
2. Hollow Stars
3. Pyramid
Enter your choice: 3
```

```
Enter your choice: 3
Enter no. of rows: 5
    *
   * *
  * * *
 * * * *
* * * * *
PS D:\Hasan\cpp\university\lab05>
```

Task 02:

```cpp
//Floyd's triangle

#include<iostream>
using namespace std;
int main(){
    int rows = 0, p = 1; //p is for number on pattern
    cout << "Enter no. of rows: ";
    cin >> rows;
    for(int i = 1; i <= rows; i++){
        for(int j = 1; j <= i; j++){
            cout << p<<" ";
            p++;
        }
        cout << endl;
    }
}
```

Output:

```
PS D:\Hasan\cpp\university\lab05> g++ task02.cpp
PS D:\Hasan\cpp\university\lab05> ./a.exe
Enter no. of rows: 5
1
2 3
4 5 6
7 8 9 10
11 12 13 14 15
PS D:\Hasan\cpp\university\lab05>
```

Ln 1, Col 1 Spaces: 4 UTF-8 CRLF {} C++ Go Live windows-gcc-x86

Task 03:

```cpp
// Decreasing L
// Hollow square
// Combination of L & square

#include<iostream>
using namespace std;
int main(){

    // for inverted triangle
    cout << "1. Inverted triangle."<<endl;
    for(int i = 1; i <= 5; i++){
        for(int j = 5; j >= i; j--){
            cout << "* ";
        }
        cout << endl;
    }

    //for hollow square
    cout << "2. Hollow square."<<endl;
    for(int i = 1; i <= 5; i++){
        for(int j = 1; j <= 5; j++){
            if(i == 1 || i == 5 || j == 1 || j == 5){
                cout << "* ";
            }
            else{
                cout << "  ";
            }
        }
        cout << endl;
    }

    cout << "3. Combination of L & square."<<endl;
    for(int i = 1; i <= 5; i++){
        for(int j = 1; j <= i; j++){ // for simple L
            cout << "* ";
        }
        for(int k = 5; k > i; k--){ // for spaces after L
            cout << "  ";
        }
        for(int k = 1; k <= 5; k++){ // for square
            if(i == 1 || i == 5 || k == 1 || k ==5){
                cout << "* ";
            }
```

```
            else{
                cout << "   ";
            }
        }
        cout << endl;
    }
}
```

Output: