Java - Introduction to Programming
Lecture 4

Print the Patterns:

1. Solid Rectangle

*****

*****

*****

*****

```
public class pattern {
    public static void main(String[] args) {
        //outer loop
        for(int i=1;i<=4;i++){
            //inner loop
            for(int j=1;j<=5;j++){
                System.out.print("*");
            }
            System.out.println();
        }
    }}
```

2. Hollow Rectangle

*****
*   *
*   *
*****

(1,1) (1,2) (1,3) (1,4) (1,5)
(2,1) (2,5)
(3,1) (3,5)
(4,1) (4,2) (4,3) (4,4) (4,5)

```
public class pattern {
```

```
    public static void main(String[] args) {
        int n=4;
        int m=5;
        //outer loop
        for(int i=1; i<=n; i++){
            //inner loop
            for(int j=1; j<=m; j++){
                //cell(i,j)
                if(i==1 || j ==1 || i==n || j==m){
                    System.out.print("*");
                }
                else{
                    System.out.print(" ");
                }
            }
            System.out.println();
        }
    }}
```

Half Pyramid:

*

**

***

****

no of rows = column number

```
public class pattern {
    public static void main(String[] args) {
        int n=4;
        //outer loop
        for(int i=1; i<=n; i++){
            //inner loop
            for(int j=1; j<=i; j++){
                System.out.print("*");
            }
            System.out.println();
        }
```

```
    }}
```

Inverted Half Pyramid:

****

***

**

*

```
public class pattern {
    public static void main(String[] args) {
        int n=4;
        //outer loop
        for(int i=n; i>=1; i--){
            //inner loop
            for(int j=1; j<=i; j++){
                System.out.print("*");
            }
            System.out.println();
        }
    }}
```

Inverted Half Pyramid:

(rotated by 180 degree)

3 space(n-i)+ 1 star(i)
2 space + 2 star
1 space + 3 star
0 space + 4 star

```java
public class pattern {
    public static void main(String[] args) {
        int n=4;
        //outer loop
        for(int i=1; i<=n; i++){
            //inner loop
            //space
            for(int j=1; j<=n-i; j++){
                System.out.print(" ");
            }
            //inner loop
            //star
            for(int j=1;j<=i;j++){
                System.out.print("*");
            }
            System.out.println();
        }
    }}
```

Half Pyramid with numbers

1
12
123
1234
12345

```java
public class pattern {
    public static void main(String[] args) {
        int n=5;
        //outer loop
        for(int i=1; i<=n; i++){
            //inner loop
            for(int j=1; j<=i; j++){
                System.out.print(j);
            }
            System.out.println();
```

```
        }
    }}
```

Inverted Half Pyramid with numbers

12345
1234
123
12
1

```
public class pattern {
    public static void main(String[] args) {
        int n=5;
        //outer loop
        for(int i=n; i>=1; i--){
            //inner loop
            for(int j=1; j<=i; j++){
                System.out.print(j);
            }
            System.out.println();
        }
    }}
```

```
public class pattern {
    public static void main(String[] args) {
        int n=5;
        //outer loop
        for(int i=1; i<=n; i++){
            //inner loop
            for(int j=1; j<=n-i+1; j++){
                System.out.print(j);
            }
            System.out.println();
        }
    }}
```

Floyd’s Triangle

1
2 3
4 5 6
7 8 9 10
11 12 13 14 15

```
public class pattern {
    public static void main(String[] args) {
        int n=5;
        int num =1;
        //outer loop
        for(int i=1; i<=n; i++){
            //inner loop
            for(int j=1; j<=i; j++){
                System.out.print(num);
                num++;
            }
            System.out.println();
        }
    }}
```

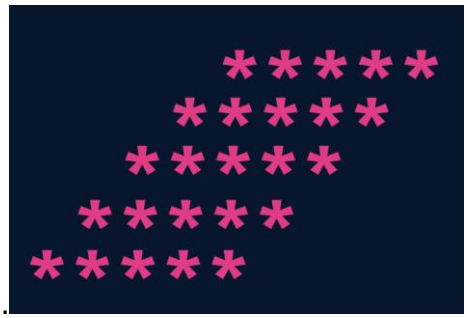
0-1 Triangle

1 (1,1)
0 1 (2,1) (2,2)
1 0 1 (3,1) (3,2) (3,3)
0 1 0 1 (4,1) (4,2) (4,3) (4,4)
1 0 1 0 1 (5,1) (5,2) (5,3) (5,4) (5,5)

```java
public class pattern {
    public static void main(String[] args) {
        int n=5;
        //outer loop
        for(int i=1; i<=n; i++){
            //inner loop
            for(int j=1; j<=i; j++){
                int sum = i+j;
                if(sum%2==0){ //even
                    System.out.print("1 ");
                }else{  //odd
                    System.out.print("0 ");
                }
            }
            System.out.println();
        }
    }}
```

Home Assignment:

1. Print a solid rhombus.



2. Print a number pyramid.

3. Print a palindromic number pyramid.