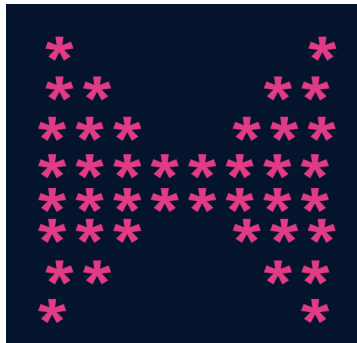


Java - Introduction to Programming

Day 6

Patterns - Part 2

1.



```
import java.util.*;

public class Solutions {
    public static void main(String args[]) {
        int n = 4;

        //upper part
        for(int i=1; i<=n; i++) {
            for(int j=1; j<=i; j++) {
                System.out.print("*");
            }

            int spaces = 2 * (n-i);
            for(int j=1; j<=spaces; j++) {
                System.out.print(" ");
            }

            for(int j=1; j<=i; j++) {
                System.out.print("*");
            }
            System.out.println();
        }

        //lower part
        for(int i=n; i>=1; i--) {
            for(int j=1; j<=i; j++) {
```

```

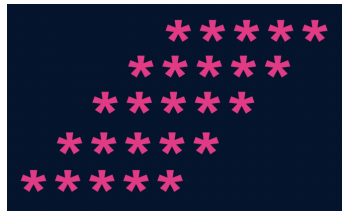
        System.out.print("*");
    }

    int spaces = 2 * (n-i);
    for(int j=1; j<=spaces; j++) {
        System.out.print(" ");
    }

    for(int j=1; j<=i; j++) {
        System.out.print("*");
    }
    System.out.println();
}
}
}

```

2.



```

import java.util.*;

public class Solutions {
    public static void main(String args[]) {
        int n = 5;

        for(int i=1; i<=n; i++) {
            //spaces
            for(int j=1; j<=n-i; j++) {
                System.out.print(" ");
            }

```

```
        //stars
        for(int j=1; j<=n; j++) {
            System.out.print("*");
        }
        System.out.println();
    }
}
```

3.

```

1
2 2
3 3 3
4 4 4 4
5 5 5 5 5
```

```

import java.util.*;

public class Solutions {
    public static void main(String args[]) {
        int n = 5;

        for(int i=1; i<=n; i++) {
            //spaces
            for(int j=1; j<=n-i; j++) {
                System.out.print(" ");
            }

            //numbers
            for(int j=1; j<=i; j++) {
                System.out.print(i+" ");
            }
            System.out.println();
        }
    }
}

```

4.

```

      1
    2 1 2
  3 2 1 2 3
4 3 2 1 2 3 4
5 4 3 2 1 2 3 4 5

```

```

import java.util.*;

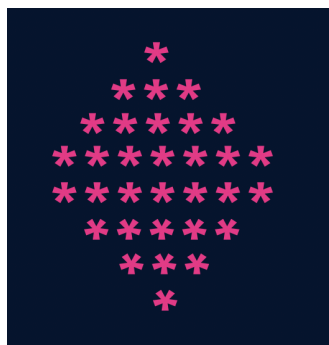
public class Solutions {
    public static void main(String args[]) {
        int n = 5;
        for(int i=1; i<=n; i++) {
            //spaces
            for(int j=1; j<=n-i; j++) {
                System.out.print(" ");
            }

            //first part
            for(int j=i; j>=1; j--) {
                System.out.print(j);
            }

            //second part
            for(int j=2; j<=i; j++) {
                System.out.print(j);
            }
            System.out.println();
        }
    }
}

```

5.



```

import java.util.*;

public class Solutions {
    public static void main(String args[]) {
        int n = 5;

        //upper part

```

```

for(int i=1; i<=n; i++) {
    //spaces
    for(int j=1; j<=n-i; j++) {
        System.out.print(" ");
    }
    for(int j=1; j<=2*i-1; j++) {
        System.out.print("*");
    }
    System.out.println();
}

//lower part
for(int i=n; i>=1; i--) {
    //spaces
    for(int j=1; j<=n-i; j++) {
        System.out.print(" ");
    }
    for(int j=1; j<=2*i-1; j++) {
        System.out.print("*");
    }
    System.out.println();
}
}

```

Homework Problems

1. Print a hollow Butterfly.



2. Print a hollow Rhombus.

```
*****  
  
*   *  
  
*   *  
  
*   *  
  
*****
```

3. Print Pascal's Triangle.

```
1  
1 1  
1 2 1  
1 3 3 1  
1 4 6 4 1
```

4. Print half Pyramid.

```
1  
1 2  
1 2 3  
1 2 3 4  
1 2 3 4 5
```

5. Print Inverted Half Pyramid.

```
11111  
222  
33  
4
```