**Butterfly program:**

class butterfly{  
 public static void main(String[]args){  
 int n=4;  
 for(int i=1;i<=n;i++){  
 System.*out*.println("\*".repeat(i) + " ".repeat(2\*(n-i)) + "\*".repeat(i));  
 }  
 for(int i=n;i>=1;i--){  
 System.*out*.println("\*".repeat(i) + " ".repeat(2\*(n-i)) + "\*".repeat(i));  
 }  
 }  
}

**output:**

**\* \***

**\*\* \*\***

**\*\*\* \*\*\***

**\*\*\*\*\*\*\*\***

**\*\*\*\*\*\*\*\***

**\*\*\* \*\*\***

**\*\* \*\***

**\* \***

**Pattern1:**

class HWpattern{  
 public static void main(String[]args){  
 int n=8;  
 for(int i=1;i<=n;i++){  
 if(i<=3){  
 System.*out*.println(" ");  
 for(int j=1;j<=i;j++){  
 System.*out*.print("\* ");  
 }  
 System.*out*.println(" ");  
 }  
 else if (i==4) {  
 System.*out*.println("\* \* \* ");  
 }  
 else if (i==5) {  
 System.*out*.println(" \* \* \*");  
 }  
 else{  
 System.*out*.print(" ");  
 for(int j=1;j<=(n-i+1);j++){  
 System.*out*.println("\* ");  
 }  
 System.*out*.println(" ");  
 }  
 }  
 }  
}

**output:**

**\***

**\* \***

**\* \* \***

**\* \* \***

**\* \* \***

**\* \***

**\***

**Two sum:**

class TwoSum{  
 public static void main(String[]args){  
 int[] nums={2,7,11,15};  
 int target=18;  
 for(int i=0;i<nums.length;i++){  
 for(int j=i+1;j< nums.length;j++){  
 if(nums[i]+nums[j]==target){  
 System.*out*.println("[" + i + "," + j+ "]");  
 }  
 }  
 }  
 }  
}

**output:**

**[1,2]**

**Palindrome:**

class palindrome{  
 public static void main(String[]args){  
 System.*out*.println("999".equals(new StringBuilder("999").reverse().toString())?"True":"False");  
 }  
}

**output:**

**True**

**Neon num:**

class Neonnum{  
 public static void main(String[]args){  
 int num=1;  
 int sq=num\*num;  
 int sum=0;  
 while(sq>0){  
 sum+=sq%10;  
 sq/=10;  
 }  
 if(sum==num){  
 System.*out*.println(num + "is a neon number" );  
 }  
 else{  
 System.*out*.println(num + "is not a neon number");  
 }  
 }  
}

**output:**

**1 is a neon number**

**Roman to int:**

import java.util.HashMap;  
import java.util.Map;  
class RomantoInt{  
 public static void main(String[]args){  
 Map<Character,Integer>map=new HashMap<>();  
 map.put('I',1);  
 map.put('V',5);  
 map.put('X',10);  
 map.put('L',50);  
 map.put('C',100);  
 map.put('D',500);  
 map.put('M',1000);  
 String s="MCMIV";  
 int result=0;  
 for(int i=0;i<s.length();i++){  
 int value=map.get(s.charAt(0));  
 if(i+1<s.length() && value<map.get(s.charAt(i+1))){  
 result-=value;  
 }  
 else{  
 result+=value;  
 }  
 }  
 System.*out*.println("int value:"+result);  
 }  
}

**output:**

**int value:5000**