Array_Programs

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```java
package _apple;

public class _01_static_Array {

	public static void main(String[] args) {

		int[] arr = {1,2,3,4,5,6,7};

		for (int i = 0; i < arr.length; i++) {
			System.out.println(arr[i]);
		}
	}

}
```

```java
package _apple;

import java.util.Scanner;

public class _02_Dynamic_Array {

	public static void main(String[] args) {

		Scanner sc = new Scanner(System.in);

		System.out.println("Enter the size : ");
		int size = sc.nextInt();

		int[] arr = new int[size];
```

```
		System.out.println("Enter the elements : ");
		for (int i = 0; i < arr.length; i++) {
			arr[i] = sc.nextInt();
		}

		for (int i = 0; i < arr.length; i++) {

			System.out.print(arr[i] + " ");
		}
	}

}
```

```
package _apple;

public class _03_Sum_of_even_index_array {

	public static void main(String[] args) {

		int[] arr = {1,2,3,4,5}; int sum = 0 ;

		for (int i = 0; i < arr.length; i++) {
			if(i % 2 == 0) {
				sum += arr[i];
			}
		}
		System.out.println(sum);
	}

}
```

```
package _apple;

public class _04_Reverse_array_sum_of_even_index_value {
```

```
	public static void main(String[] args) {

		int[] arr = { 1, 2, 3, 4, 5 }; // 5 4 3 2 1

		int j = 0, sum = 0;

		int[] arr1 = new int[arr.length];

		for (int i = 0; i < arr1.length; i++) {
			arr1[j++] = arr[i];
		}

		for (int i = arr1.length - 1; i >= 0; i--) {
			if (i % 2 == 0) {
				sum += arr1[i];
			}
		}

		System.out.println(sum);

	}

}
```

```
package _apple;

import java.util.Arrays;

public class _05_Sort_array {

	public static void main(String[] args) {

		int[] arr = { 5, 3, 2, 6, 1, 4 };

		Arrays.sort(arr);
```

```
		for (int no : arr) {
			System.out.print(no + " ");
		}

	}

}
```

```
package _apple;

import java.util.Arrays;

public class _06_Find_elements_in_Array_BinarySearch {

	public static void main(String[] args) {

		int[]arr =  { 1,2,3,4,5,6};
		int no = 3 ;

		System.out.println(Arrays.binarySearch(arr, no)+" index");
	}

}
```

```
package _apple;

import java.util.Arrays;

public class _08_Print_Zero_First_and_Last {

	// zero first
	static void zeroFirst(int[] arr) {

		Arrays.sort(arr);
```

```
		for (int i = 0; i < arr.length; i++) {
			System.out.print(arr[i] + " ");

		}
	}

	//zero last
	static void zeroLast(int[] arr) {

		int j = 0;
		int[] a1 = new int[arr.length];

		for (int i = 0; i < arr.length; i++) {
			if (arr[i] != 0) {
				a1[j++] = arr[i];
			}
		}
		for (int no : a1) {
			System.out.print(no + " ");
		}

	}

	public static void main(String[] args) {
		int[] arr = { 1, 3, 2, 0, 0, 4, 0, 5 };

		zeroFirst(arr);
		System.out.println();
		zeroLast(arr);

	}

}
```

```
package _apple;

public class _09_Bubble_Sort {
```

```
	// bubble sort
	public static void main(String[] args) {

		int[] arr = { 5, 3, 4, 1, 2 };

		for (int i = 0; i < arr.length; i++) {

			for (int j = 0; j < arr.length - 1 - i; j++) {

				if (arr[j] > arr[j + 1]) {

					int temp = arr[j];

					arr[j] = arr[j + 1];

					arr[j + 1] = temp;
				}

			}
		}

		for (int no : arr) {
			System.out.print(no + " ");
		}
	}
}
```

```
package _apple;

public class _07_Linear_Search {

	public static void main(String[] args) {

		int[] arr = { 10, 20, 30, 40, 50 };

		int no = 30;
```

```
		linearSearch(arr, no);

	}

	static void linearSearch(int[] arr, int no) {

		for (int i = 0; i < arr.length; i++) {
			if (arr[i] == no) {
				System.out.println("The value present in the index of : " + i);
				return;
			}
		}
		System.out.println("The value is not present in the array");

	}

}
```

```
package _apple;

import java.util.ArrayList;
import java.util.Arrays;

// bubble sort in arraylist

public class _10_Bubble_sort_in_ArrayList {

	public static void main(String[] args) {

		ArrayList<Integer> a1 = new ArrayList<Integer>(Arrays.asList(1, 4, 2, 3, 5));

		for (int i = 0; i < a1.size(); i++) {

			for (int j = 0; j < a1.size() - 1 - i; j++) {

				if (a1.get(j) > a1.get(j + 1)) {
```

```
                    int temp = a1.get(j);

                    a1.set(j, a1.get(j + 1));

                    a1.set(j + 1, temp);
                }
            }
        }

        System.out.println(a1); // [1, 2, 3, 4, 5]

    }

}
```

```
package _apple;

public class _11_Words_sorting_ {

    // word sorting
    // String sorting

    public static void main(String[] args) {

        String[] arr = { "cat", "bat", "ant" };

        for (int i = 0; i < arr.length; i++) {

            for (int j = 0; j < arr.length - 1 - i; j++) {

                if (arr[j].compareTo(arr[j + 1]) > 0) {

                    String temp = arr[j];

                    arr[j] = arr[j + 1];

                    arr[j + 1] = temp;
                }
```

```
                }
            }

            for (String str : arr) {
                System.out.print(str + " ");
            }

        }

}
```

```
package _apple;

import java.util.ArrayList;
import java.util.Arrays;

// intersection of two arrays

public class _12_InterSection_Of_2_array {

        public static void main(String[] args) {

            ArrayList<Integer> a1 = new ArrayList<Integer>(Arrays.asList(1, 2, 3, 5, 6));
            ArrayList<Integer> a2 = new ArrayList<Integer>(Arrays.asList(4, 7, 8, 3, 1));

            a1.retainAll(a2);

            System.out.println(a1);

        }

}
```

```
package _apple;
```

```java
import java.util.TreeSet;

// remove duplicates in a given array

public class _13_Remove_Duplicates_in_array {

	public static void main(String[] args) {

		int[] arr = { 1, 2, 3, 3, 2, 4, 5, 5, 4, 5 };

		TreeSet<Integer> t1 = new TreeSet<Integer>();

		for (int no : arr) {
			t1.add(no);
		}

		System.out.println(t1);

	}

}
```

```java
package _apple;

// merge multiple arrays
public class _14_Merge_Multiple_arrays_in_Single_Array {

	// another way to merge two arrays
	static void merge(int[] a1, int[] a2) {

		int[] temp = new int[a1.length + a2.length];
		int j = 0;

		for (int i = 0; i < a1.length; i++) {
			temp[j++] = a1[i];
		}

		for (int i = 0; i < a2.length; i++) {
```

```
                temp[j++] = a2[i];
            }

            for (int no : temp) {

                System.out.print(no + " ");
            }

        }

        public static void main(String[] args) {

            int[] a1 = { 1, 2, 3, 4 };
            int[] a2 = { 5, 6, 7, 8, 9 };

            int[] temp = new int[a1.length + a2.length];

            System.arraycopy(a1, 0, temp, 0, a1.length);

            System.arraycopy(a2, 0, temp, a1.length, a2.length);

            for (int no : temp) {

                System.out.print(no + " ");
            }



            // another way to merge two arrays
            System.out.println("\n another way");
            merge(a1, a2);

        }

}
```

```
package _apple;
```

```java
// convert first character of each word to uppercase in a sentence

public class _15_First_Character_Of_Each_word_Uppercase {

	public static void main(String[] args) {

		String str = "Java is a programming language";

		String s[] = str.split(" ");

		String res = "";

		for (int i = 0; i < s.length; i++) {

			String a = s[i].substring(0, 1).toUpperCase();

			String b = s[i].substring(1);

			res += a + b + " ";
		}

		System.out.println(res);
	}

}
```

```java
package _apple;

import java.util.Arrays;

public class _16_Anagram {

	public static void main(String[] args) {

		String s1 = "race", s2 = "care";
```

```
		if (s1.length() == s2.length()) {

			char[] ch1 = s1.toCharArray();
			char[] ch2 = s2.toCharArray();

			Arrays.sort(ch1);
			Arrays.sort(ch2);

			if (Arrays.equals(ch1, ch2)) {
				System.out.println("Anagram");
			}
		}

		else {
			System.out.println("Not an anagram");
		}
	}
}
```

```
package _apple;

import java.util.Set;
import java.util.TreeSet;

// panagram

public class _17_Panagram {

	public static void main(String[] args) {

		String str = "The quick brown fox jumps over the lazy dog";

		str = str.toLowerCase().replaceAll(" ", "");

		Set<Character> set = new TreeSet<Character>();

		for (int i = 0; i < str.length(); i++) {
```

```
                char ch = str.charAt(i);
                set.add(ch);
            }

//          System.out.println(set);

            if (set.size() == 26) {
                System.out.println("Panagram");
            } else {
                System.out.println("not Panagram");
            }
        }
}
```

```
package _apple;

// union and intersection
import java.util.ArrayList;
import java.util.Arrays;
import java.util.HashSet;
import java.util.Set;

public class _18_Union_and_Intersection {

    public static void main(String[] args) {

        ArrayList<Integer> arr1 = new ArrayList<Integer>(Arrays.asList(1, 2, 4, 5, 8));
        ArrayList<Integer> arr2 = new ArrayList<Integer>(Arrays.asList(1, 6, 7, 4, 9, 3));

        ArrayList<Integer> a1 = new ArrayList<Integer>(arr1);
        a1.retainAll(arr2);

        System.out.println(a1);

        Set<Integer> a2 = new HashSet<Integer>(arr1);
        a2.addAll(arr2);

        System.out.println(a2);
```

```
	}

}
```

```
package _apple;

public class _19_Hello_Lol {

	public static void main(String[] args) {

		String s = "Hello-LoL" ; // o/p : hLLo-lol

	}

}
```

```
package _apple;

import java.util.Arrays;

public class _20_Nth_Largest_Number {
	public static void main(String[] args) {

		int[] a = { 4, 1, 6, 3, 2, 1, 5 };

		int n = 3;

		Arrays.sort(a);

		System.out.println(a.length - n);
	}
}
```

```
package batman;
```

```java
// first positive missing number

public class _21_1st_Positive_Missing_number {

	public static void main(String[] args) {
		int[] arr = { 1, 2, 4, 5, 6, 7, 8, 9 };

		int n = arr[arr.length - 1];

//		System.out.println("n value : "+n);

		int exactSum = n * (n + 1) / 2;
//		System.out.println("exactSum :"+exactSum);

		int sum = 0;

		for(int no : arr) {
			sum += no;
		}
//		System.out.println("sum :" + sum);

		System.out.println(exactSum-sum);
	}

}
```

```java
package batman;

// missing numbers in array

import java.util.TreeSet;

public class _22_All_Missing_Number_in_Array {

	public static void main(String[] args) {

		int[] arr = { 1, 3, 5, 9, 11, 15, 21, 30 };
```

```
		int start = arr[0]; // 1
		int end = arr[arr.length - 1]; // 30

		// add array values in treeSet

		TreeSet<Integer> t1 = new TreeSet<Integer>();

		for (int no : arr) {
			t1.add(no);
		}

//		System.out.println(t1);

		// print the missing number in treeSet
		for (int i = start; i <= end; i++) {
			if (!t1.contains(i)) {
				System.out.println(i);
			}
		}

	}

}
```

```
package batman;

//Rotation of array - Right side

public class _23_Right_side_Rotation_array {

	public static void main(String[] args) {

		int[] arr = { 1, 2, 3, 4, 5 };

		int k = 3;
```

```
		k = k % arr.length;

		for (int i = 0; i < arr.length; i++) {

			if (i < k) {
				System.out.print(arr[arr.length + i - k] + " ");
			} else {
				System.out.print(arr[i - k] + " ");
			}

		}
	}

}
```

```
package batman;

//Rotation of array - Left side

public class _24_Left_Side_Rotation_Array {

	public static void main(String[] args) {

		int[] arr = { 1, 2, 3, 4, 5 };

		int k = 3;
		int j = 0;

		k = k % arr.length;

		for (int i = 0; i < arr.length; i++) {

			if (k < arr.length) {
				System.out.print(arr[k] + " ");
				k++;
			} else {
				System.out.print(arr[j++] + " ");
```

```
                }

            }
        }

}
```

```
package batman;

import java.util.ArrayList;
import java.util.Arrays;

// Intersection of 3 array elements

public class _25_InterSection_Of_3_Array {

    // using ArrayList

    static void arrList() {
        ArrayList<Integer> a1 = new ArrayList<Integer>(Arrays.asList(1, 2, 3, 4, 5, 6));
        ArrayList<Integer> a2 = new ArrayList<Integer>(Arrays.asList(1, 7, 4, 8, 3, 9));
        ArrayList<Integer> a3 = new ArrayList<Integer>(Arrays.asList(7, 3, 9, 2, 8, 5));
        a1.retainAll(a2);
        System.out.println(a1);

        a2.retainAll(a3);
        System.out.println(a2);
    }

    public static void main(String[] args) {
        arrList();

        int[] a1 = { 1, 2, 3, 4, 5, 6 };
        int[] a2 = { 1, 7, 4, 8, 3, 9 };
        int[] a3 = { 7, 3, 9, 2, 8, 5 };

        // compare a1 and a2 using for loop
```

```
		for (int i = 0; i < a1.length; i++) {
			for (int j = 0; j < a2.length; j++) {
				if (a1[i] == a2[j]) {
					System.out.print(a1[i] + " ");
				}
			}
		}
		System.out.println();
		// compare a2 and a3 using for loop

		for (int i = 0; i < a2.length; i++) {
			for (int j = 0; j < a3.length; j++) {
				if (a2[i] == a3[j]) {
					System.out.print(a2[i] + " ");
				}
			}
		}

	}

}
```

```
package batman;

// print unique number in an array

public class _26_Unique_Numbers_In_array {

	public static void main(String[] args) {

		int[] arr = { 1, 2, 3, 4, 1, 5, 2, 6 };

		for (int i = 0; i < arr.length; i++) {
			boolean flag = true;
			for (int j = 0; j < arr.length; j++) {
				if (i != j && arr[i] == arr[j]) {
					flag = false;
					break;
```

```
                }
            }

            if (flag) {
                System.out.print(arr[i] + " ");
            }

        }
    }

}
```

```
package batman;
// print unique character in array

public class _27_Unique_character_in_Array {

    public static void main(String[] args) {

        String s = "zzcyyaoot"; // cat

        char[] ch1 = s.toCharArray();
        char[] ch2 = s.toCharArray();

        for (int i = 0; i < ch1.length; i++) {

            boolean flag = true;

            for (int j = 0; j < ch2.length; j++) {

                if (i != j && ch1[i] == ch2[j]) {
                    flag = false;
                    break;
                }
            }
            if (flag) {
                System.out.print(ch1[i]);
```

```
                }
            }

        }
}
```

```
package batman;

import java.util.Arrays;

// find Nth max and min value in array

public class _28_Nth_Max_Min_value_In_Array {

        public static void main(String[] args) {

                int[] arr = { 1, 2, 3, 4, 5, 6 };

                int n = 3 ;

                Arrays.sort(arr);

                int len = arr.length;

                System.out.println("Max : " + arr[len-n]);

                System.out.println("Min : "+ arr[n-1]);
        }

}
```

```
package batman;

import java.util.Arrays;

// Add two unsorted arrays in one array and print in ascending order
```

```java
public class _29_Add_Two_unsorted_Array_and_Print_in_Ascending_Order {

	public static void main(String[] args) {

		int[] a1 = { 4, 2, 1, 3, 5 };
		int[] a2 = { 9, 7, 6, 8, 10 };

		int temp[] = new int[a1.length + a2.length];
		int j = 0;

		for (int i = 0; i < a1.length; i++) {
			temp[j++] = a1[i];
		}

		for (int i = 0; i < a2.length; i++) {
			temp[j++] = a2[i];
		}

		Arrays.sort(temp);

		for (int no : temp) {
			System.out.print(no + " ");
		}

	}

}
```

```java
package batman;

// Occurrence of an array

public class _30_Count_the_Occurrence_of_Array {

	public static void main(String[] args) {

		int[] arr = { 1, 1, 2, 3, 4, 3, 2, 3, 4, 5 };
```

```
		int x = 5;

		int count = 0;

		for (int no : arr) {
			if (x == no) {
				count++;
			}
		}
		System.out.println(count);
	}

}
```

```
package batman;

// find the maximum permutation count in String array

import java.util.ArrayList;
import java.util.Collections;

public class _31_Permutation_Count_String_Array {

	public static void main(String[] args) {

		String[] s = { "hello", "ccbc", "aacioeu" };

		System.out.println(maxPermutation(s));
	}

	// maxPermutation

	static int maxPermutation(String[] str) {
		ArrayList<Integer> a1 = new ArrayList<Integer>();

		for (int i = 0; i < str.length; i++) {
			String s = str[i];
```

```
                s = s.replaceAll("[aeiou]", "");

                a1.add(fact(s.length()));
            }

            Collections.sort(a1);

            return a1.get(a1.size() - 1);
        }

        // factorial of each String
        static int fact(int no) {
            int fact = 1;

            for (int i = 1; i <= no; i++) {
                fact *= i;
            }
            return fact;
        }

}
```

```
package batman;

// Remove adjacent words in given sentence

public class _32_Remove_Adjacent_words_in_Sentence {

        public static void main(String[] args) {
            String str = "hi hi hi how hi are are you you";

            String[] s1 = str.split(" ");

            for (int i = 0; i < s1.length - 1; i++) {
                if (compare(s1[i], s1[i + 1])) {
                    System.out.print(s1[i] + " ");
```

```
                }
            }
            System.out.print(s1[s1.length - 1]);
        }

        static boolean compare(String s1, String s2) {

//              return !s1.equals(s2);

            if (s1.equals(s2)) {
                return false;
            } else {
                return true;
            }

        }

}
```

```
package batman;

// a3b2c4 --> aaa bb cccc
public class _33_a3b2c4_aaa_bb_cccc {

        public static void main(String[] args) {

            String s = "a3b2c4";

            for (int i = 0; i < s.length(); i = i + 2) {
                print(s.charAt(i), s.charAt(i + 1));
            }
        }

        static void print(char ch1, char ch2) {

            int no = (int) (ch2 - 48);

            for (int i = 1; i <= no; i++) {
```

```
                System.out.print(ch1);
            }
        }
}
```

```
package batman;

import java.util.HashMap;
import java.util.Map;

//Frequency of each words in String array sentence

public class _34_Frequency_of_each_words_in_Sentence {

    public static void main(String[] args) {

        String str = "hi hello how how hi are are you";

        String[] s1 = str.split(" ");

        Map<String, Integer> map = new HashMap<String, Integer>();

        for (String s : s1) {
            if (map.containsKey(s)) {
                map.put(s, map.get(s) + 1);
//              map.put(s, map.getOrDefault(s, 0)+1);
            } else {
                map.put(s, 1);
            }
        }

        // to print

        for (Map.Entry<String, Integer> m : map.entrySet()) {
            System.out.println(m.getKey() + " " + m.getValue());
        }
    }
```

```
}
```

```
package batman;

import java.util.HashMap;
import java.util.Map;

// Frequency of Integer array

public class _35_Frequency_of_Integer_array {

	public static void main(String[] args) {

		int[] arr = { 1, 1, 2, 2, 2, 3, 3, 4, 5, 6, 7, 7, 7, 7, 8, 8, 8, 8, 9, 9, 9, 10 };

		Map<Integer, Integer> map = new HashMap<Integer, Integer>();

		for (int no : arr) {
			map.put(no, map.getOrDefault(no, 0) + 1);
		}

		// print

		for (Map.Entry<Integer, Integer> m : map.entrySet()) {
			System.out.println(m.getKey() + " --> " + m.getValue() + " times");
		}
	}

}
```

```
package batman;

// convert integer to binary value
```

```java
public class _36_Convert_Integer_to_Binary {

	public static void main(String[] args) {

		int no = 4;

		String str = "";

		while (no > 0) {
			int rem = no % 2;

			str = rem + str;

			no /= 2;
		}

		System.out.println(str);
	}

}
```

```java
package batman;

import java.util.TreeSet;

public class _37_Remove_Duplicates_words_in_sentence {

	public static void main(String[] args) {

		String str = "hi hi how how are are are you you";

		String[] s = str.split(" ");

		TreeSet<String> t1 = new TreeSet<String>();

		for (String s1 : s) {
			t1.add(s1);
		}
```

```
            System.out.println(t1);
        }

}
```

```
package batman;

/*
 *  i / p  :  1,2,3,4,5
 *      o / p  :  5,3,1
 */

public class _38_print_even_odd_index_values_in_reverse_order {

        public static void main(String[] args) {

                int[] arr = { 1, 2, 3, 4, 5 };

                for (int i = arr.length - 1; i >= 0; i--) {
                        if (i % 2 == 0) {
                                System.out.print(arr[i] + " "); // 5 3 1
                        }
                }

// ------------------------------------------------
                System.out.println();
//-------------------------------------------------------

                // print_odd_index_values_in_reverse_order

                int[] a1 = { 1, 2, 3, 4, 5, 6 };

                for (int i = a1.length - 1; i >= 0; i--) {
                        if (i % 2 != 0) {
                                System.out.print(a1[i] + " "); // 6 4 2
```

```
                }
            }

        }

}
```

```
package batman;

// sum of double digits in array

public class _39_Sum_of_double_digits {

        public static void main(String[] args) {

                int[] arr = { 10, 1, 20, 4, 2, 456, 1234, 10, 20, 444, 2, 10 };
                // 10, 20 ,10 , 20, 10 == 70

                int sum = 0;

                for (int i = 0; i < arr.length; i++) {

                        if (arr[i] > 9 && arr[i] < 100) {
                                sum += arr[i];
                        }
                }
                System.out.println(sum); // 70
        }

}
```

```
package batman;

// find the character occurrence in a given string
```

```java
public class _40_character_occurrence_in_String {

	public static void main(String[] args) {

		String str = "hi how hello happy";

		int count = 0;

		String s1 = str.replaceAll("[^h]", ""); // hhhh

		for (int i = 0; i < s1.length(); i++) {
			count++;
		}
		System.out.println(count);  // 4

		// another way to find occurrence

		char ch = 'h';
		int count1 = 0;

		for (int i = 0; i < str.length(); i++) {
			char ch1 = str.charAt(i);
			if (ch1 == ch) {
				count1++;
			}
		}
		System.out.println(ch + " presents " + count1 + " times");



	}

}
```

```java
package cat;

// find the biggest number in given array without sorting
```

```java
public class _41_Biggest_element_in_given_Array {

	public static void main(String[] args) {

		int[] arr = { 20, 98, 34, 2, 13, 12, 5, 88 };

		int max = 0 ;

		for (int i = 0; i < arr.length; i++) {
			if(arr[i] > max) {
				max = arr[i] ;
			}
		}
		System.out.println(max);  // 98

	}

}
```

```java
package cat;

// find the first biggest and second biggest element in a given array

public class _41_First_Biggest_and_Second_Biggest_element {

	public static void main(String[] args) {

		int[] arr = { 20, 98, 34, 2, 13, 12, 5, 88 };

		int max1 = 0;
		int max2 = 0;

		for (int i = 0; i < arr.length; i++) {
			if (arr[i] > max1) {
				max1 = arr[i];
			}
		}
```

```
            System.out.println("First biggest : " + max1);

            for (int i = 0; i < arr.length; i++) {
                if (arr[i] < max1 && arr[i] > max2) {
                    max2 = arr[i];
                }
            }

            System.out.println("Second biggest : " + max2);
        }

}
```

……to be continue 

Patterns

```
package Pattern;

public class Patterns {

	public static void main(String[] args) {

		int no = 5;

//-------------------------------------------------------------
		System.out.println(1);
//-------------------------------------------------------------

		for (int row = 1; row <= no; row++) {

			for (int col = 1; col <= no; col++) {

				if (row >= col) {
					System.out.print("*");
				} else {
					System.out.print(" ");
				}
			}
			System.out.println();
		}

//		*
//		**
//		***
//		****
//		*****

//-------------------------------------------------------------
		System.out.println(2);
//-------------------------------------------------------------
```

```
		for (int row = 1; row <= no; row++) {

			for (int col = 1; col <= no; col++) {

				if (row <= col) {
					System.out.print("*");
				} else {
					System.out.print(" ");
				}
			}
			System.out.println();
		}
```

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

```
 //---------------------------------------------------------------
		System.out.println(3);
 //---------------------------------------------------------------
		for (int row = 1; row <= no; row++) {

			for (int col = 1; col <= no; col++) {

				if (row <= col) {
					System.out.print("* ");
				} else {
					System.out.print(" ");
				}
			}
			System.out.println();
		}
```

```
 //                  * * * * *
 //                   * * * *
 //                    * * *
 //                     * *
```

```
//                      *

//---------------------------------------------------------------
            System.out.println(4);
//---------------------------------------------------------------

            for (int row = 1; row <= no; row++) {

                  for (int col = no; col >= 1; col--) {

                        if (row >= col) {
                              System.out.print("*");
                        } else {
                              System.out.print(" ");
                        }
                  }
                  System.out.println();
            }

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

//---------------------------------------------------------------
            System.out.println(5);
//---------------------------------------------------------------

            for (int row = 1; row <= no; row++) {

                  for (int col = 1; col <= no; col++) {

                        if (row <= col) {
                              System.out.print("*");
                        } else {
                              System.out.print("");
                        }
                  }
                  System.out.println();
            }
```

```
//                    *****
//                    ****
//                    ***
//                    **
//                    *
//-------------------------------------------------------------
            System.out.println(6);
//-------------------------------------------------------------

            for (int row = 1; row <= no; row++) {

                  for (int col = no; col >= 1; col--) {

                        if (row >= col) {
                              System.out.print("* ");
                        } else {
                              System.out.print(" ");
                        }
                  }
                  System.out.println();
            }
```

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

```
//-------------------------------------------------------------
            System.out.println(7);
//-------------------------------------------------------------

            for (int row = 1; row <= no; row++) {

                  for (int col = 1; col <= no; col++) {

                        if (row >= col) {
                              System.out.print("*");
                        } else {
                              System.out.print(" ");
                        }
```

```
                }

                for (int col = no; col >= 1; col--) {

                        if (row >= col) {
                                System.out.print("*");
                        } else {
                                System.out.print(" ");
                        }
                }
                System.out.println();


        }

                //        *         *
                //        **       **
                //        ***     ***
                //        ****   ****
                //        **********




//---------------------------------------------------------------
                        System.out.println(8);
//---------------------------------------------------------------

                        //5
                        for (int row = 1; row <= no; row++) {

                                for (int col = 1; col <= no; col++) {

                                        if (row <= col) {
                                                System.out.print("*");
                                        } else {
                                                System.out.print("");
                                        }
                                }
```

```
                        //2

                                for (int col = 1; col <= no; col++) {

                                        if (row <= col) {
                                                System.out.print("*");
                                        } else {
                                                System.out.print("  ");
                                        }
                                }
                                System.out.println();
                        }


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



//-------------------------------------------------------------
                        System.out.println(9);
//-------------------------------------------------------------
// 5 , 1
                        //5
                        for (int row = 1; row <= no; row++) {

                                for (int col = 1; col <= no; col++) {

                                        if (row <= col) {
                                                System.out.print("*");
                                        } else {
                                                System.out.print("");
                                        }
                                }
                                System.out.println();
                        }
                        //1
                        for (int row = 1; row <= no; row++) {
```

```
                        for (int col = 1; col <= no; col++) {

                                if (row >= col) {
                                        System.out.print("*");
                                } else {
                                        System.out.print(" ");
                                }
                        }
                        System.out.println();
                }


//                      *****
//                      ****
//                      ***
//                      **
//                      *
//                      *
//                      **
//                      ***
//                      ****
//                      *****


//---------------------------------------------------------------
        System.out.println(10);
//---------------------------------------------------------------

        // 1

        for(int row = 1;row<=no;row++)
        {

                        for (int col = 1; col <= no; col++) {

                                if (row <= col) {
                                        System.out.print("*");
                                }
                                else {
                                        System.out.print(" ");
                                }
```

```
                        }
                        System.out.println();
                    }

        for(int row = 1;row<=no;row++)
        {

            for (int col = no; col >= 1; col--) {

                if (row >= col) {
                    System.out.print("*");
                } else {
                    System.out.print(" ");
                }
            }
            System.out.println();
        }
```

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

```
//-------------------------------------------------------------
                    System.out.println(11);
//-------------------------------------------------------------

            //3 , 6
                    //3
                    for (int row = 1; row <= no; row++) {

                        for (int col = 1; col <= no; col++) {

                            if (row <= col) {
                                System.out.print("* ");
                            } else {
                                System.out.print(" ");
```

```
                }
            }
            System.out.println();
        }
        ///6
        for (int row = 1; row <= no; row++) {

            for (int col = no; col >= 1; col--) {

                if (row >= col) {
                    System.out.print("* ");
                } else {
                    System.out.print(" ");
                }
            }
            System.out.println();
        }
```

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

```
//-------------------------------------------------------------
        System.out.println(12);
//-------------------------------------------------------------
// 3 , 6
        //6

        ///6
        for (int row = 1; row <= no; row++) {

            for (int col = no; col >= 1; col--) {

                if (row >= col) {
```

```
                System.out.print("* ");
            } else {
                System.out.print(" ");
            }
        }
        System.out.println();
    }
     //3
    for (int row = 1; row <= no; row++) {

        for (int col = 1; col <= no; col++) {

            if (row <= col) {
                System.out.print("* ");
            } else {
                System.out.print(" ");
            }
        }
        System.out.println();
    }
```

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

}}