

```
1 import java.util.Scanner;
2
3 public class RemoveVowels {
4     public static void main(String[] args) {
5         Scanner sc = new Scanner(System.in);
6         System.out.print("Enter a string: ");
7         String str = sc.nextLine();
8         String result = "";
9
10        for (int i = 0; i < str.length(); i++) {
11            char ch = str.charAt(i);
12            if (!isVowel(ch)) {
13                result += ch;
14            }
15        }
16
17        System.out.println("The string without vowels is: " + result);
18    }
19
20    private static boolean isVowel(char ch) {
21        return (ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u' ||
22                ch == 'A' || ch == 'E' || ch == 'I' || ch == 'O' || ch == 'U');
23    }
24 }
25
```

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Output:

Enter a string: The string without vowels is: mrtshmr1

```
11 * for (int i = 0; i < 2; i++) {
12 *     for (int j = 0; j < 2; j++) {
13 *         mat1[i][j] = sc.nextInt();
14 *     }
15 * }
16
17 System.out.println("Enter elements for Matrix 2:");
18 * for (int i = 0; i < 2; i++) {
19 *     for (int j = 0; j < 2; j++) {
20 *         mat2[i][j] = sc.nextInt();
21 *     }
22 * }
23
24 * for (int i = 0; i < 2; i++) {
25 *     for (int j = 0; j < 2; j++) {
26 *         result[i][j] = 0;
27 *         for (int k = 0; k < 2; k++) {
28 *             result[i][j] += mat1[i][k] * mat2[k][j];
29 *         }
30 *     }
31 * }
32
33 System.out.println("Mat Sum = ");
34 * for (int i = 0; i < 2; i++) {
35 *     for (int j = 0; j < 2; j++) {
36 *         System.out.print(result[i][j] + " ");
37 *     }
38 *     System.out.println();
39 * }
40
41 }
42 }
```

```
13 24
4 5 6 7
```

Output:

```
Enter elements for Matrix 1:
Enter elements for Matrix 2:
Mat Sum =
22 26
32 38
```

```
17 }
18 return (double) sum / arr.length;
19 }
20
21 private static double median(int[] arr) {
22     Arrays.sort(arr);
23     if (arr.length % 2 == 0) {
24         return (arr[arr.length / 2 - 1] + arr[arr.length / 2]) / 2.0;
25     } else {
26         return arr[arr.length / 2];
27     }
28 }
29
30 private static int mode(int[] arr) {
31     HashMap<Integer, Integer> frequencyMap = new HashMap<>();
32     for (int num : arr) {
33         frequencyMap.put(num, frequencyMap.getOrDefault(num, 0) + 1);
34     }
35
36     int mode = arr[0];
37     int maxCount = 0;
38     for (int key : frequencyMap.keySet()) {
39         if (frequencyMap.get(key) > maxCount) {
40             maxCount = frequencyMap.get(key);
41             mode = key;
42         }
43     }
44
45     return mode;
46 }
47 }
48 }
```

```
13 24
45 67
```

Output:

```
Mean = 20.0
Median = 19.0
Mode = 16
```

```
1 import java.util.Scanner;
2
3 public class InvertedPyramid {
4     public static void main(String[] args) {
5         Scanner sc = new Scanner(System.in);
6         System.out.print("Enter the number of rows: ");
7         int rows = sc.nextInt();
8
9         for (int i = rows; i >= 1; i--) {
10             for (int j = rows; j > i; j--) {
11                 System.out.print(" ");
12             }
13             for (int k = 1; k <= (2 * i - 1); k++) {
14                 System.out.print("*");
15             }
16             System.out.println();
17         }
18     }
19 }
20
```

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9

Output:

Enter the number of rows: \*\*\*\*\*

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



```
1 import java.util.Scanner;
2
3 public class SpecialCharacters {
4     public static void main(String[] args) {
5         Scanner sc = new Scanner(System.in);
6         System.out.print("Enter a string: ");
7         String str = sc.nextLine();
8         int count = 0;
9
10        System.out.print("Special characters: ");
11        for (int i = 0; i < str.length(); i++) {
12            char ch = str.charAt(i);
13            if (!Character.isLetterOrDigit(ch) && !Character.isWhitespace(ch)) {
14                System.out.print(ch + " ");
15                count++;
16            }
17        }
18        System.out.println("\nNumber of Special characters = " + count);
19    }
20 }
21
```

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Output:

Enter a string: Special characters:  
Number of Special characters = 0

```
1 import java.util.Arrays;
2 import java.util.HashSet;
3 import java.util.Set;
4
5 public class ArraySameElements {
6
7     public static void main(String[] args) {
8         Integer[] a1 = {1,2,3,2,1};
9         Integer[] a2 = {1,2,3};
10        Integer[] a3 = {1,2,3,4};
11
12        System.out.println(sameElements(a1, a2));
13        System.out.println(sameElements(a1, a3));
14    }
15    static boolean sameElements(Object[] array1, Object[] array2) {
16        Set<Object> uniqueElements1 = new HashSet<>(Arrays.asList(array1));
17        Set<Object> uniqueElements2 = new HashSet<>(Arrays.asList(array2));
18        if (uniqueElements1.size() != uniqueElements2.size()) return false;
19
20        for (Object obj : uniqueElements1) {
21            if (!uniqueElements2.contains(obj)) return false;
22        }
23
24        return true;
25    }
26
27 }
```

STDIN

Output:

true  
false

```
1 public class StringPrograms {  
2  
3     public static void main(String[] args) {  
4         String str = "123";  
5  
6         System.out.println(reverse(str));  
7     }  
8  
9     public static String reverse(String in) {  
10        if (in == null)  
11            throw new IllegalArgumentException("Null is not valid input");  
12  
13        StringBuilder out = new StringBuilder();  
14  
15        char[] chars = in.toCharArray();  
16  
17        for (int i = chars.length - 1; i >= 0; i--)  
18            out.append(chars[i]);  
19  
20        return out.toString();  
21    }  
22  
23 }
```

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Output:

321

```
1 import java.util.*;
2
3 public class Main {
4     public static void main(String[] args) {
5         System.out.println("Hello, mritsha!");
6     }
7 }
```

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Output:

Hello, mritsha!



```
1 public class Armstrong {
2
3     public static void main(String[] args) {
4
5         int number = 1634, originalNumber, remainder, result = 0, n = 0;
6
7         originalNumber = number;
8
9         for (;originalNumber != 0; originalNumber /= 10, ++n);
10
11         originalNumber = number;
12
13         for (;originalNumber != 0; originalNumber /= 10)
14         {
15             remainder = originalNumber % 10;
16             result += Math.pow(remainder, n);
17         }
18
19         if(result == number)
20             System.out.println(number + " is an Armstrong number.");
21         else
22             System.out.println(number + " is not an Armstrong number.");
23     }
24 }
25
```

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Output:

1634 is an Armstrong number.

```
1 public class MergeSort {
2     public static void main(String[] args) {
3         int[] arr = { 70, 50, 30, 10, 20, 40, 60 };
4         int[] merged = mergeSort(arr, 0, arr.length - 1);
5         for (int val : merged) {
6             System.out.print(val + " ");
7         }
8     }
9     public static int[] mergeTwoSortedArrays(int[] one, int[] two) {
10        int[] sorted = new int[one.length + two.length];
11        int i = 0;
12        int j = 0;
13        int k = 0;
14        while (i < one.length && j < two.length) {
15            if (one[i] < two[j]) {
16                sorted[k] = one[i];
17                k++;
18                i++;
19            } else {
20                sorted[k] = two[j];
21                k++;
22                j++;
23            }
24        }
25        if (i == one.length) {
26            while (j < two.length) {
27                sorted[k] = two[j];
28                k++;
29                j++;
30            }
31        }
32        if (j == two.length) {
33            while (i < one.length) {
34                sorted[k] = one[i];
35                k++;
36                i++;
37            }
38        }
39        return sorted;
40    }
41    public static int[] mergeSort(int[] arr, int lo, int hi) {
42        if (lo == hi) {
43            int[] hr = new int[1];
```

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Input for the program (Optional)

Output:

10 20 30 40 50 60 70