Program Name	Description
BSLab4a.java	Write a program that uses **an array** to store the following data: "I", "Love", "Java", "Classes" You program should produce the output below:

Output

```
Index 0: I
Index 1: Love
Index 2: Java
Index 3: Classes

I Love Java Classes
```

Program Name	Description
BSLab4b.java	Write a program that uses an array to store 10 numbers. The numbers should be **randomly** generated (**Math.random()**), and they should be between 1 and 100 (1 and 100 inclusive). The program should produce an output like the one below:

Output

```
Element 1 = 23 ( Odd )
Element 2 = 15 ( Odd )
Element 3 = 32 ( Even )
Element 4 - 10 ( Even )
Element 5 - 99 ( Odd )
Element 6 - 1 ( Odd )
Element 7 - 3 ( Odd )
Element 8 - 100 ( Even )
Element 9 - 5 ( Odd )
Element 10 - 7 ( Odd )

Number of odd numbers.: 7
Number of even numbers: 3
```

NOTE: The numbers, classification and quantities are only to illustrate the output !!! Your output will most probably have different numbers

Program Name	Description
BSLab4c.java	Write a program that creates and stores 10 numbers. Each element of the array should be populated with a random number between 0 and 100. The program should perform **a linear search** to find the first occurrence of the number 0 (Zero) in the array from the left to the right. It should also produce the following output: 1. The value of the elements in the array 2. A message based on the linear search

Output

8-85-54-12-1-45-3-9-54-27

If there is no occurrence of 0 in the array, then print:

Message: "Zero was not found in the list"

Else, print:

Message "Zero was found at position X in the list"

NOTE: X is the position (index) of the element where the Zero was found

Program Name	Description
BSLab4d.java	Write a program that creates, and stores 10 numbers. Each element of the array should be populated with a random number between 512 and 1,024 (inclusive). The program should find the smallest and the biggest number in the list. It should also produce the following output: **Note:** The program should use only one loop to perform both tasks

Output

658-1008-954-1012-761-545-937-989-534-927

The smallest element is: **XXX** at position **YYY**

The biggest element is: **AAA** at position **BBB**

NOTE: AAA & XXX are the values found, and YYY & BBB the position (indices)of the values in the array

Sample Exam Question

A. Write a Java program that generates **5** numbers between 101 and 200 (**200 inclusive**) and prints the result to the command line, briefly explain each part of the code.

B. Write a Java code that declares an array of **size 5** and populate each element with the result of the formula $\mathbf{x^2 - 5}$, where **x** is the index of the element in the array.

C. The following Java code is not compiling, assuming that the class and main method are correctly defined, list the changes needed to allow the code to compile:

```
string myA[] = { 18, 34, -98, -5 };
int o = myA.length -1
for ( int x = 1; x <= o - 1; x++){
    System.out.printLn( myA{x} );
}
```

E. Given the following list of numbers:

7.2, -6.9, 3.1, 9.0, 7.52, 0.10

Using full Java code, write a Java program to determine (print to command line):

- **I.** The biggest number
- **II.** The smallest number
- **III.** The sum of all the elements
- **IV.** The average of the elements

The program should display the following message to the screen:

Biggest: **XXX**, Smallest: **YYY**, Sum: **AAA**, Average: **BBB**

XXX, YYY, AAA and **BBB** are the result of the produced by the program

NOTE: Your solution should be designed to work with a list of different values, but same data type, and with more or less numbers in the list

F. **Using full Java code**, given the following list:

0	1	2	3	4	5	6	7	8	9
79	32	10	30	27	5	13	27	7	51

Write a program that performs a **linear search** to find the **first occurrence only** of the value **27** in the above list.

The program should have the following output at the end of the linear search, **only** one message should be displayed:

If the value was found, the program should display the following message:

```
Element K found in the list at position X.
```

If the value was NOT found, the program should display the following message:

```
Element K was not found in the list
```

NOTE: **K** is the value the program is looking for and **X** is the index where the value was found if any is found.