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| **Semester:** | **IV** | **Course Code:** | **22UCSL403** |
| **Course Title:** | **Object Oriented Programming Laboratory** | **Division:** | **A and B** |
| **Academic Year:** | **2023-24** | | |

## General instructions

- The programs must strictly follow the Java naming and coding conventions
- All the programs must use **object-oriented concepts** like classes, objects, methods, constructors, overloading, overriding, late binding, interfaces, etc. (wherever possible)
- Never write the business logic inside main() method

Following steps are be followed in Eclipse IDE to pass command line arguments:

- Right click on the java file from the **Package Explorer**
- Goto **Run As  Run Configurations**
- Ensure that the configuration for the selected file has been created. If not, create a run configuration by clicking on **New launch configuration** button
- Goto **Arguments** tab and enter the command line arguments separated by whitespaces inside **Program arguments** text area
- Click on **Apply** button to save the command line arguments
- Then click on **Run** button to run the program with command line arguments

Following is the procedure to read input from keyboard in Java program:

- Instantiate Scanner class:

  **Scanner sc = new Scanner(System.in);**
- The Scanner class is available in **java.util** package. Hence import that package in the application:

  **import java.util.Scanner;**
- To read inputs from keyboard, use one of **next()** methods. For e.g., to read an integer, following code can be used:

  **int n = sc.nextInt();**

- Similarly, to read single precision data, use **nextFloat()** method; to read double precision data, use **nextDouble()** method.
- However, to read character data, use the following code:

  **char ch = sc.next().charAt(0);**
- To read a string, use the following code:

  **String s = sc.next();**

## Practice Programs-2

1) Write a Java program that prints all the command line arguments that are passed to it.
2) Write a Java program that implements a simple calculator. The inputs are to be taken as command line arguments.
3) Write a Java program that implements a simple calculator. The inputs are to be read from the keyboard. [Hint: Use **Scanner** class object to read the input from keyboard]
4) Write a Java program that takes IA-1 marks as input. The IA-1 marks must be in the range 0-20. Proper error messages to be printed if the input entered is invalid (use exception handling mechanism for printing error messages). In case of valid input, the program should just print the entered marks as output.
5) Write a Java Program that takes a string as command-line argument and checks whether the string is palindrome or not. If the string is palindrome, then print proper message; else, generate a used-defined exception **StringNotPalindromeException**. [Hint: use equals() method to check equality of two strings]
6) A chemical company named "XYZ Chemicals Pvt. Ltd." manufactures various chemicals. To automate and monitor the manufacturing process, they are planning to install an "**Automated Manufacturing and Maintenance System**". One important task of this system is to sense the rise in temperature of the furnace and monitor its temperature. If the temperature of the furnace rises above 300ºC, then it should immediately generate an alarm. It should also generate a separate alarm if the temperature of the furnace falls below 100ºC. You are hired as a Java Programmer to develop this system. Write a Java Program which simulates the above scenario using exception handling mechanism.

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