SWT 12031: Practical for Object oriented Program
Lab Sheet No: 02
Java Basics

Time :- 09-12pm & 01-04 pm **Submission Due: 2023-01-26**

Java User Input String

```
import java.util.Scanner; // import the Scanner class


class Main {
  public static void main(String[] args) {
    Scanner myObj = new Scanner(System.in);
    String userName;


    // Enter username and press Enter
    System.out.println("Enter username");
    userName = myObj.nextLine();


    System.out.println("Username is: " + userName);
  }
}
```

Java User Input Numbers

```
Scanner sc=new Scanner(System.in);
```

```
import java.util.*;

class UserInputDemo

{

public static void main(String[] args)

{

Scanner sc= new Scanner(System.in);    //System.in is a standard input stream

System.out.print("Enter first number- ");

int a= sc.nextInt();

System.out.print("Enter second number- ");

int b= sc.nextInt();

System.out.print("Enter third number- ");

int c= sc.nextInt();

int d=a+b+c;

System.out.println("Total= " +d);

}

}
```

Java Output / Print Text

```
public class Main {
  public static void main(String[] args) {
    System.out.println("Hello World!");
    System.out.println("I am learning Java.");
    System.out.println("It is awesome!");
  }
}
```

Java Output Numbers

```
public class Main {
  public static void main(String[] args) {
    System.out.println(3);
    System.out.println(358);
    System.out.println(50000);
  }
}
```

Java Comments

Single-line Comments

```
public class Main {
  public static void main(String[] args) {
    // This is a comment
    System.out.println("Hello World");
  }
}
```

Java Multi-line Comments

```
public class Main {
  public static void main(String[] args) {
    /* The code below will print the words Hello World
    to the screen, and it is amazing */
    System.out.println("Hello World");
  }
}
```

Java Variables String

```
public class Main {
  public static void main(String[] args) {
    String name = "John";
    System.out.println(name);
  }
}
```

Java Variables Numbers

```
public class Main {
  public static void main(String[] args) {
    int myNum;
    myNum = 15;
    System.out.println(myNum);
  }
}
```

Java Variables Multiple Numbers

```
public class Main {
  public static void main(String[] args) {
    int myNum = 15;
    myNum = 20;  // myNum is now 20
    System.out.println(myNum);
  }
}
```

Other Types

```
int myNum = 5;

float myFloatNum = 5.99f;

char myLetter = 'D';

boolean myBool = true;

String myText = "Hello";
```

Display Variables

```
public class Main {
  public static void main(String[] args) {
    String firstName = "John ";
    String lastName = "Doe";
    String fullName = firstName + lastName;
    System.out.println(fullName);
  }
}
```

```
public class Main {
  public static void main(String[] args) {
    int x = 5;
    int y = 6;
    System.out.println(x + y); // Print the value of x + y
  }
}
```

Declare Many Variables

```
public class Main {
  public static void main(String[] args) {
    int x = 5, y = 6, z = 50;
    System.out.println(x + y + z);
  }
}
```

Java Data Types

```
int myNum = 5;              // Integer (whole number)
float myFloatNum = 5.99f;   // Floating point number
char myLetter = 'D';        // Character
boolean myBool = true;      // Boolean
String myText = "Hello";    // String
```

Boolean Types

```
public class Main {
  public static void main(String[] args) {
    boolean isJavaFun = true;
    boolean isFishTasty = false;
    System.out.println(isJavaFun);
    System.out.println(isFishTasty);
  }
}
```

Java Characters

```
public class Main {
  public static void main(String[] args) {
    char myVar1 = 65, myVar2 = 66, myVar3 = 67;
    System.out.println(myVar1);
    System.out.println(myVar2);
    System.out.println(myVar3);
  }
}
```

Java Operators

```
public class Main {
  public static void main(String[] args) {
    int sum1 = 100 + 50;
    int sum2 = sum1 + 250;
    int sum3 = sum2 + sum2;
    System.out.println(sum1);
    System.out.println(sum2);
    System.out.println(sum3);
  }
}
```

Arithmetic Operators

```
public class Main {
  public static void main(String[] args) {
    int x = 5;
    int y = 3;
    System.out.println(x * y);
  }
}
```

Assignment Operators

```
public class Main {
  public static void main(String[] args) {
    int x = 10;
    System.out.println(x);
  }
}
```

Comparison Operators

```
public class Main {
  public static void main(String[] args) {
    int x = 5;
    int y = 3;
    System.out.println(x > y); // returns true, because 5 is higher than 3
  }
}
```

Logical Operators

```
public class Main {
  public static void main(String[] args) {
    int x = 5;
    System.out.println(x > 3 && x < 10); // returns true because 5 is greater than 3 AND 5 is less than 10
  }
}
```

Java Strings

String Length

```
public class Main {
  public static void main(String[] args) {
    String txt = "ABCDEFGHIJKLMNOPQRSTUVWXYZ";
    System.out.println("The length of the txt string is: " + txt.length());
  }
}
```

String Methods

```
public class Main {
  public static void main(String[] args) {
    String txt = "Hello World";
    System.out.println(txt.toUpperCase());
    System.out.println(txt.toLowerCase());
  }
}
```

Java Math

```
public class Main {
  public static void main(String[] args) {
    System.out.println(Math.max(5, 10));
  }
}
```

Java Conditions and If Statements

if Statement

```
public class Main {
  public static void main(String[] args) {
    int x = 20;
    int y = 18;
    if (x > y) {
      System.out.println("x is greater than y");
    }
  }
}
```

else Statement

```
public class Main {
  public static void main(String[] args) {
    int time = 20;
    if (time < 18) {
      System.out.println("Good day.");
    } else {
      System.out.println("Good evening.");
    }
  }
}
```

else if Statement

```
public class Main {
  public static void main(String[] args) {
    int time = 22;
    if (time < 10) {
      System.out.println("Good morning.");
    } else if (time < 18) {
      System.out.println("Good day.");
    }  else {
      System.out.println("Good evening.");
    }
  }
}
```

If...Else

```
public class Main {
  public static void main(String[] args) {
    int time = 20;
    if (time < 18) {
      System.out.println("Good day.");
    } else {
      System.out.println("Good evening.");
    }
  }
}
```

Java Switch Statements

```
public class Main {
  public static void main(String[] args) {
    int day = 4;
    switch (day) {
      case 1:
        System.out.println("Monday");
        break;
      case 2:
        System.out.println("Tuesday");
        break;
      case 3:
        System.out.println("Wednesday");
        break;
      case 4:
        System.out.println("Thursday");
        break;
      case 7:
        System.out.println("Sunday");
        break;
    }
  }
}
```

default Keyword

```
public class Main {
  public static void main(String[] args) {
    int day = 4;
    switch (day) {
      case 6:
        System.out.println("Today is Saturday");
        break;
      case 7:
        System.out.println("Today is Sunday");
        break;
      default:
        System.out.println("Looking forward to the Weekend");
    }
  }
}
```

Java Loops

Java While Loop

```
public class Main {
  public static void main(String[] args) {
    int i = 0;
    while (i < 5) {
      System.out.println(i);
      i++;
    }
  }
}
```

Java Do/While Loop

```
public class Main {
  public static void main(String[] args) {
    int i = 0;
    do {
      System.out.println(i);
      i++;
    }
    while (i < 5);
  }
}
```

Java For Loop

```
public class Main {
  public static void main(String[] args) {
    for (int i = 0; i < 5; i++) {
      System.out.println(i);
    }
  }
}
```

Nested Loops

```
public class Main {
  public static void main(String[] args) {
    // Outer loop.
    for (int i = 1; i <= 2; i++) {
      System.out.println("Outer: " + i); // Executes 2 times
      // Inner loop
      for (int j = 1; j <= 3; j++) {
        System.out.println(" Inner: " + j); // Executes 6 times (2 * 3)
      }
    }
  }
}
```

For-Each Loop

```
public class Main {
  public static void main(String[] args) {
    String[] cars = {"Volvo", "BMW", "Ford", "Mazda"};
    for (String i : cars) {
      System.out.println(i);
    }
  }
}
```

Java Break and Continue

Java Break

```
public class Main {
  public static void main(String[] args) {
    for (int i = 0; i < 10; i++) {
      if (i == 4) {
        break;
      }
      System.out.println(i);
    }
  }
}
```

Java Continue

```
public class Main {
  public static void main(String[] args) {
    for (int i = 0; i < 10; i++) {
      if (i == 4) {
        continue;
      }
      System.out.println(i);
    }
  }
}
```

Java Arrays

```
public class Main {
  public static void main(String[] args) {
    String[] cars = {"Volvo", "BMW", "Ford", "Mazda"};
    System.out.println(cars[0]);
  }
}
```

Change an Array Element

```
public class Main {
  public static void main(String[] args) {
    String[] cars = {"Volvo", "BMW", "Ford", "Mazda"};
    cars[0] = "Opel";
    System.out.println(cars[0]);
  }
}
```

Array Length

```
public class Main {
  public static void main(String[] args) {
    String[] cars = {"Volvo", "BMW", "Ford", "Mazda"};
    System.out.println(cars.length);
  }
}
```

Loop Through an Array

```
public class Main {
  public static void main(String[] args) {
    String[] cars = {"Volvo", "BMW", "Ford", "Mazda"};
    for (int i = 0; i < cars.length; i++) {
      System.out.println(cars[i]);
    }
  }
}
```

Multidimensional Arrays

```
public class Main {
  public static void main(String[] args) {
    int[][] myNumbers = { {1, 2, 3, 4}, {5, 6, 7} };
    System.out.println(myNumbers[1][2]);
  }
}
```

Loop Through a Multi-Dimensional Array

```
public class Main {
  public static void main(String[] args) {
    int[][] myNumbers = { {1, 2, 3, 4}, {5, 6, 7} };
    for (int i = 0; i < myNumbers.length; ++i) {
      for(int j = 0; j < myNumbers[i].length; ++j) {
        System.out.println(myNumbers[i][j]);
      }
    }
  }
}
```

Exercise 01:

1. Create your first java program that will print, "Hello, Welcome to Object Oriented Programming!".
    a. Make the name of the class as **'HelloWorld'**.
    b. Write the main method that will execute the print statement given.
    c. Save the program by giving the file name same as class class and with the .java extension.
    d. Compile the program you created.
    e. Execute the program you created.

2. Create a class to display the following.

    Name : Sam
    Subject: OOP
    Duration : 4 Months
    Grade : A+

Exercise 02:

1. Create a class called **Student**. Within this class,
    a. Define two variables namely **id** and **name.**
    b. Initialize **id** to **1** and **name** to **Kamal.**
    c. **Display everything inside the Method.**

Exercise 03:

1. Create a class called **Employee.** Within the class,
    a. Create the variables **empid**, **name** and **salary** (salary is a float value).
    b. Assign the Value for those variable and display all.
    c. Change the Value after display those value with the same method.

Exercise 04:

1. Create a class called MyName to print your name.
2. Create a class to display the following

    Java is an example for OOP

    It is a pure Object Oriented language

3.

- Create a class called **Rectangle.** Within the class,
    I. Create the variables **length** and **width**.
    II. Assign the Value for those variable (float data type).
    III. Next, creae another method **calculateArea()** to calculate the area of the given rectangle.

Discussion

- User Input
- Output
- Comments
- Operators
- Conditional Statement
- Loops
- Array