JOBSHEET 3
Variables, Data Types, and Operators

1. Objective

- Students be able to apply data types in Java programming
- Students be able to apply variables in Java programming
- Students be able to apply Input-output in Java programming
- Students be able to apply the Sequence in Java programming
- Students be able to understand and apply operators in Java programming

2. Laboratory

2.1 Experiment 1

1. Open a text editor
2. Create a new file, name it **ExampleVariabel.java**
3. Write the basic structure of the Java programming language which contains the **main()** function
4. Write the code below in **public static void main (String args [])**

```
String oneOfMyHobbies = "Playing futsal";
boolean isSmart = true;
char gender = 'M';
byte _age = 20;
double $gpa = 3.38, height = 1.68;
System.out.println(oneOfMyHobbies);
System.out.println("Are you smart ?" + isSmart);
System.out.println("Gender: "+gender);
System.out.println("My current age is "+ _age);
System.out.println(String.format("My GPA is %s and my height is %s meters", $gpa, height));
```

5. Run the program code that you have written, then observe the results

Questions

1. Change the variable name so that the variable naming model is good and correct!
2. Run the code again and then observe the results!

2.2 Experiment 2

1. Open a text editor
2. Create a new file, name it **ExampleDataType.java**

3. Write the basic structure of the Java programming language which contains the **main()** function
4. Write the code below in **public static void main (String args [])**

```
char bloodGroup = 'A';
byte distance = (byte) 130;
short theNumberOfResidents = 1025;
float temperature = 60.50F;
double weight = 0.5467812345;
long balance = 150000000;
int number = 0x10;
System.out.println("Blood group\t\t: " + (byte) bloodGroup);
System.out.println("Distance\t\t: " + distance);
System.out.println("The number of residents\t: " + theNumberOfResidents);
System.out.println("Temperature\t\t: " + temperature);
System.out.println("Weight\t\t\t: " + (float) weight);
System.out.println("Balance\t\t\t: " + balance);
System.out.println("Number\t\t\t: " + number);
```

5. Run the program code that you have written, then observe the results

Questions!

1. Explain why the blood group does not display an "A"!
2. Explain the syntax of **distance = (byte) 130 bytes**! Then, explain why the results change when displayed!
3. In the syntax **float temperature = 60.50F;** remove the letter **F**, then run again. What happened?
4. Why does the result change when displaying weight values?
5. Explain the meaning of initializing **0x10** on **number** variables! What does it do?

2.3 Experiment 3

1. Open a text editor
2. Create a new file, name it **ExampleOperator.java**
3. Write the basic structure of the Java programming language which contains the **main()** function
4. Write the code below in **public static void main (String args [])**

```
int x = 10;
System.out.println("Initial value of x = " + x);
System.out.println("x++ = " + x++);
System.out.println("After evaluation, x = " + x);
x = 10;
System.out.println("Initial value of x = " + x);
System.out.println("++x = " + ++x);
System.out.println("After evaluation, x = " + x);
int y = 12;
System.out.println(x > y || y == x && y <= x);
int z = x ^ y;
System.out.println("The result of x ^ y is " + z);
z %= 2;
System.out.println("The final result is " + z);
```

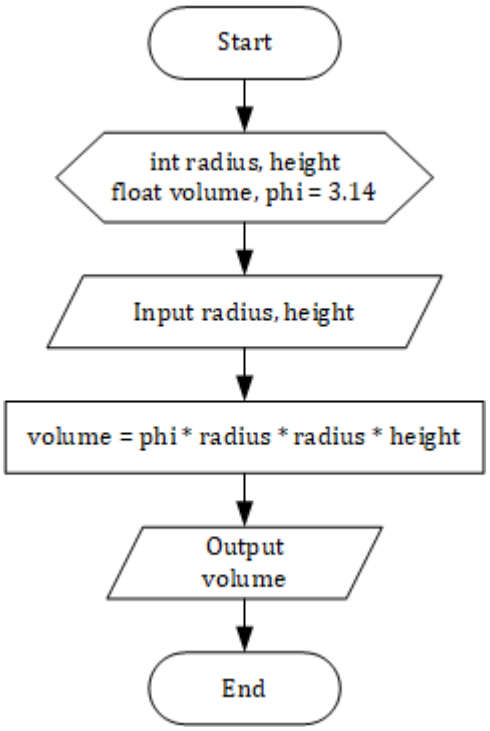
5. Run the program code that you have written, then observe the results

Questions!

1. Explain in your opinion what is the difference between **x++** and **++x**!
2. What is the result of **int z = x ^ y;** do the calculations manually (you can use a calculator)!

2.4 Experiment 4

1. Create a new file named **triangle.java**
2. Observe the flowchart to calculate the area of the following triangle



3. Create a basic Java program structure that consists of the **main()** function.
4. Add the **Scanner** library. Write the following code at the top **outside the class**

```
import java.util.Scanner;
```

5. Make a Scanner declaration. Write the following code **in the main()** function

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

6. Create an int variable for base and height, then a float variable for area.

```
int base, height;
float area;
```

7. Write down the syntax for inputting the base and height values

```
System.out.print("Insert base: ");
base = sc.nextInt();
System.out.print("Insert height: ");
height = sc.nextInt();
```

8. Write down the syntax for calculating the area of a triangle

```
area = base * height / 2;
```

9. Print the calculation of the area of the triangle

```
System.out.println("Area of triangle is " + area);
```

10. Compile and run the program. Observe the results!

Questions!

1. Explain why the float data type is used for the variable **area**!

3. Assignment

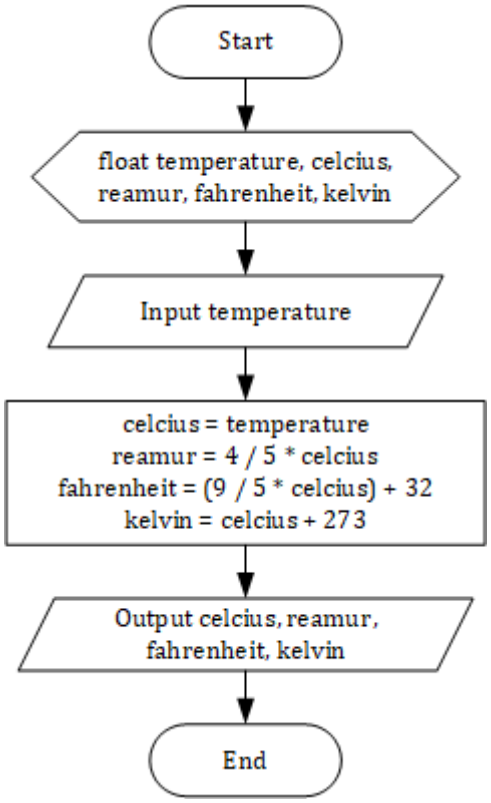
1. Pay attention to the following table:

Variable Name	Data Type	Initial Value	Description
campus	Sentence	Polinema	-
grade	Integers	1	-
class	Character	Z	Initial value = your class
integer	Integers	10	-
number	Floating point	3.33333	-
character	Character	C	-

From the table information, create a program to display the results as shown below!

```
I am Polinema student, class 1Z
I'm learning to display values:
Integer 10
Floating point 3.33
Character C
```

2. Observe the flowchart to convert temperature



Implement the flowchart into the program using the Java programming language!