27th Jan’23 Fundamentals of Java Assignment-5

1. What is statically typed and Dynamically typed Programming Language?
Ans: Statically typed: Programming languages are referred to as **"Static typed"** if the memory of the variable is provided at the time of compilation.

For instance, C, C++, and Java

Dynamically typed: Programming languages are said to be **"dynamically typed"** if the memory for the variable is provided at the time of execution.

Like Python, PHP, and JavaScript

2. What is the variable in Java?
Ans: A variable is the name of a memory-allocated reserved area. It may be thought of as the name of a memory location, in other words.

While the Java programme is running, the value is held in a container.

To identify the storage location, each variable needs to have a special name.

A data type is assigned to a variable (we will learn about it after this topic).

3. How to assign a value to a variable?
Ans: Syntax for Declaring a Variable:
The variable_name is the name of a variable. We can initialize the variable by specifying an equal sign and a value (initialization i.e. assigning an initial value, is optional). However, the compiler never assigns a default value to an uninitialized local variable in Java.

Here, rate is an int data type variable with the value 40 assigned to it.
In the example above, the variable can only hold integer values, as indicated by the int data type.
Here, we assigned a value to the variable during the declaration process. However, as stated before, it is optional.

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Variables can be declared and assigned separately.
Example,
int rate;
rate = 40;

4. What are primitive data types in java?
Ans: Primitive data types

Primitive Data Type: In Java, the primitive data types are the predefined data types of Java. They specify the size and type of any standard values.

Java has 8 primitive data types namely **byte, short, int, long, float, double, char** and **boolean**.

When a primitive data type is stored, it is the **stack** that the values will be **assigned**. When a **variable** is copied then another copy of the **variable** is created and changes made to the copied variable will not reflect changes in the **original variable**.

Here is a Java program to demonstrate all the **primitive data types** in Java.

Integer: This group includes **byte, short, int, long**

byte : It is 1 byte(8-bits) integer data type. Values range from -128 to 127. Default value zero.
example: byte b=10;

short : It is 2 bytes(16-bits) integer data type. Values range from -32768 to 32767. Default value zero.
example: short s=11;

int : It is 4 bytes(32-bits) integer data type. Values range from -2147483648 to 2147483647. Default value zero.
example: int i=10;

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long : It is 8 bytes(64-bits) integer data type. Values range from -9,223,372,036,854,775,808 to 9,223,372,036,854,775,807. Default value zero.
example: long l=100012;

```
public class Demo {
	public static void main(String[] args)
	{
		// byte type
		byte b = 20;
		System.out.println("b= " + b);

		// short type
		short s = 20;
		System.out.println("s= " + s);

		// int type
		int i = 20;
		System.out.println("i= " + i);

		// long type
		long l = 20;
		System.out.println("l= " + l);
	}
}
```

Output:
b= 20
s= 20
i= 20
l= 20

Floating-Point Number:

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This group includes float, double
float : It is 4 bytes(32-bits) float data type. Default value 0.0f.
example: float ff=10.3f;
double: It is 8 bytes(64-bits) float data type. Default value 0.0d.
example: double db=11.123;

```
public class Demo {

    public static void main(String[] args)
    {
        // float type
        float f = 20.25f;
        System.out.println("f= " + f);

        // double type
        double d = 20.25;
        System.out.println("d= " + d);
    }
}
```

Output
f= 20.25
d= 20.25

Characters: This group represents char, which represent symbols in a character set, like letters and numbers.

char: It is 2 bytes(16-bits) unsigned unicode characters. Range 0 to 65,535.

example: char c=’a’;

```
public class Demo {
```

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```
public static void main(String[] args) {

	char ch = 'S';
	System.out.println(ch);

	char ch2 = '&';
	System.out.println(ch2);

	char ch3 = '$';
	System.out.println(ch3);

}
}
```

Output:
S
&
$

Boolean: Boolean type is used when we want to test a particular condition during the execution of the program. There are only two values that a Boolean type can take: **true** or **false**.

Remember, both these words have been declared as keywords. Boolean type is denoted by the keyword Boolean and uses only 1 bit of storage.

```
public class Demo {
public static void main(String[] args) {
	boolean t = true;
	System.out.println(t);
	boolean f = false;
	System.out.println(f);
}}
```

Output:

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true
false

5. What are the identifiers in java?
Ans: Identifiers: An identifier is a name given to a **package**, **class**, **interface**, **method**, or **variable**. All identifiers must have different names.

In Java, there are a few points to remember while dealing with identifiers :
Rule 1 − All identifiers should begin with a letter (A to Z or a to z), $ and _ and must be
unique.
Rule 2 − After the first character/letter, identifiers can have any combination of characters.
Rule 3 − A keyword cannot be used as an identifier.
Rule 4 − The identifiers are case-sensitive.
Rule 5 – Whitespaces are not permitted.
Examples of legal identifiers: rank, $name, _rate, __2_mark.
Examples of illegal identifiers: 102pqr, -name.

6. List the operators in java?
Ans: Operators in Java: Operators in Java are the symbols used for performing specific operations in Java. Operators make tasks like addition, multiplication, etc which look easy although the implementation of these tasks is quite complex.

Operators in Java can be classified into 6 types:
1. Arithmetic Operators
2. Relational Operators
3. Logical Operators
4. Assignment Operators
5. Unary Operators
6. Bitwise Operators

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7. Explain about increment and decrement operator and give an examples

Ans: Incrementation and Decrementation: Increment Operator adds 1 to the operand. Decrement Operator subtracts 1 from the operand.

++ Increment

-- Decrement

The decrement (–) and increment (++) operators are special types of operators used in programming languages to decrement and increment the value of the given variable by 1 (one), respectively.

Increment and Decrement Operators

1. PreIncrement(++a)
2. PostIncrement(a++)
3. PreDecrement(--a)
4. PostDecrement(a--)

```
class Main {
public static void main(String[] args) {
int a = 5, int b = 6;
int c = a++;    //Post Increment
int d = ++a;   //Pre Increment
int e = b—-;   //Post Decrement
int f = –b;   //Pre Decrement

System.out.println(c);
System.out.println(d);
System.out.println(e);
System.out.println(f);
}
}
```

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Output:

5
7
6
4