Java Variables and Data Types

*Assignment Questions *NO=>05*

Q.1 What is Statically Typed and Dynamically Typed programming Language?

Ans1 Statically Typed: If the Memory of the Variable is given during the Compilation time itself then Such types of programming Languages are called as Statically Typed.

Example: C, C++, Java

Dynamically Typed: If the Memory of Variable is given during the Execution time itself then Such type of programmi-ng Languages are called as Dynamically Typed.

Example: python, PHP, Java Script

Q.2 What is the variable in Java?

* A variable is the title of a reserved region allocated in Memory. In other words, It may be refered to as the name of a Memory location.

* It is a Container that holds

the value while the Java program is executed.

* Each variable should be given a unique Name to indicate the storage area.

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

Q.3 How to assign a value to a variable?

Ans 3 *Syntax for Declaring a variable*

```
Type variable_name = value;
```

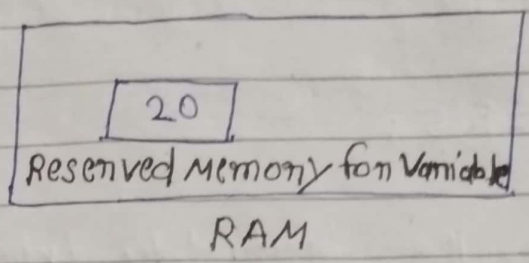
the variable_name is the name of a variable. We can initialise the variable by specifying an equal sign and a value (initialization i.e assigning an initial value, is optional). However, the compiler never assigns a default value to an uninitialized local variable in Java.

```
int age = 20;
```

int ← datatype

age ← Variable_name

20 ← Value



Q4 What are premitive Data types in Java?

Ans4 premitive Data types: the premitive data types ~~include~~ is predefined by the language and is named by a reserved keyword.

1. Boolean type
- The Boolean data type can have two values- True or false and hence are typically used in true/false Situations.

for Example
```
Boolean flag = true;
```

2. Byte type
- Values for the byte data type range from -128 to 127 (8-bit signed two's Complim-ent integer, you will know more about it once we move to programs and applications).

- A byte type is used in place of an int to Save Memory when it is certain that the value of a variable will be b/w -128 to 127.

for example

byte range = 105;

3. Short Type: The short data type can have values ranging from -32768 to 32767 (16-bit Signed two's Complement Integer)

- If the value of a variable is certain to be between -32768 and 32767, short is used in place other Integer data types (int, long)

For Example

short Joss = -50;

4. Int Type: values for int data type range from 2^{31} to $2^{31}-1$ (32-bit signed two's Complement Integer, you will know about it as we move to programs)

* In Java SE 8 and later, you can use the int data type to represent an unsigned 32-bit integer, which has Minimum value of 0 and a Maximum value of $2^{32}-1$

For example

int profit = 5000;

5. Long Type

* Values for the long data type range from -2^{63} to $2^{63}-1$ (64 bit Signed two's Compliment Integers).

* You can use an unsigned 64-bit integer with a minimum value of 0 and Maximum value of $2^{64}-1$ if you are using Java 8 or later.

For Example

```
Long profit = 45555990;
```

6. Double Type

* The double data type is a 64-bit floating-point data type with double precision.

* It should never be used for exact values like currency.

For Example

```
double height = 12.5;
```

7. Float Type

* The float data type is a 32-bit Single

-precision floating point value. If you are curious, you can learn about single-precision and double-precision floating point.

* It should never be used for precise values like Money.

For Example

```
Float depth = -32.3f;
```

8. Char Type

* It's a unicode (an international character encoding standard that provides a unique number for every character across language and scripts) 16-bit characters.

* The char data type has a minimum value of '\u0000' (0) and Maximum vale of '\uffff'.

for example

```
char temp = 'a';
```

Q.5 What are the Identifiers in Java?

Ans 5 An Identifier is a name given to a package, class, interface, Method,

on Variable. All Identifiers must have differents 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 _ Must be unique.

Rule 2 After the first character/letter, Identifiers can have any Combination of Characters.

Rule 3 A Keyword can not be used as an Identifier.

Rule 4 The Identifiers are Case-Sensitive

Rule 5 Whitespaces are not permitted.

* Example of legal Identifiers: rank, $name, _rate, __2_mark.

* Example of illegal Identifiers: 102pgm, -name.

Q.6 List the operators in Java?

Ans 6 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

Q.7 Explain about Increment and decrement operators and give an example.

Increment operator: Increment operators are used to increasing the value of a variable by a specific amount, usually by 1.

there are two types.
(i) preincrement (++a)
(ii) postincrement (a++)

Decrement operator: decrement operator are used to decreasing the value of a variable by a specific amount, usually by 1.

there are of two types
(i) predecrement (--a)
(ii) postdecrement (a--)

Example

```
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);
    }
}
```

output

5
7
6
4