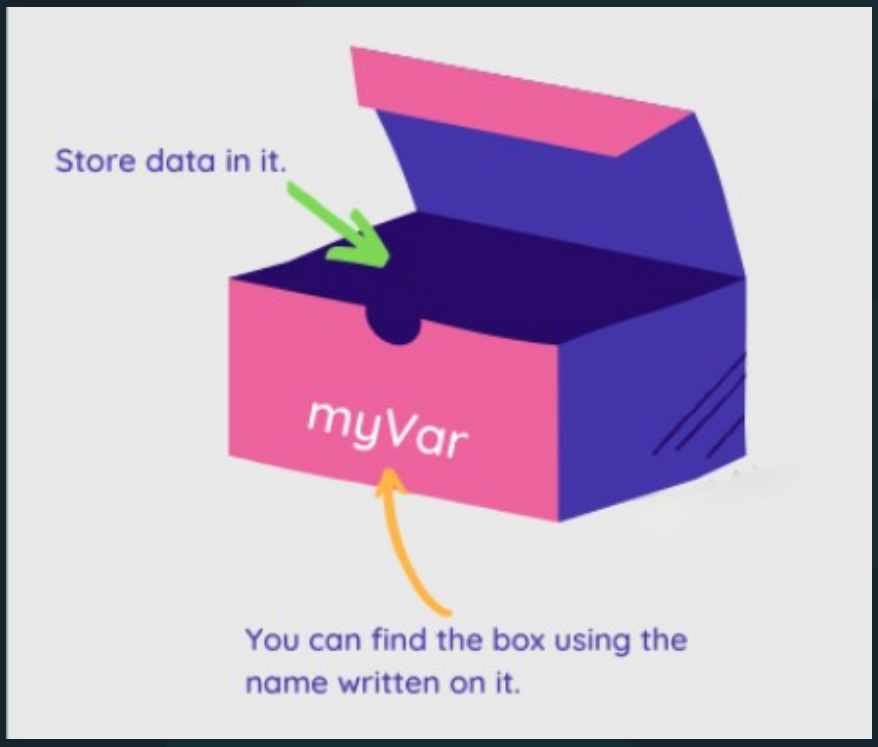
Introduction to variables and operators

Variables

A variable is a way of storing information in a computer program. Think of a variable like a container and the name of the variable as the label on the container which shows us what is inside.



Data Types in Java

Data types specify the different sizes and values that can be stored in the variable.There are two types of data types in Java:

Primitive data types

Primitive data types: The primitive data types include boolean, char, byte, short, int, long, float and double.

Non-primitive data types

Non-primitive data types: The non-primitive data types include Classes, Interfaces, and Arrays.

Java Primitive Data Types

- boolean data type - 1 bit
- byte data type - 1 byte
- char data type - 2 byte
- short data type - 2 bytes
- int data type - 4 bytes
- long data type - 8 bytes
- float data type - 4 bytes
- double data type - 8 bytes

1 byte = 8 bits

Non-Primitive data types

- Array
- Class
- String

Int Data Type

- The int data type is generally used as a default data type for integral values unless if there is no problem about memory.

- Its minimum value is - 2,147,483,648and maximum value is 2,147,483,647. Its default value is 0.

Example:

```
int a = 100000, int b = -200000
```

Float Data Type

- The float data type is typically used to represent values that require a decimal point, such as fractional numbers. It can be used to represent a wide range of values, from small to large, positive or negative.

- It can hold a value of approximately 6 to 7 decimal digits.

Example:

```
float f1 = 234.5
```

Double Data Type

- The double data type is generally used for decimal values just like float.
- The double data type also should never be used for precise values, such as currency. Its default value is 0.0d.

Example:

```
double d1 = 12.3
```

Boolean data type

The Boolean data type is used to store only two possible values: true and false. This data type is used for simple flags that track true/false conditions.

Example:

```
Boolean one = false
```

Operator 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.

*** : Multiplication**

/ : Division

% : Modulo

+ : Addition

– : Subtraction

Type conversion in java

Type conversion in Java, also known as type casting, is the process of changing the data type of a variable's value from one type to another. Java supports two types of type conversions:

Implicit Type Conversion (Widening):

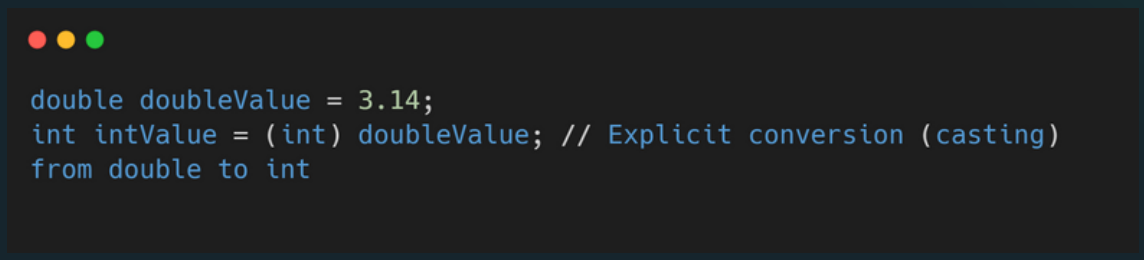
- This type of conversion is performed automatically by the Java compiler when it is safe to do so.
- It typically occurs when you assign a value of a smaller data type to a variable of a larger data type.
- For example, assigning an int to a double or a byte to an int.

Explicit Type Conversion (Narrowing):

Explicit type conversion, also known as casting, is performed when you want to convert a value from a larger data type to a smaller data type.

This conversion may result in loss of data or precision, so you need to explicitly tell the compiler that you are aware of the potential issues.

You use parentheses and specify the target data type to perform explicit type conversion.



Note: When you perform explicit type conversion from a larger data type to a smaller data type, be cautious about potential loss of information. For example, if you cast a double to an int, the fractional part will be truncated