Concepts

Introduction

In this unit, we will learn a few more concepts of Java and understand the order of arithmetic calculations.

1. Reassigning the Variables

The values of variables in Java can also be reassigned (modified) as in Python.

Code

JAVA

```java
class Main {
    public static \
        int a = 1;
        System.out.
        a = 2;
        System.out.
    }
}
```

Output

```
1
2
```

In the above program, the value of the variable

`a` is reassigned to `2`

2. The `final` Keyword

The

`final` keyword is used for variables, classes and methods, which makes them non-changeable (impossible to inherit or override).

The

`final` keyword is useful when you want a variable to always store the same value, like PI (3.14159...).

2.1 The `final` Variables

When the

`final` keyword is used with a variable, it indicates that the variable is constant and the value of it cannot be reassigned (cannot be changed).

Example 1:

Code

JAVA

```
class Main {
    public static v
        final int S
        System.out.
    }
}
```

Output

```
60
```

Naming Convention: The naming convention for the

`final` variables is a bit different from normal variables. Generally, programmers follow uppercase letters with words separated by underscore(`_`). For example, `SPEED_LIMIT` , `MAX_PRICE` , etc.

What if the

`final` variable value is changed?

Code

JAVA

```
class Main {
    public static v
```

```
4        SPEED_LIMI
5        System.out.
6    }
7  }
```

Output

```
file.java:4: error: c
    SPEED_LIMIT =
    ^
1 error
```

An error will be thrown. As we learned earlier the value of **final variables cannot be changed**.

3. Expression

An expression is a valid combination of values, variables and operators.

Examples:

- a * b
- a + 2
- 5 * 2 + 3 / 4

3.1 BODMAS

The standard order of evaluating an expression

- *Brackets* (B)
- *Orders* (O)
- *Division* (D)
- *Multiplication* (M)
- *Addition* (A)
- *Subtraction* (S)

Code

JAVA

```java
class Main {
    public static \
        System.out.
        System.out.
    }
}
```

Output

```
8
2
```

4. Statements

A statement forms a complete unit of execution. In Java, the expressions can be made into a statement by terminating the expression with a semicolon (

`;`).

Code

JAVA

```java
class Main {
    public static v
        int a = 1;
        System.out.
    }
}
```

Output

```
1
```

Statement without semicolon (`;`)

Code

JAVA

```java
class Main {
    public static
        int a = 1
        System.out
    }
}
```

Output

```
file.java:3: error: '
        int a = 1
                ^
1 error
```

5. Block of Code

A Block of code consists of zero or more statements enclosed between balanced brackets (

`{}`).

Code

JAVA

```
class Main { // beg
    public static \
        int a = 1;
        System.out.
    }  // end block
}  // end block 1
```

▶ **Comparison with Python**

5.1 Indentation

Indentation refers to the spaces at the beginning of a code line. It increases the code readability.

In Java, as a best practice, we use *four spaces* for indentation.

5.2 Missing curly braces (`{` or `}`)

Code

JAVA

```
class Main {
    public static \
        int a = 1;
        System.out.
    }
```

Output

```
file.java:5: error: r
    }
    ^
1 error
```

In the above program, the closing curly brace

`}` is missing for the `Main` class (i.e, the braces are not balanced).

6. Comments

Comments are used to make the program more readable by adding the details of the code.

The comments can be used to provide information or explanation about the variable, method, class, or any statement.

There are two types of comments in Java:

- Single-line Comments
- Multi-line Comments

6.1 Single-line Comments

Single-line comments start with two forward slashes

`//`

It can be written in its line next to a statement of code.

Syntax

JAVA

```java
1  //
```

Code

JAVA

```java
1 class Main {
2     public static v
3         int num = 1
4         // finding
5         boolean isP
6
7         System.out.
8     }
9 }
```

Output

```
false
```

▼ **Comparison with Python**

Code

PYTHON

```
num = 15
# finding if n
is_even = (num
print(is_even)
```

Output

```
False
```

6.2 Multi-line Comments

Multi-line comments are used for large text descriptions of code or to comment out chunks of code.

It starts with

`/*` and ends with `*/` . In between these, we can write any number of statements.

Syntax

JAVA

```
/* */
```

Code

JAVA

```
class Main {
    public stat
        /*
        This is
        We crea
        And, ch
        */

        int num
        boolean
```

Expand

Output

```
false
```

Summary

- In Java, variables can be reassigned.
- The `final` variables cannot be reassigned.
- **BODMAS**: The standard order of evaluating an expression.
- In Java, statements are terminated with a semicolon(`;`).
- In Java, a block of code is enclosed between balanced brackets (`{}`).
- **Comments**
  - Single-line comments start with two forward slashes `//`
  - Multi-line comments start with `/*` and end with `*/` . In between these, we can write any number of statements.