

**Most Essential Learning Competencies:** *At the end of the course, you must be able to:*

1. Describe the Identifiers, Keywords and Types, Reserved Types and Primitive Types
2. Understand variable declarations



### Reading Activity

#### Comments

The three permissible styles of C program are:

// comment on one line

/\* comment on one

\* or more lines

\*/

/\*\* documentation comment

\* can also span one or more lines

\*/

#### Semicolons, Blocks, and White Space

*A statement is one or more lines of code terminated by a semicolon (;):*

```
totals = a + b + c + d + e + f;
```

*A block is a collection of statements bound by opening and closing braces:*

```
{
```

```
x = y + 1;
```

```
y = x + 1;
```

```
}
```

*A class definition uses a special block:*

```
public class MyDate {
```

```
private int day;
```

```
private int month;
```

```
private int year;
```

```
}
```

*You can nest block statements*

```
while ( i < large ) {  
    a = a + i;  
    // nested block  
    if ( a == max ) {  
        b = b + a;  
        a = 0;  
    }  
    i = i + 1;  
}
```

*Any amount of white space is permitted in a java program*

*For example:*

```
{int x; x = 23*54;}
```

*is equivalent to:*

```
{  
    int x;  
    x = 23 * 54;  
}
```

### **Identifiers**

- *Identifiers have the following characteristics:*
- *Are names given to a variable, class, or method*
- *Can start with a Unicode letter, underscore (\_), or dollar sign (\$)*
- *Are case-sensitive and have no maximum length*

### **Examples:**

```
identifier  
userName  
user_name  
_sys_var1  
$change
```

abstract	continue	for	new	switch
assert	default	goto	package	synchronized
boolean	do	if	private	this
break	double	implements	protected	throw
byte	else	import	public	throws
case	enum	instanceof	return	transient
catch	extends	int	short	try
char	final	interface	static	void
class	finally	long	strictfp	volatile
const	float	native	super	while

Reserved literal words: null, true, and false

**Figure 4.1 Java Programming Language Keywords**

### Primitive Types

*The Java programming language defines eight primitive types:*

- Logical – boolean
- Textual – char
- Integral – byte, short, int, and long
- Floating – double and float

### **Logical – Boolean**

*The boolean primitive has the following characteristics:*

- The boolean data type has two literals, true and false.

**For example, the statement:**

```
boolean truth = true;
```

*Declares the variable truth as boolean type and assigns it a value of true.*

### Textual – Char

*The textual char primitive has the following characteristics:*

- Represents a 16-bit Unicode character
- Must have its literal enclosed in single quotes ( ' ' )
- Uses the following notations:
- 'a' The letter a
- '\t' The tab character
- '\u????' A specific Unicode character, ?????, is replaced with exactly four hexadecimal digits

For example:

'\u03A6' is the Greek letter phi [Φ]

### **Textual – String**

*The textual String type has the following characteristics:*

- Is not a primitive data type; it is a class
- Has its literal enclosed in double quotes (" ")

***"The quick brown fox jumps over the lazy dog."***

*Can be used as follows:*

**String greeting = "Good Morning !! \n";**

**String errorMessage = "Record Not Found !";**

### **Integral – byte, short, int, and long**

*The integral primitives have the following characteristics:*

- Integral primitives use three forms: Decimal, octal, or hexadecimal
- Literals have a default type of int.
- Literals with the suffix L or l are of type long.
- 2 The decimal form for the integer 2.
- 077 The leading 0 indicates an octal value.
- 0xBAAC the leading 0x indicates a hexadecimal value.

Integer Length	Name or Type	Range
8 bits	byte	$-2^7$ to $2^7-1$
16 bits	short	$-2^{15}$ to $2^{15}-1$
32 bits	int	$-2^{31}$ to $2^{31}-1$
64 bits	long	$-2^{63}$ to $2^{63}-1$

**Figure 1.2 Integral Data Types**

### **Floating Point – float and double**

*The floating point primitives have the following characteristics:*

Floating-point literal includes either a decimal point or one of the following:

- E or e (add exponential value)
- F or f (float)

- D or d (double)
- 3.14 A simple floating-point value (a double)
- 6.02E23 A large floating-point value
- 2.718F A simple float size value
- 123.4E+306D A large double value with redundant D

**Literals have a default type of double.**

*Floating-point data types have the following:*

Float Length Name or Type:

- 32 bits float
- 64 bits double

### **Variables, Declarations, and Assignments**

```
public class Assign {  
    public static void main (String args []) {  
        // declare integer variables  
        int x, y;  
        // declare and assign floating point  
        float z = 3.414f;  
        // declare and assign double  
        double w = 3.1415;  
        declare and assign boolean  
        boolean truth = true;  
        // declare character variable  
        char c;  
        // declare String variable  
        String str;  
        // declare and assign String variable  
        String str1 = "bye";  
        // assign value to char variable  
        c = 'A';
```

```
// assign value to String variable
```

```
str = "Hi out there!";
```

```
// assign values to int variables
```

```
x = 6;
```

```
y = 1000;
```

```
}
```

```
}
```



### Watch Video Resources

1. **Comment Types and Uses in the Java Language**

<https://youtu.be/Y8Bym8GqIME>

2. **Declaring Variables**

<https://youtu.be/tfXKvVHn5Mg>

3. **Representing Fractional Numbers in Java using Floating point data types**

<https://youtu.be/igon6VgCSfl>

**Self-Check****Quiz 4.1**

**Instructions:** Write your answer on the Answer Sheet (AS) provided in this module.

1. Enumerate and explain the reserved words.
2. List down the different types of primitive and non-primitive.

**Laboratory Activity****Activity 4.1**

1. Open available IDE and type the following codes:

```
public class variables {  
  
    public static void main(String[] args) {  
  
        int my_int = 10;  
        float my_float = (float) 6.7;  
        double my_double = 111.77;  
        char my_char = 'A';  
        boolean my_bool = true;  
        System.out.println();  
        System.out.println();  
        System.out.println();  
        System.out.println();  
        System.out.println();  
    }  
}
```

2. Save the file as **variables.java**
3. If there are errors, debug the program. Compile it again. Do this repeatedly until no errors will be detected.
4. It should display the expected output:

```
10  
6.7  
111.77  
A  
true  
BUILD SUCCESSFUL (total time: 0 seconds)
```

**Activity 4.2**

1. Open available IDE and type the following codes:

```
import java.util.Scanner;

public class MyClass {

    public static void main(String[] args) {

        Scanner scan = new Scanner (System.in);

        System.out.println("Enter some String");

        String user_input_string = scan.nextLine();

        long user_input_Long = scan.nextLong();

        System.out.println("The entered String is");

        System.out.println (user_input_string);

        System.out.println ("The entered String is");

        System.out.println (user_input_Long);

    }

}
```

2. Save the as **MyClass.java**

**Activity 4.3**

**Instructions:** Write a program that will display your full name, age, section and school. Copy -paste your code and the screen shot of the final output in the Activity Sheet (AS) provided in this module. (20-points each)

**Internet References**

1. <https://www.youtube.com>
2. <https://www.youtube.com/c/devfactor/about>
3. <http://www.rasmurtech.com/>
4. Phoenix Publishing House Inc.