

Cmp 202 ★

INTRO NOTE

200LVL 2ND SEMESTER





## COURSE OUTLINE

- 1 JAVA BASICS [variables, functions, conditional statements, loops]
- 2 CLASSES & OBJECTS
- 3 OOP Paradigms (Inheritance, Polymorphism, Encapsulation)
- 4 Method Overloading, Method Overriding and Constructors
- 5 USER INTERFACES - using Java Swing, Library, S.O.L.I.D.
- 6 Solid Principles
- 7 Generics & Collection [Arrays, ArrayList, Hashmaps]
- 8 File I/O
- 9 Threads



## INTRODUCTION

One of the reason we use OOP and not procedural Programming is because of we "Do Not want to Repeat ourselves" - DRY (Don't Repeat Yourself).

What is a Function?

A Function is a block of codes that perform a specific task.

What is a Method?

A Method is a Function but within a class (techno note)

What you need to know about JAVA!

In JAVA we use Methods not Functions

◎ NOTE: The Difference between a Variable in a class and the one in a Method

- A variable inside a method is a Local Variable.  
while...
- A variable inside a class is a <sup>Global</sup> ~~Local~~ Variable.

◎ NOTE: In JAVA we hardly use Global Variables



What Are The 2 Operations Performed with Variables?

- Initialization and;
- Declaration

E.g

int age;

# This is an example of ~~Initialization~~ Declaration

age = 55;

# While this is an example of Declaration

OR

Initialization

float height = 18.26

Initialization

Declaration

Declaration

Initialization

What Is An INSTANCE?

An Instance is an object of a class

What Is An OBJECT?

An Object is a concrete representation of a class

E.g

Human

# A class

man woman child

# Instances / Objects

What is a LIBRARY?

A Library is a Collection of re-usable codes.

& Install

on your PC

Lecturer - To Continue You are required to Download 2 things

- 1) JDK (Install this first)
- 2) Intelligent IDE (Install Second)



# JAVA CODES

© Without further ado. - Let's write some Java Code

○ Java File

This can also be private if we want

# A Class

```
Public class JavaClass
```

This is the Return type which says void: means this method returns nothing

# A Method that returns nothing

```
Public static void main (String [] args) {  
    System.out.print ("Hello World!");  
}
```

- Return Type: int

This must return an integer value

Variables initialized

# A Method that returns an Integer (or whole number)

```
Public int sumTwoNumbers (int num1, int num2)  
{  
    return num1 + num2  
}
```

```
Public void sumTwoNumbers2 () {
```

```
    int num1 = 17;
```

```
    int num2 = 18;
```

```
    System.out.print ("num1 + num2")  
}
```



## Arithmetic Operators

+  
 -  
 /  
 \*  
 %  
 ( )

## Conditional Operators

!= # not equal to  
 && # And  
 || # Or  
 == # is equal to  
 < # Less than  
 > # Greater than  
 <= # Less than Equal to  
 >= # Greater than Equal to  
 !> # Not Greater than  
 !< # Not Less than

⑥ To Call a method inside our class (Public <sup>class</sup> JavaClass)

obj = new JavaClass() : But Prints ↓  
 obj.mash()

No Return  
=

Hello World

obj.sumTwoNumbers(5, 4)

Returns  
=

9

obj.sumTwoNumbers 2()

No Return : But Prints ↓

=

34



## CLASS TEST

Write a method that swaps two Numbers and prints

Ans:

Java File

→ Could be any name  
You want - But must be Capitalized

Public class Java Class

```
public in swapNumbers (int a, int b) {
```

```
    int hold_a = a;      Initializations
```

→ # hold\_a now carries a

```
    a = b;
```

# a now carries b

```
    b = hold_a;
```

# b now carries the original a value

```
    System.out.printf ("a = " + a + " b = " + b )
```

```
}
```

DONE ✓