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COMP90041

Programming and Software Development

Tutorial 2 Data types & Input/output

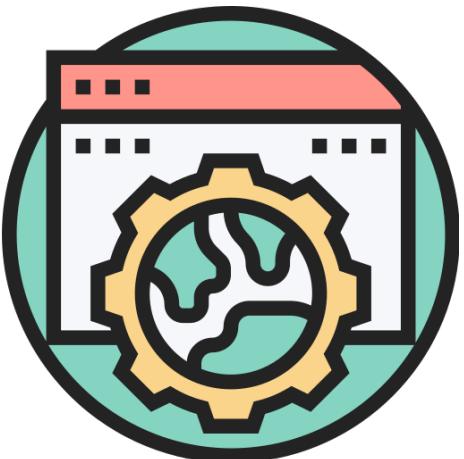
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Admin

- ✓ Connect to remote server from home via **Uni VPN**
- ✓ Upload -> Submit -> Verify = **Literally Submit**
- ✓ Use **Discussion Board**
- ✓ **Slides available at...**





Slides available at

GitHub Repository: [COMP90041 Tutorial](#)



Overview

1. Object Oriented Programming
2. Data Types
3. Output
4. Input
5. Exercises



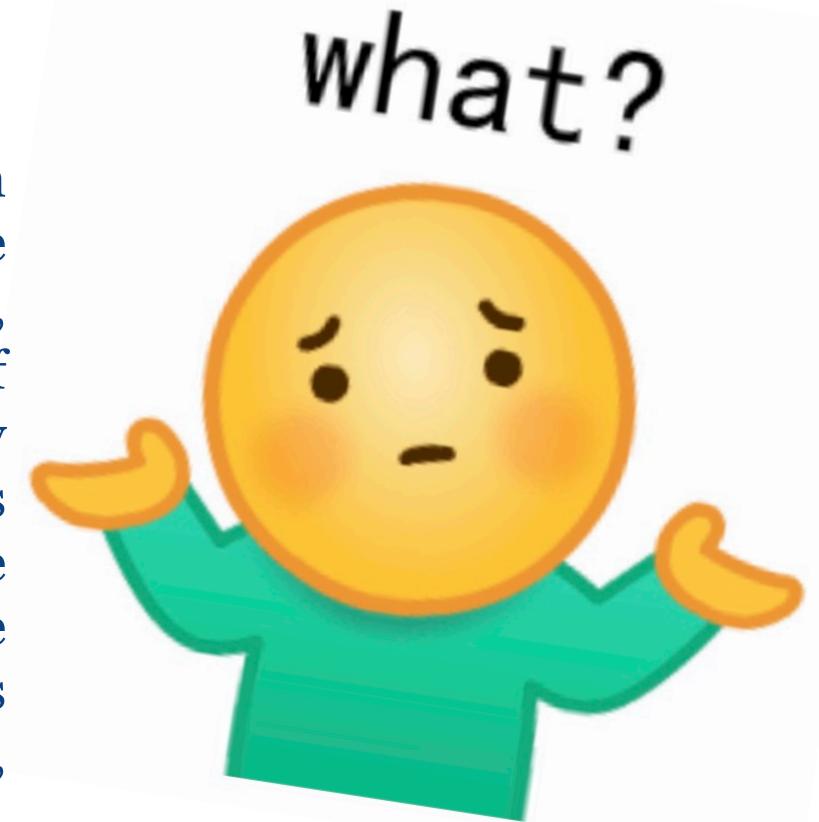
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1. Object Oriented Programming(OOP)

What is OOP?(oops?)

Wikipedia:

Object-oriented programming (OOP) is a programming paradigm based on the concept of “objects”, which can contain data, in the form of fields (often known as attributes or properties), and code, in the form of procedures (often known as methods). A feature of objects is an object’s procedures that can access and often modify the data fields of the object with which they are associated (objects have a notion of “this” or “self”). In OOP, computer programs are designed by making them out of objects that interact with one another. OOP languages are diverse, but the most popular ones are class-based, meaning that objects are instances of classes, which also determine their types.....



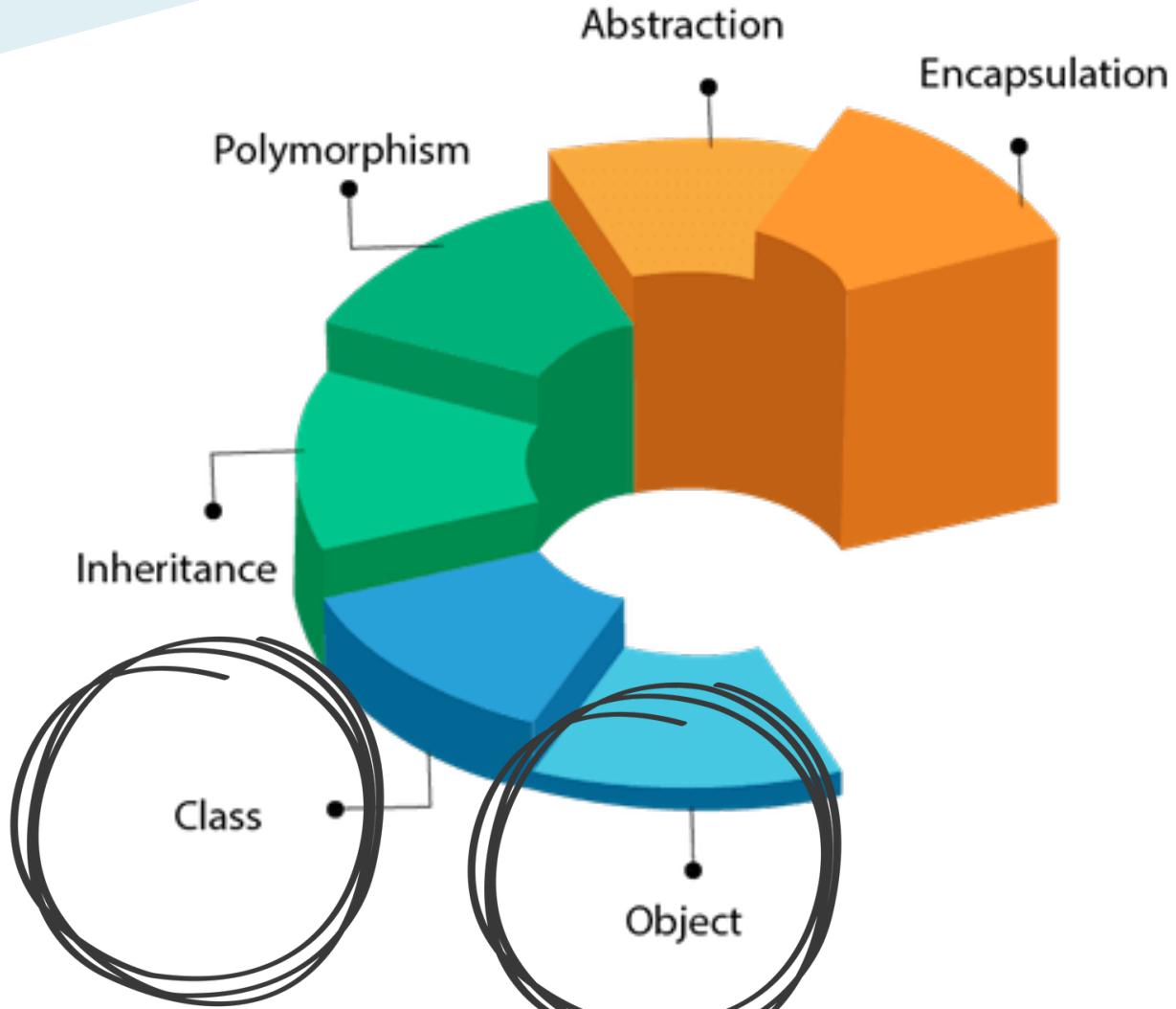


What is OOP?

combine a group of related **variables** and **functions** into a **unit**



OOP Properties





Example

Scrabble Game



Fight the Landlord





Player Class

Properties

Functions

```
Player.java ×
1 package tute2;
2 /**
3  * introduce classes and objects
4 */
5 public class Player {
6     String name;
7     int age;
8     int score;
9     @
10    public Player(String name, int age) {
11        this.name = name;
12        this.age = age;
13    }
14    public void introduceSelf(){
15        System.out.println("Hello, my name is " + this.name);
16    }
17    public void putCharacter(char input){
18        //
19    }
20    public void requestVoting(){
21        //
22    }
}
```

The code snippet shows a Java class named Player. It contains three instance variables: name (String), age (int), and score (int). It has a constructor that takes name and age as parameters and initializes them. It also contains three methods: introduceSelf(), putCharacter(), and requestVoting(). The code is annotated with comments and imports. Two thought bubbles highlight the instance variables (name, age, score) and the constructor, while another bubble highlights the introduction method.



Player Object

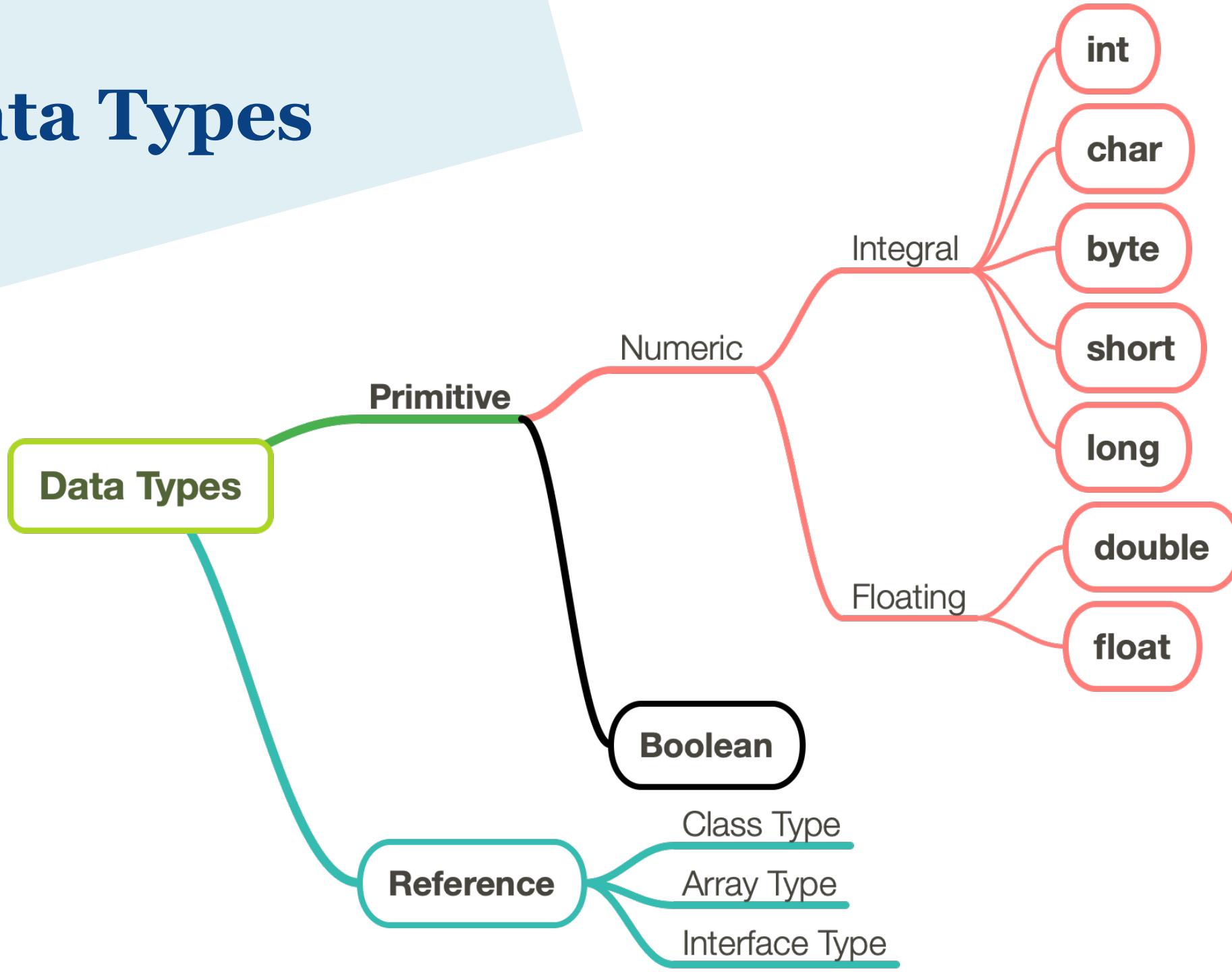
```
Player.java × GameEngine.java ×
1 package tute2;
2
3 ► public class GameEngine {
4 ►     public static void main(String[] args) {
5         Player p1 = new Player( name: "michale", age: 25 );
6         p1.introduceSelf();
7         p1.putCharacter( input: 'a' );
8         p1.requestVoting();
9     }
10 }
```



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2. Data Types

Data Types





Data Types

Questions:

- 1. Primitive Types VS Reference Types?**

- 2. What is Type Casting?**



Primitive & Reference Types

Primitive variables:

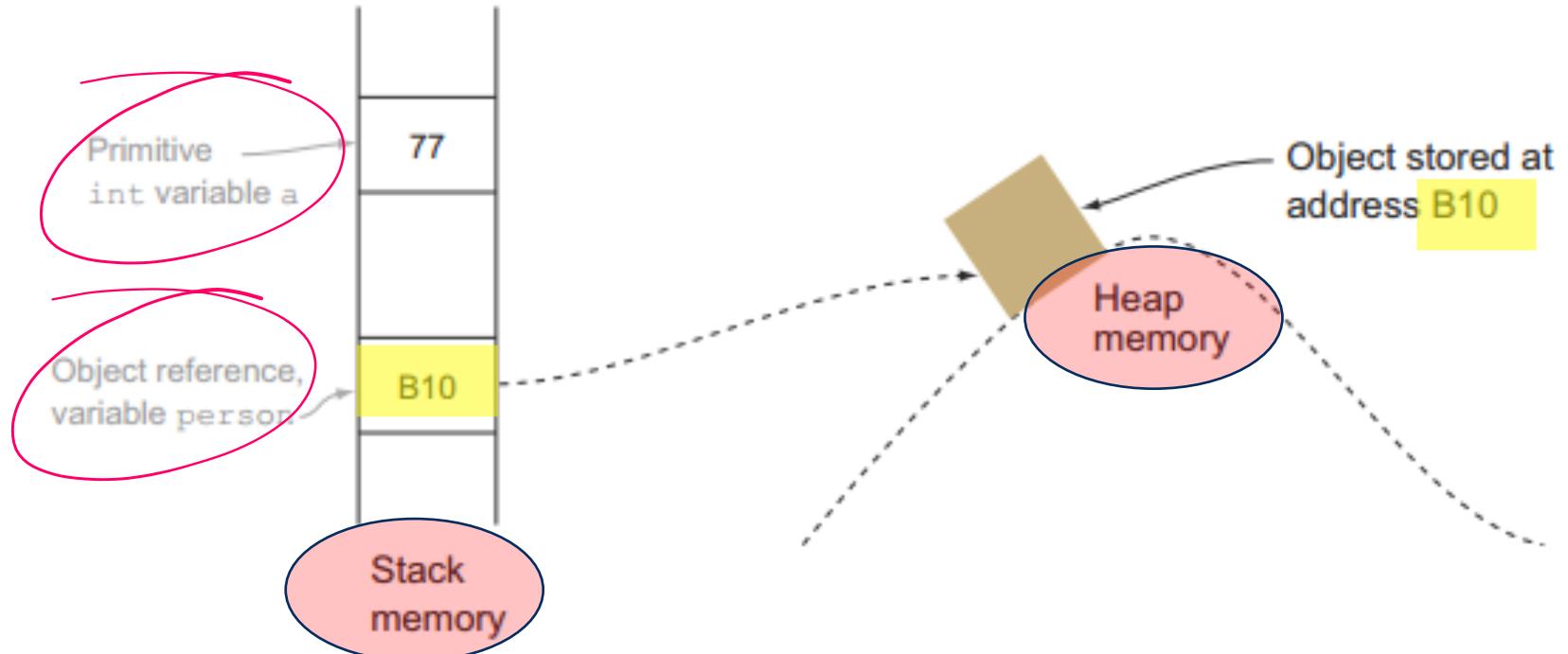
store the **actual values**

Reference variables:

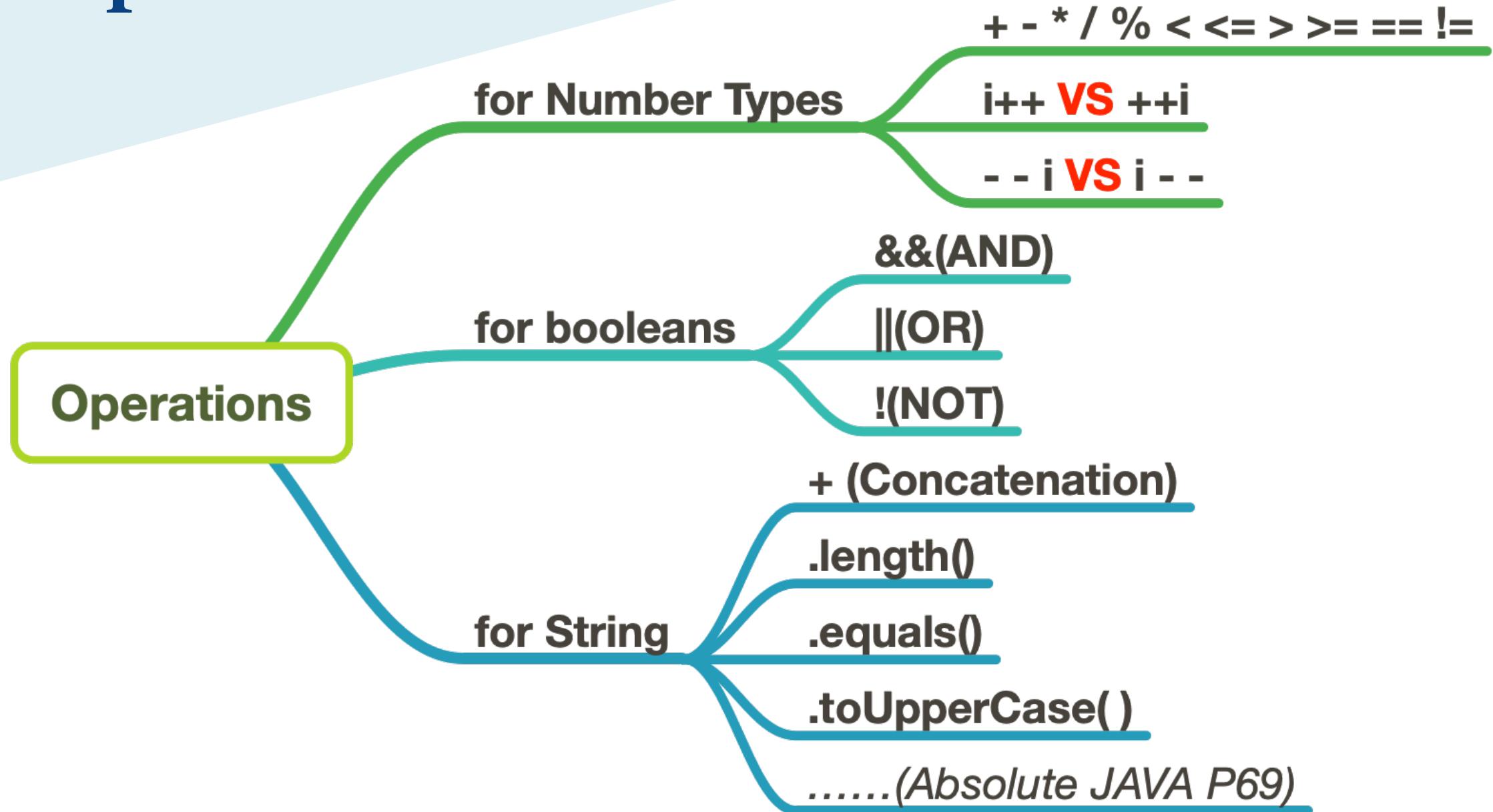
store the **addresses** of the objects they refer to

Primitive & Reference Types

```
int a = 77;  
Person person = new Person();
```



Operations





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3. Output



Output

```
// The next output is placed on the same line
System.out.print("Adele");

// The next output goes on a new line
System.out.println(" Hello, it's me");

// Formatted output
System.out.printf("Album %.2f", 25.0);
```



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4. Input



Input

```
1 import java.util.Scanner;  
2  
3 Scanner keyboard = new Scanner(System.in);  
4  
5 keyboard.nextInt();  
6  
7 keyboard.nextDouble();  
8  
9 keyboard.next();  
10  
11 keyboard.nextLine();  
12  
13 ... (Absolute Java P113)
```



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5. Exercises



Tutorial Exercise

Write a java program that reads in a single line of text from the user, prints out how long it is (in characters), on the next line prints out just the first word of the user's text, and on the third prints all of the user's input but the first word. Assume that words are separated by a single space character.



Homework

Write a java program that prints out the first command line argument between quote characters on a line by itself. You can ignore any command line arguments after the first, and don't worry that the program will crash if you don't give it any command line arguments.



Thank you





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