Day 1

Monday, July 18, 2022 2:55 PM

Java Program Memory

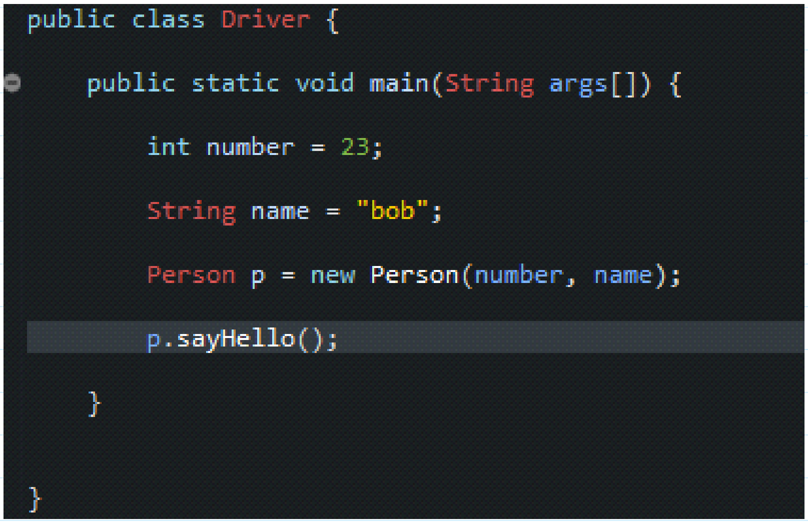
2 types: Heap and Stack

Heap:

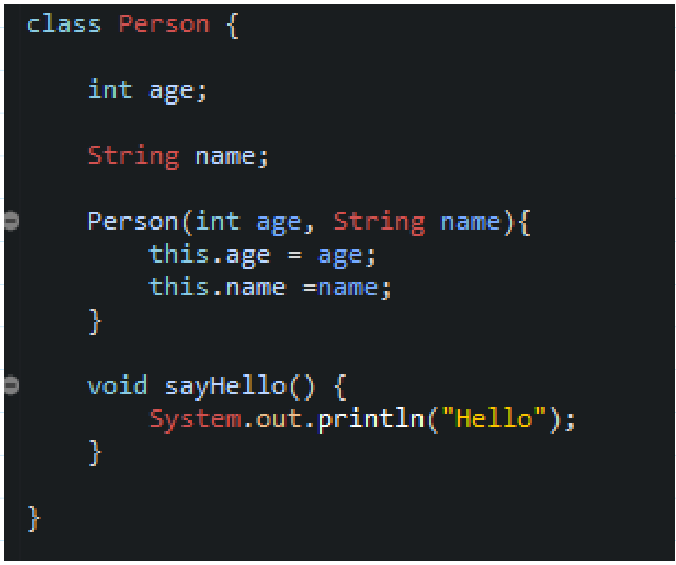
- Stores the objects we create
- We use the new keyword this will place an object in the heap
- If we run out of space this is a OutOfMemoryError

Stack:

- holds method calls, primitive values and references to objects corrently being used by the program
- Stacks follow first in last out
- When a method/constructor is called it is put on top of the call stack
  - all variables and refrences will be placed on the memory stack
- Once the method is finished running all memory will be cleared off the stack
- If we run out of stack space this is a StackOverflowError

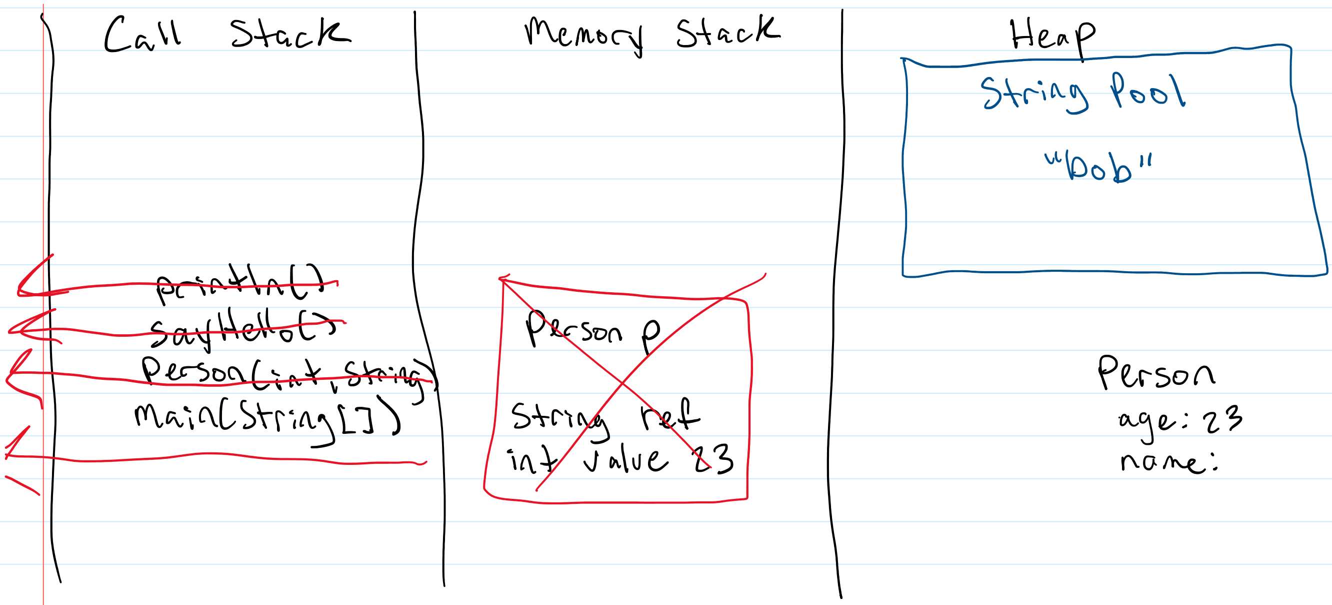


```
public class Driver {

    public static void main(String args[]) {

        int number = 23;

        String name = "bob";

        Person p = new Person(number, name);

        p.sayHello();

    }


}
```



```
class Person {

    int age;

    String name;

    Person(int age, String name){
        this.age = age;
        this.name =name;
    }

    void sayHello() {
        System.out.println("Hello");
    }

}
```

Java Memory for the above code


Call Stack
Memory Stack
Heap
~~println()~~
~~sayHello()~~
~~Person(int, String)~~
main(String[])
Person p
String ref
int value 23
String Pool
"bob"
Person
age: 23
name: