Misuse of Static Variables


```
public class Client {
  private Account[] accounts;
  private static int numberOfAccounts = 0;
  public void addAccount(Account acc) {
    accounts[this.numberOfAccounts] = acc;
    this.numberOfAccounts ++;
  } }
```

```
public class ClientTester {
  Client bill = new Client("Bill");
  Client steve = new Client("Steve");
  Account acc1 = new Account();
  Account acc2 = new Account();
  bill.addAccount(acc1);
    /* [redacted] */
  steve.addAccount(acc2);
    /* [redacted] */
}
```

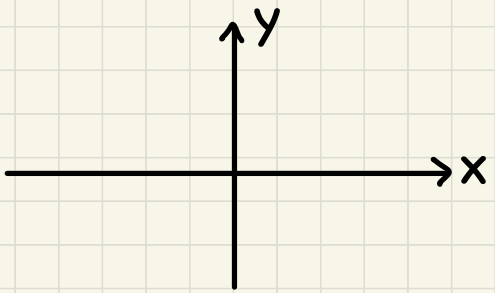
Use of Static Variables: Common Error


```
1  public class Bank {
2     private string branchName;
3     public String getBrachName() { return this.branchName; }
4     private static int nextAccountNumber = 0;
5     public static String getInfo() {
6        nextAccountNumber++;
7        return this.branchName + nextAccountNumber;
8     }
9  }
```

Reference-Typed Return Values


```
public class Point {
   /* A mutator modifying the context Point object */
   public void moveUp (double i) {
      this.y = this.y + i;
   }

   /* An accessor returning a new Point object */
   public Point movedUpBy(double i) {
      Point np = new Point(this.x, this.y);
      np.moveUp(i);
      return np;
   }
}
```




```
public class PointTester {
   public static void main(String[] args) {
      Point p1 = new Point(2.5, -3.6);
      p1.moveUp(7.8);
      Point p2 = p1.movedUpBy(6.4);
      System.out.println(p1 == p2);
   }
}
```

Example: Reference to this


```
public class Person {
  private String name;
  private Person spouse;
  public Person(String name) {
    this.name = name;
  }
  public void marry(Person other) {



  }
}
```

```
Person jim = new Person("Jim");
Person elsa = new Person("Elsa");
jim.marry(elsa);
```

Caller vs. Callee

- caller is the client using the service provided by another method.
- callee is the supplier providing the service to another method.

```
class C1 {
  void m1() {
    C2 o = new C2();
    o.m2(); /* static type of o is C2 */
  }
}
```

Q: Can a method be a caller and a callee simultaneously?