

1. True/False questions

For each of the following statements below, indicate whether it is true or false in Java:

- a) The value of a local variable named `i` has no direct relationship with that of a variable named `i` in its caller. **= TRUE**
- b) The value of a parameter named `x` has no direct relationship with that of a variable named `x` in its caller. **= TRUE**

2. Tracing method execution

For the program below, trace through its execution by hand to show what output is produced when it runs.

```
/*
 * File: Hogwarts.java
 * -----
 * This program is just testing your understanding of parameter passing.
 */

import acm.program.*;

public class Hogwarts extends ConsoleProgram {

    public void run() {
        bludger(2001);
    }

    private void bludger(int y) {
        int x = y / 1000;
        int z = (x + y);
        x = quaffle(z, y);
        println("bludger: x = " + x + ", y = " + y + ", z = " + z);
    }

    private int quaffle(int x, int y) {
        int z = snitch(x + y, y);
        y /= z;
        println("quaffle: x = " + x + ", y = " + y + ", z = " + z);
        return z;
    }

    private int snitch(int x, int y) {
        y = x / (x % 10);
        println("snitch: x = " + x + ", y = " + y);
        return y;
    }
}
```

Output:

snitch: x = 4004, y = 1001
quaffle: x = 2003, y = 1, z = 1001
bludger: x = 1001, y = 2001, z = 2003

Explanation: (Next Page)

Explanation Continued:

Bludger

```
private void bludger (int y(2001))
int x = y(2001) / 1000 = 2
int z = (x(2) + y(2001)) = 2003
x = quaffle (z(2003), y(2001))
x = 1,001
```

```
println ("bludger: x = " + 1,001 + ", y = " + 2001 + ")
Bludger: x = 1,001, y = 2,001, z = " + 2003 + "
```

quaffle

```
private int quaffle (int x(2003), int y(2001))
int snitch = x(2003) + y(2001)
as. 4004 = 1
```

```
(2001)
y = 1,001; = 1
println ("quaffle: x = " + 2003 + ", y = " + 1 + ", z = " + 1,001 + ")
return 1,001;
```

```
Quaffle: x = 2,003, y = 1, z = 1,001
```

snitch

```
private int snitch (int x(4004), int y(2001))
y = 4004 / (4004 % 10) = 400.4
y = 4004 / (4004 % 10) = 1,001
400.4 = 900.4
```

4004 / 4

```
Print In ("snitch: x = " + 4,004 + ", y = " + 1,001 + ")
return 1,001;
```

```
Snitch: x = 4,004, y = 1,001
```