

1 Bear

```
public class Bear {
    public static int num = 0;
    public int myNum;
    public String name;

    public Bear (int n, String str) {
        num += 1;
        myNum = n;
        name = str;
    }

    public void printNum() {
        System.out.println(myNum);
    }

    public void printInfo(String str) {
        System.out.println("I like " + str);
    }

    public void printInfo(int d) {
        System.out.println("Number: " + d);
    }
}
```

Take a look at the class and answer the questions below. Suppose we instantiate the following two objects:

```
Bear bear1 = new Bear(4, "Oski");
Bear bear2 = new Bear(2, "Clark");
```

What is the output Determine the output after executing the following snippet of code.

```
System.out.println(bear2.num);
bear2.num -= 1;
System.out.println(bear1.num);
bear2.myNum -= 1;
System.out.println(bear1.myNum);
bear1.printInfo(2);
bear1.printInfo("apples");
```

Solution:

```
2
1
4
Number: 2
I like apples
```

2 Box and Pointer Diagrams

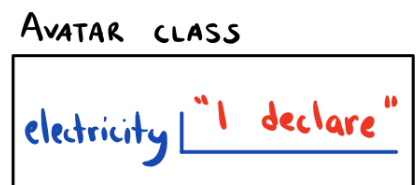
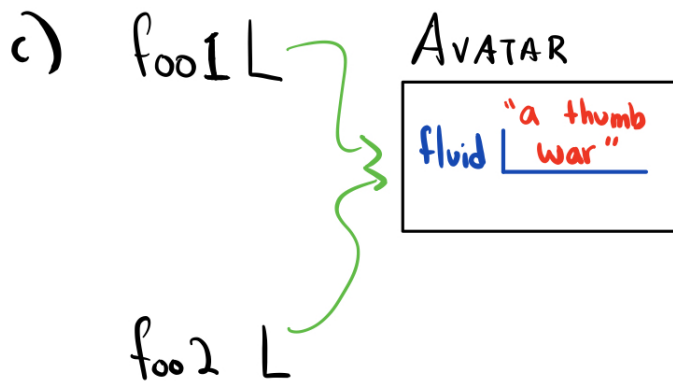
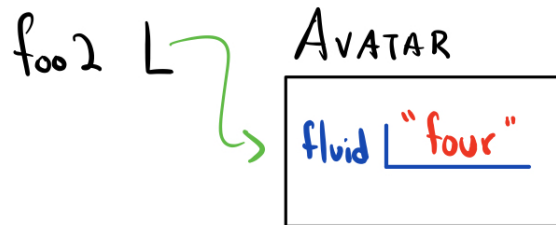
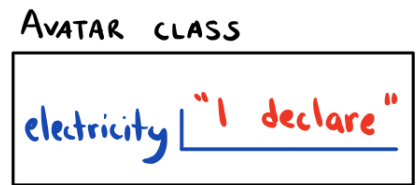
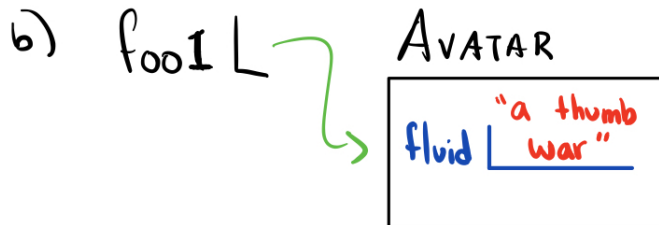
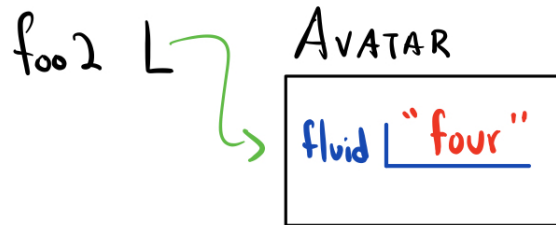
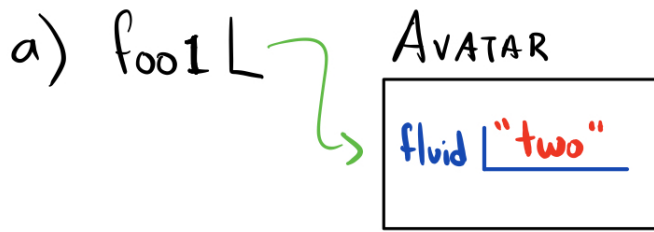
Answer the following questions about the Avatar class.

```
public class Avatar {
    public static String electricity;
    public String fluid;

    public Avatar(String str1, String str2) {
        Avatar.electricity = str1;
        this.fluid = str2;
    }

    public static void main(String[] args) {
        Avatar foo1 = new Avatar("one ", "two");
        Avatar foo2 = new Avatar("three ", "four");
        /* a */
        foo1.electricity = "I declare ";
        foo1.fluid = "a thumb war";
        /* b */
        foo2 = foo1;
        /* c */
    }
}
```

Draw the box-and-pointer diagrams of the states of the program during the lines with the comments a, b, and c in the main method before exiting.



3 Java Practice

1. Write a function that sums up all the digits in an integer recursively.

```
public static int sumDigits (int x) {  
    if (_____ ) {  
        _____;  
    }  
    return _____ + sumDigits(_____);  
}
```

Solution:

```
public static int sumDigits(int x) {  
    if (x <= 0) {  
        return 0;  
    }  
    return x % 10 + sumDigits(x / 10);  
}
```

2. Write a function that sums up all the digits in an integer iteratively. For example, sumDigits(31415) should return $3+1+4+1+5=14$.

```
public static int sumDigits(int x) {  
}
```

Solution:

```
public static int sumDigits(int x) {  
    int total = 0;  
    for (int num = x; num > 0; num /= 10) {  
        total += num % 10;  
    }  
    return total;  
}
```

Note: The "while" loop version may be more familiar for students, but going over the "/=" notation in the for loop can be good practice!

Alternate Solution:

```
public static int sumDigits(int x) {  
    int total = 0;  
    while (x > 0) {
```

```
        total += x % 10;
        x /= 10;
    }
    return total;
}
```

4 Do you Git it?

Recall the Git commands `init`, `add`, `commit`, `status`, `log`, `show`, `clone`, `pull`, and `push`. Which of those commands allows you to:

- tell Git to start tracking a file: `add`
- save a snapshot of the files being tracked: `commit`
- see what files have changed since your last commit: `status`
- see a list of previous commits: `log`
- create a local copy of a remote repository: `clone`
- send your locally tracked files to a remote repository: `push`