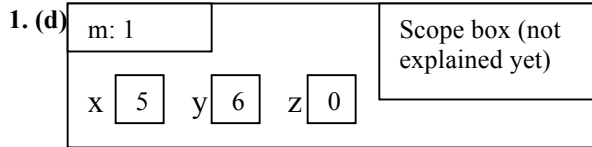


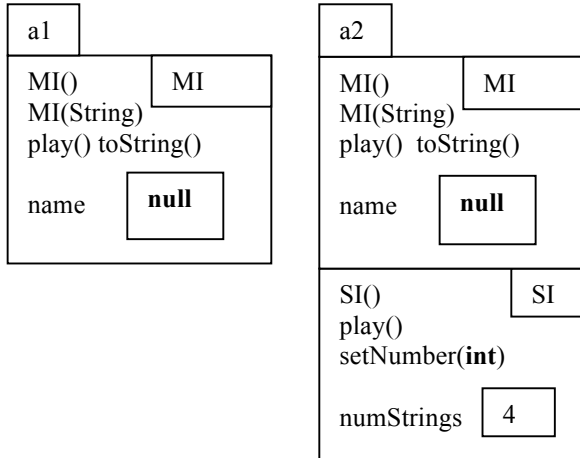
1. (a) A parameter is a variable declared in the header of a method (within the parentheses). An argument is an expression that occurs in a call of a method.

1. (b) A local variable is a variable that is declared in the body of a method. Its scope begins at its declaration and continues until the end of the block in which it is declared.

1. (c) For a new-expression `new C(...)`: (1) Create a new object of class `C`; (2) execute constructor call `C(...)`; (3) yield as value the name of the newly created object.



2. (a) We abbreviate `MusicInstrument` as `MI` and `StringInstrument` as `SI`. You didn't have to write in the two constructors, but they really are there.



2b.

`/** An instance represents a percussion instrument */`

```
public class PercussionInstrument extends MusicInstrument {
    // number of drums in this instrument
    private int numDrums;

    /** Constructor: an instance name s with n drums */
    public PercussionInstrument(String s, int n) {
        super(s);
        numDrums = n;
    }

    /** = sound this instrument makes */
    public String play() {
        return super.toString() + numDrums + "druuums";
    }
}
```

2c. The declaration is

```
private static int numInstruments;
```

Here are the two constructors.

```
/** Constructor: an instrument with name s */
public MusicInstrument(String s) {
    name = s; numInstruments = numInstruments + 1;
}
```

```
/** Constructor: an instrument with name "" */
public MusicInstrument() {
    this("");
}
```

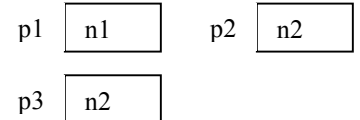
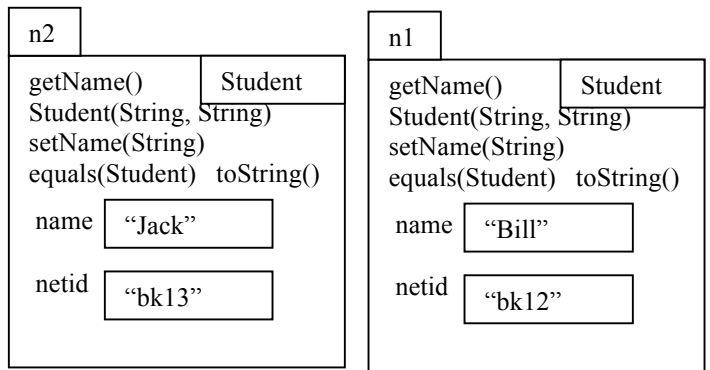
```
3. /** An instance is a violin */
public class Violin extends StringInstrument {
    // The manufacturer
    private String manufacturer;

    /** Constructor: a violin with n strings made by
        manufacturer s */
    public Violin(int n, String s) {
        setNumber(n);
        manufacturer = s;
    }

    /** Constructor: a violin with 6 strings made by
        manufacturer s */
    public Violin(String s) {
        this(6, s);
    }
}
```

4a. false, true, false, false.

4b.



5. Function body:

```
int k = s.indexOf("/"); // index of first "/"
String month = s.substring(0, k);
String rest = s.substring(k + 1);

k = rest.indexOf("/"); // index in rest of the only "/"
String day = rest.substring(0, k);
String year = rest.substring(k + 1);
return year + "." + month + "." + day;
```