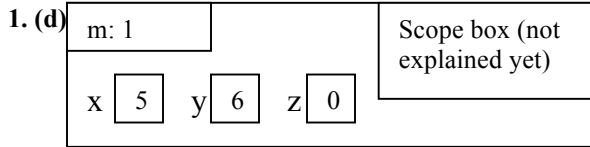


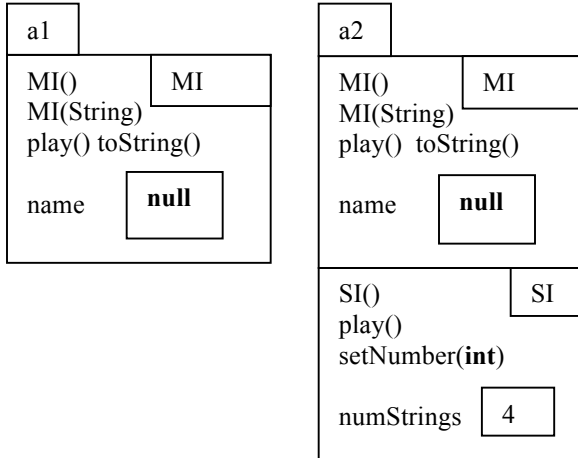
1. (a) A parameter is a variable declared in the header of a method (within the parentheses). An argument is an expression that occurs in a call of a method.

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 numbInstruments;
```

Here are the two constructors.

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

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

3. /** An instance is a violin */

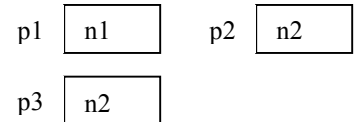
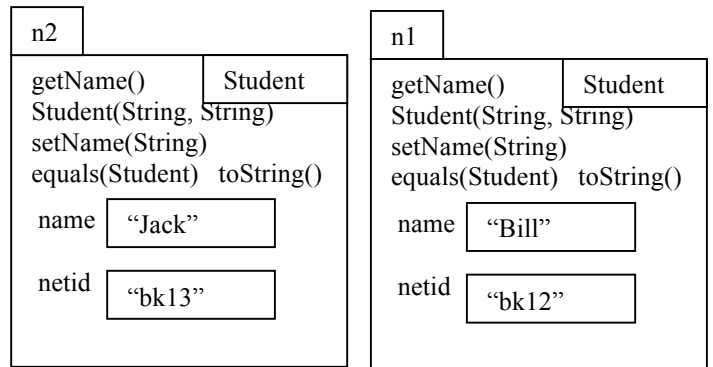
```
public class Violin extends StringInstrument {
    // The manufacturer
    private String manufacturer;
```

```
    /** 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;
```