

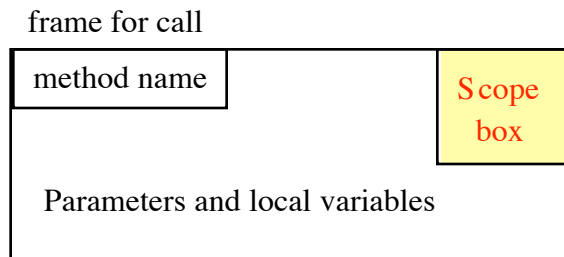
Classes Labs

PGL-3. Drawing frames

Lesson Page 3-7

Introduction

We have added a scope box to the frame for a call:



The scope box contains one of the following:

1. For a constructor, the name of the newly created object.
2. For a static method, the name of the class.
3. For a non-static method, the name of the object in which the method resides.

If a variable or method name referenced in the method body does not appear in the frame for the call, then one looks further for it in the entity given by the scope box. This lab does not require the computer. You will need some fresh sheets of paper.

We now provide practice in drawing frames and using the scope box.

Step 1. Executing a constructor call

Consider the following class:

```
public class Class1 {
    public static final ZERO= 0;
    private int x;
    private int y;

    // Constructor: instance with xp for x,
    //                xp+yp for y
    public Class1 (int xp, int yp) {
        x= xp;
        int z= x+yp;
        y= z;
    }

    // = value of x
    public int getX() {return x;}
}
```

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```
// = maximum of x and y
public int max() {
    if (x > y) return x;
    return y;
}

// = maximum of x and y
public static int max(int x, int y) {
    if (x > y) return x + ZERO;
    return y;
}
}
```

Evaluate the expression:

```
new Class1(5,6);
```

That is, draw a new instance of `Class1`; execute the constructor call `Class1(5,6)`, drawing the frame, etc.; and show what the value of the new expression is. When drawing the frame, what will you put in the scope box? When you have to reference a variable `x`, make sure to use the scope box to determine where the variable is.

Don't erase the frame, so that you and perhaps others can check your work later.

Step 2. Calling a static method

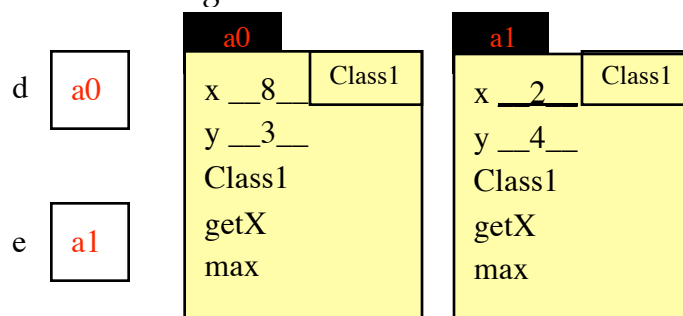
Evaluate the expression:

```
Class1.max(6,5);
```

When drawing the frame, what will you put in the scope box? Make sure you use the scope box to find a referenced name that does not appear in the frame. Don't erase the frame, so that you and perhaps others can check your work later.

Step 2. Calling an instance method

Suppose we have the following variables:



Evaluate the call

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```
d.max(d.getX, e.getX)
```

Note that there are actually three function calls here, two of them in the arguments of the call of `d.max`, so you will have to write three frames. Don't erase frames, so you and perhaps others can check your work later. When drawing a frame, what will you put in the scope box? Make sure you use the scope box to find a referenced name that does not appear in the frame.