Model 1 Assignment

The following eight lines of code are executed one at a time, in order. The boxes on the right show the state of the (same) two variables after each step.

Declaring a variable instructs the computer to reserve space for it in memory:

```
1 int dollars;
2 int cents;
```

dollars [ ]

cents [ ]

Variables cannot be used until they are ***initialized*** (assigned for the first time):

```
3 dollars = 2;
4 System.out.println(dollars);  // OK
5 System.out.println(cents);    // error
```

dollars [2]

cents [ ]

Each time you assign a variable, you are ***updating*** its value stored in memory:

```
6 dollars = 3;
7 dollars = 4;
8 cents = 49;
```

dollars [4]

cents [49]

Questions (10 min) Start time:

1. How many times is each variable in Model 1 assigned?

2. What is the error in the second `System.out.println` statement? (Don't just repeat the text in Model 1; explain in your own words what the problem is.)

3. What is the value of `dollars` right before it's assigned for the last time? What is the value of `cents` before it's assigned for the last time?

4. Consider the statement: `cents = dollars;`

a) Compare this code to lines 6–8 in Model 1. What value do you think `cents` and `dollars` will have after running this statement?

b) Which side of the equals sign (left or right) was assigned a new value?

5. In Java, the + and - symbols are used to perform addition and subtraction. For example, the statement `dollars = dollars + 1;` adds one to the current value of `dollars`.

a) What is the value of `dollars` (in memory) after running this statement?

b) Do you consider the equals sign in Java an operation to be performed? (like +)
If so, explain the operation. If not, explain why not.

c) Do you consider the equals sign in mathematics an operation to be performed?
If so, explain the operation. If not, explain why not.

6. In your own words, explain how you should read the = sign in Java. For example, the Java statement `x = a + b;` should be read out loud as "x _____ a plus b."