Model 1 Variables

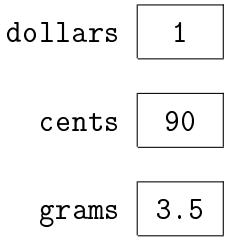
Most programs store and manipulate data values. We use ***variables*** to give values meaningful names. The following code ***declares*** three variables and ***assigns*** them (using the = operator). Each variable is stored in the computer's memory, represented by the boxes on the right.

Java code

```
int dollars;
int cents;
double grams;

dollars = 1;
cents = 90;
grams = 3.5;
```

Computer memory



Questions (10 min)

Start time:

1. Identify the Java ***keyword*** used in a variable declaration to indicate

a) an integer: int

b) a real number: double

2. Consider numbers of dollar bills, cents, and grams. Which of these units only makes sense as an integer, and why?

Cents makes sense (ha ha) only as an integer, because at the end of the day, you can't pay with a fractional amount. (It is possible to make a similar argument for dollars, but not for grams.)

3. What would you expect the following statements to print out?

a) `System.out.println(dollars);` 1

b) `System.out.println(cents);` 90

c) `System.out.println(grams);` 3.5

4. In the previous question, how does the third printed line (c) differ from the first two?

The third line prints a double, and the first two print an integer.

5. What do you think is the purpose of a variable declaration?

It tells the computer how to interpret and display the value.

6. What will be output by the following code, and why?

```
double one;
one = 1;
System.out.println(one);
```

The output is 1.0, because `one` is a `double`. The type of variable determines the output format.