Announcements and Stuff:

- Java Crash Course

- Gradescope CS61BL and CS61BL Quizzes

- Presemester Survey due tomorrow

- Coming soon: Survey from me

Today:

- Find a partner, preferably someone new

- Java as a statically typed language

- Primitives vs Reference Types

- Box and pointer: Code → Pictures

Declaring Variables:

Python

```
x = 5
s = "apple"
x = "banana"
```

- No need to specify type of each variable
- No problem w/ this assignment

Java

```
int x = 5;
String s = "apple";
x = "banana"
```

- Need to specify the type of each variable
- This assignment does not work, x is an int

Statically Typed Languages

- At declaration a variable's type must be specified

- Once a variable's type has been specified it cannot be changed

- Why do this? - compiler can catch errors
                - perhaps readability

Primitives

The ones we will use
{
boolean
int
long
double
char
}

the value of a primitive is the value itself

The other three
{
float
byte
short
}

Objects/Reference Types

- Any variable that is not a primitive will be a reference type

Ex: Dog fido = new Dog();

the value of a reference type is not the value of the object, it is a reference or address in memory of where the object's data is stored

```
Int    a = 3;
Dog  fido = new Dog();
boolean  var = true;
a = 5;
```

a `5`

fido ⬜ ⟶

```
┌──────────────┐
│ Dog          │
├──────────────┤
│ name  ⬜      │
│         │     │
└─────────┼────┘
          ▼
```

var `true`

"fido"