Midterm Exam:
Review Session 1

Wednesday, September 25

CS 105 • Fall 2024 • MSG Session

Variables

Breaking Down Variables

type name

```
int number;
```

```
int number = 12;
```

type name value

What *types* of variables are there?

Types of Variables

Type	Stores	Example

Type	Stores	Example

Initialization & Assignment

```
int number;

number = 12;

int number = 12;
```

Integer Division

```
1 / 2 =

1.0 / 2 =
```

Checking for Equality

- Usually, we use `==` to check for equality.
- There are two cases where we ***must*** use a different comparison.
  - `float`
  - `String`
  - When we can't use `==`, we use `.equals()`

Let's use `.equals()` and `==`

1. Are integers `x` and `y` equal?
2. Are Strings `str1` and `str2` equal?

Variables: ***Booleans***

Booleans: what are they?

- Answer a yes/no question
- Two possible values:
  - `true`
  - `false`

Booleans: an example

Convert the statement “it is not raining outside” to a `boolean` in Java.

Booleans: boolean expressions

- More complex booleans; aren't as simple as setting a variable to `true` or `false`.
- Like another form of math, except with only `true` or `false` (1 or 0).
  - Has different operators.

Booleans: boolean operators

What are some operators in our (decimal) math system?

Booleans: boolean operators

What are some operators in the boolean math system?

Booleans: boolean operators

`a && b`

a	b	a && b
true	true	
true	false	
false	true	
false	false	

Booleans: boolean operators

`a && b`

a	b	a && b
true	true	true
true	false	false
false	true	false
false	false	false

Booleans: boolean operators

`a || b`

a	b	a || b
true	true	
true	false	
false	true	
false	false	

Booleans: boolean operators

`a || b`

a	b	a || b
true	true	true
true	false	true
false	true	true
false	false	false

Booleans: boolean operators

`!a`

`a`	`!a`
`true`	
`false`	

Booleans: boolean operators

`!a`

`a`	`!a`
`true`	`false`
`false`	`true`

Booleans: boolean operators

```
boolean a = true;
boolean b = false;

!(a || b) && (a && !b)
```

Functions

How do we *declare a function*?

How do we *implement a function*?

How do we *test a function*?