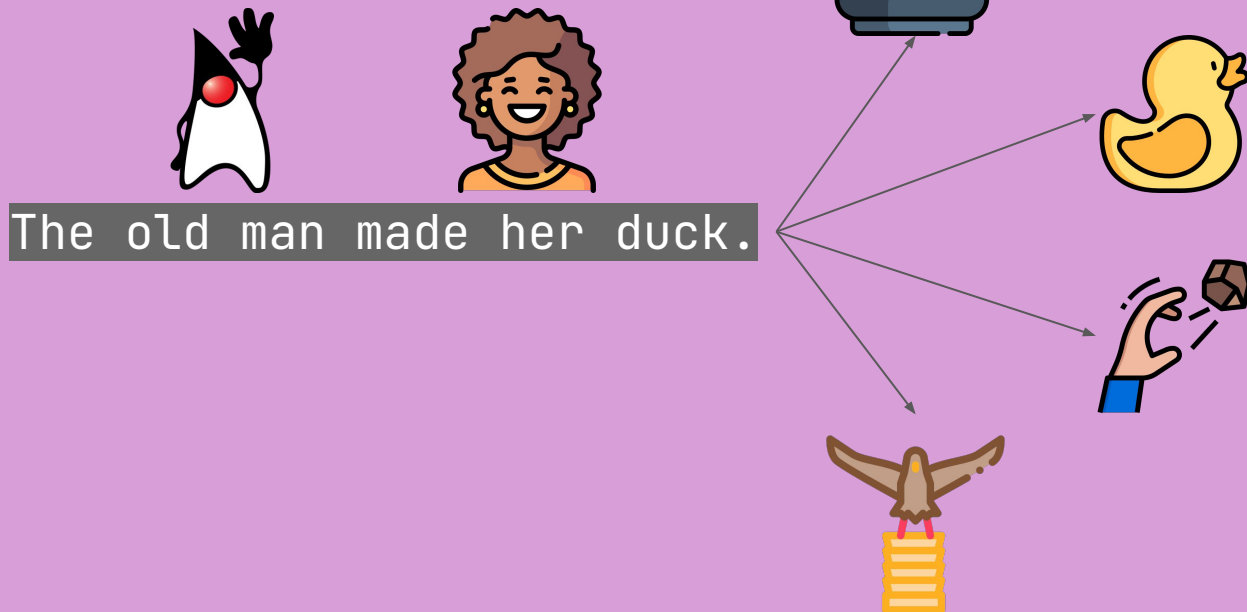# CMPSC 201: PROGRAMMING LANGUAGES

Natural language

At your tables, come up with what you think this sentence might mean:

The old man made her duck.

Possible meanings

But whose is it really?

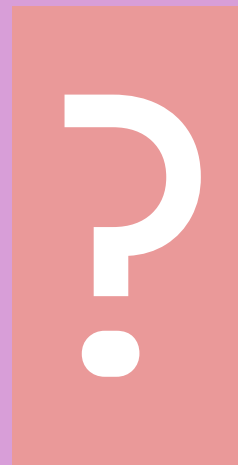The old man made her duck.

Natural language

The man who hunts ducks out on weekends.

The sour drink from the ocean.

The old man the boat.

The raft floated down the river sank.

Iron people eat accumulates.

Natural language vs. Formal language

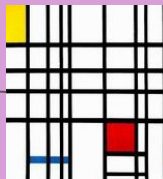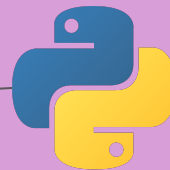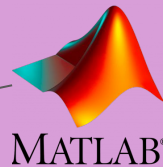| Natural language	Formal language
Purpose: Communication	Purpose: Computation
Not designed; evolved	Designed
Ambiguous	Unambiguous
Redundant	Concise
Mostly *not* literal	Extremely literal

Programming languages are formal

Needs to be:

- Verifiable
- Transferrable
- Completely literal/translatable
- Correct
- Deterministic

Reasons for designing a language

- Suits personal or professional use (preference)
- Solves a specific kind of problem very well
- Existing language deficiencies inspire new replacements
- Inherently rewarding task
- Exploring new computational terrain
- You have a v. funny joke

Nope.

Lox is a "hobby language"

- Created by Robert Nystrom solely as teaching tool
- Adopts features of many languages you might already know:
  - "Duck" typing
  - Brace scoping
  - Object-oriented features:
    - Classes
    - Inheritance
- Two official (more-or-less) implementations:
  - jlox (Lox Java interpreter)
  - clox (Lox C runtime)

jlox

We're spending the semester writing Nystrom's implementation of jlox using a single repository, with branches dedicated to each chunk of content.

Sample Lox "Hello, World!"

```
fun sayHello() {

    print "Hello, World!";
}



sayHello();
```
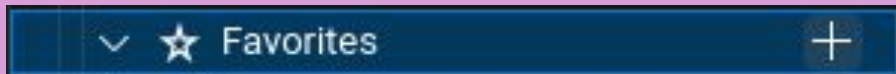
Write this in the test.lox file located in:

…lox/interpreter/src/test/resources

Set up a Favorite for `java:exec`

Under the "Interpreter" entry in the "Lox Language":

- Click the **+** next to "Favorites"

- In the resulting text box, type:

`exec:java -q`

Goin' Fishin'

`lox`

`loxlox`

`loxloxlox`

`loxloxloxlox`

`loxloxloxloxlox` ←───────────────
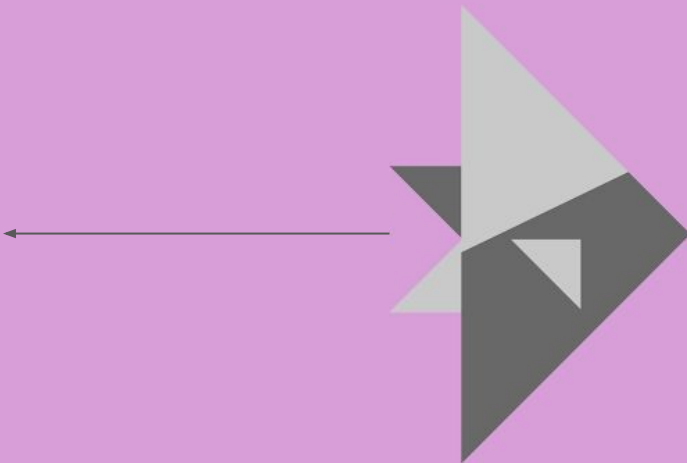
`loxloxloxlox`

`loxloxlox`

`loxlox`

`lox`

Write this in the test.lox file located in:

…lox/interpreter/src/test/resources