

COMP 110/L Lecture 2

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Slides adapted from Dr. Kyle Dewey

Programming Languages as Natural Languages

Syntax

Programming languages are a lot like human languages in that they have syntax rules.

Syntax

Defines what valid sentences are

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Megan goes to the store.

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The goes store to Megan.

Syntax

Defines what valid sentences are

Megan goes to the store.



~~The goes store to Megan.~~

Example

- In many programming languages, commands or statements are terminated by semicolons
- Just as most sentences are ended with a period.
- In English paragraphs are separated by lines.
- In programming languages blocks of code are separated by curly brackets.

Semantics

Semantics

Defines what valid sentences *mean*

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Defines what valid sentences *mean*

Megan goes to the store.

Semantics

Defines what valid sentences *mean*

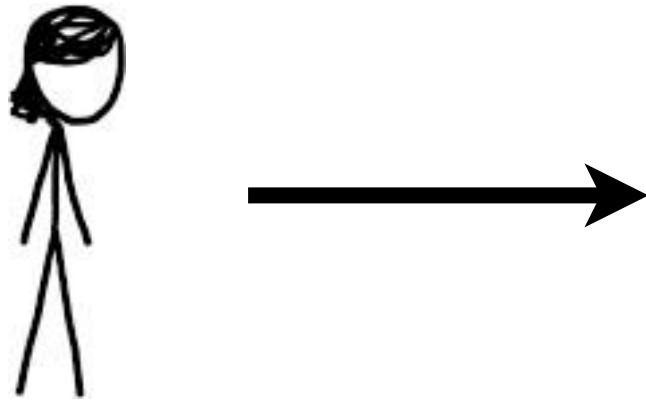
Megan goes to the store.



Semantics

Defines what valid sentences *mean*

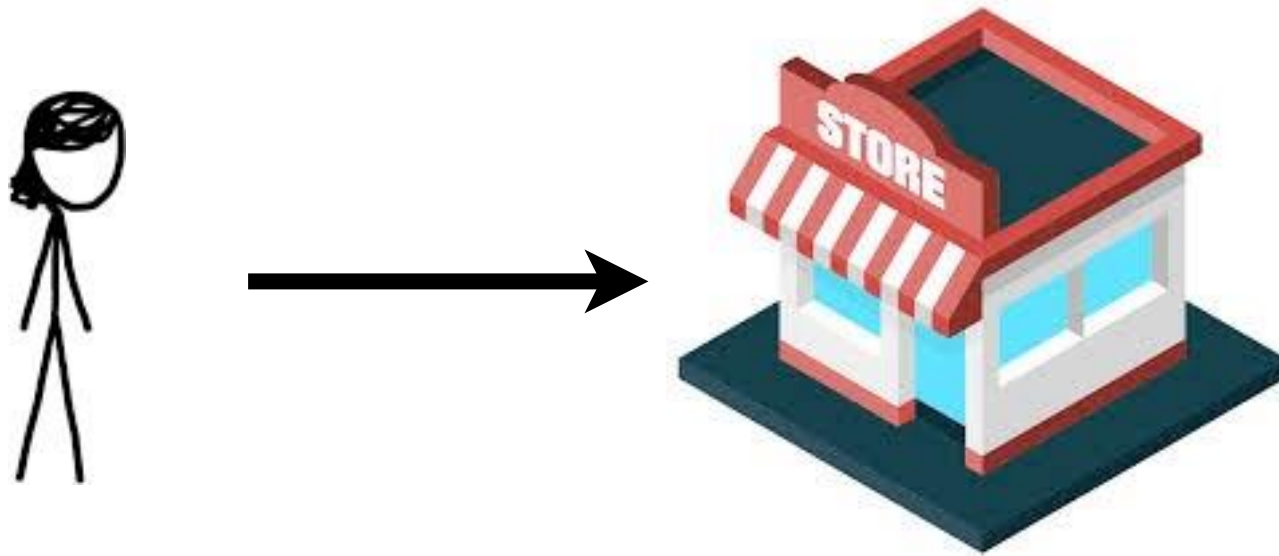
Megan goes to the store.



Semantics

Defines what valid sentences *mean*

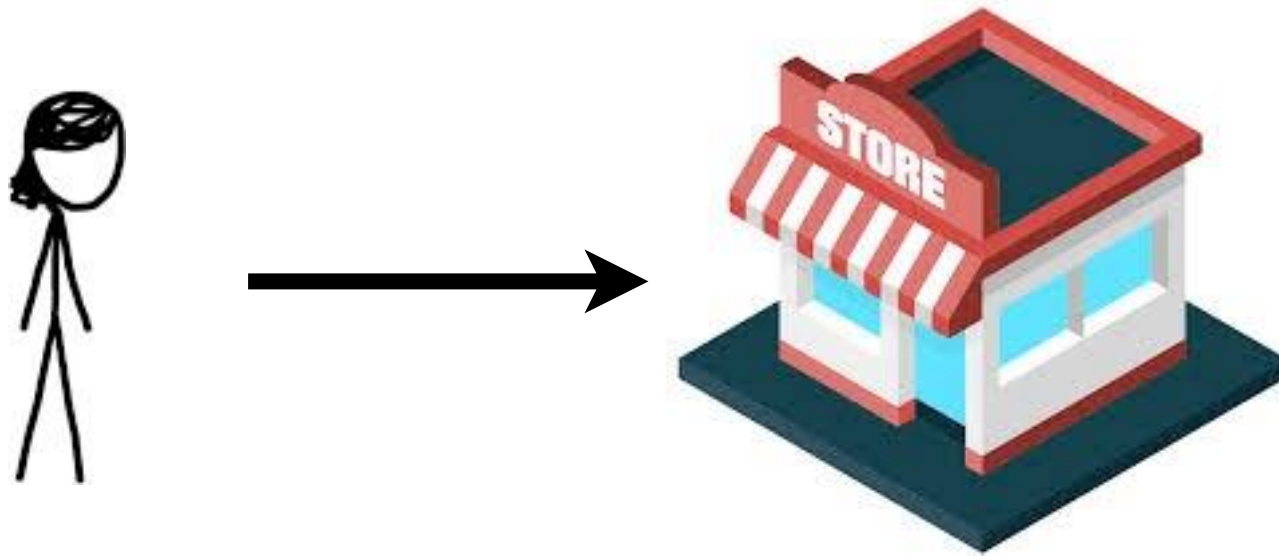
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Semantics

Defines what valid sentences *mean*

Megan goes to the store.

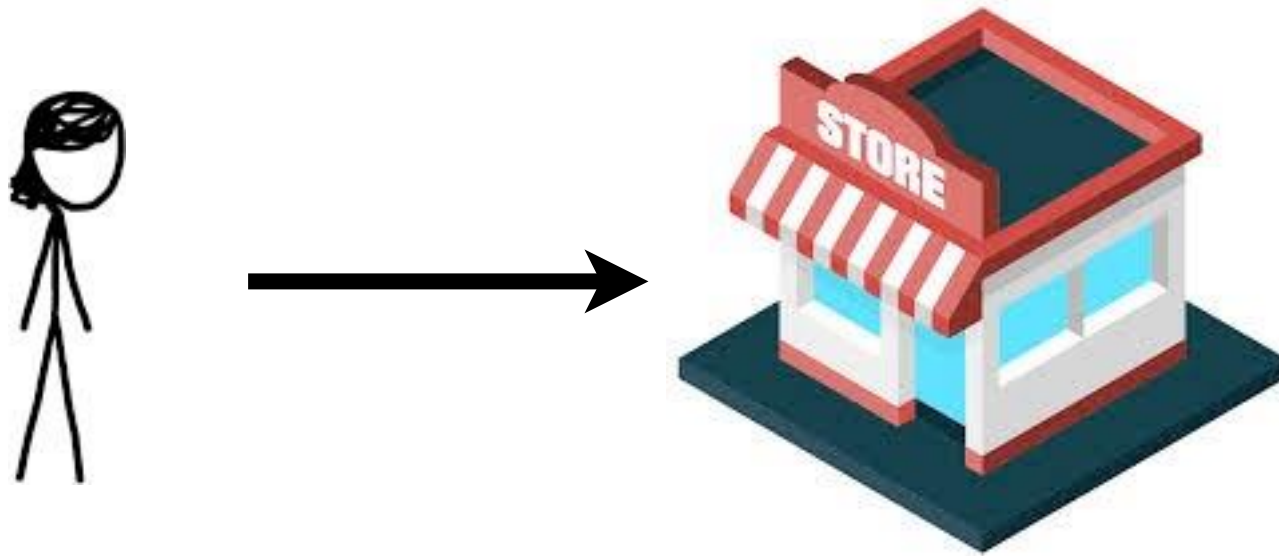


Colorless green ideas sleep furiously.

Semantics

Defines what valid sentences *mean*

Megan goes to the store.



Colorless green ideas sleep furiously.

???

Programming Language Semantics

- Some languages have the same problem!
- All syntactically valid sentences in Java have prescribed meaning
 - ...this meaning might not be useful...
 - ...and it definitely could be unintended...

Learning a Language

Learning a Language

Have to start somewhere

Learning a Language

Have to start somewhere

Megan goes to the store.

Learning a Language

Have to start somewhere

Megan goes to the store.

Need nouns
(that which can act
or can be acted on)

Learning a Language

Have to start somewhere

Megan **goes** to the store.

Need nouns
(that which can act
or can be acted on)

Need verbs
(the actions)

Learning a Language

Have to start somewhere

Megan goes to the store.

Need nouns
(that which can act
or can be acted on)

Need verbs
(the actions)

Need connections between the two

The Point

- To make complete sentences, we need a lot of stuff
- Java requires a *lot* for a complete sentence

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- Java requires a *lot* for a complete sentence

```
public class MyClass {  
    public static void  
    main(String[] args) {  
        . . .  
    }  
}
```

The Point

- To make complete sentences, we need a lot of stuff
- Java requires a *lot* for a complete sentence

```
public class MyClass {  
    public static void  
    main(String[] args) {  
        . . .  
    }  
}
```

**For now, a
magical
incantation**

Let's see some code!
(in jGrasp)

Example:

HelloWorld.java

Java Coding Process

Text
Editor

Text Editor

emacs, vi, pico, nano...



Text
Editor

emacs, vi, pico, nano...



Microsoft Word, Google Docs

Text
Editor

emacs, vi, pico, nano...



~~Microsoft Word, Google Docs~~

Wanted: plain text without formatting

Also nice: syntax highlighting

