

L0: Introduction

COMP232 Mathematics for Computer Scientists

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September 8, 2016

What is this course about?

What is this course about?

Computer Science Major



What my friends think I do.



What my mom thinks I do.



What society thinks I do.



What my professor thinks I do in class.



What I think I do.



What I actually do.

Perception vs Fact.com¹

¹<http://perceptionvsfact.com/1kz9>

Computer Science is a precise science

- 1 A computer scientist's husband tells her:

“Run to the store and pick up a loaf of bread. If they have eggs, get a dozen.”

Computer Science is a precise science

- 1 A computer scientist's husband tells her:

“Run to the store and pick up a loaf of bread. If they have eggs, get a dozen.”

- 2 She comes home with 12 loaves of bread.

Clicker

Did you get this joke?

A Yes

B No

Precise science requires precise language

- 1 A computer scientist's wife is in the delivery room. The doctor hands the newborn to him.
- 2 His wife asks impatiently: "So, is it a boy or a girl?"
- 3 He replies: "yes."

Is english precise enough?

“there’s nothing going on between us.”

— The President of the United States at a grand jury testimony.



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“there’s nothing going on between us.”

— The President of the United States at a grand jury testimony.

Did Clinton commit perjury?

A Yes

B No

Use ambiguity to your advantage!

“It depends upon what the meaning of the word ‘is’ is. If ‘is’ means is and never has been, that is not—that is one thing. If it means there is none (at that time), that was a completely true statement.”

— Clinton, in defense.

What the take away lesson here?

- A politician uses the ambiguity of language to get out of a pickle and win elections!
- How about a crooked computer scientist?

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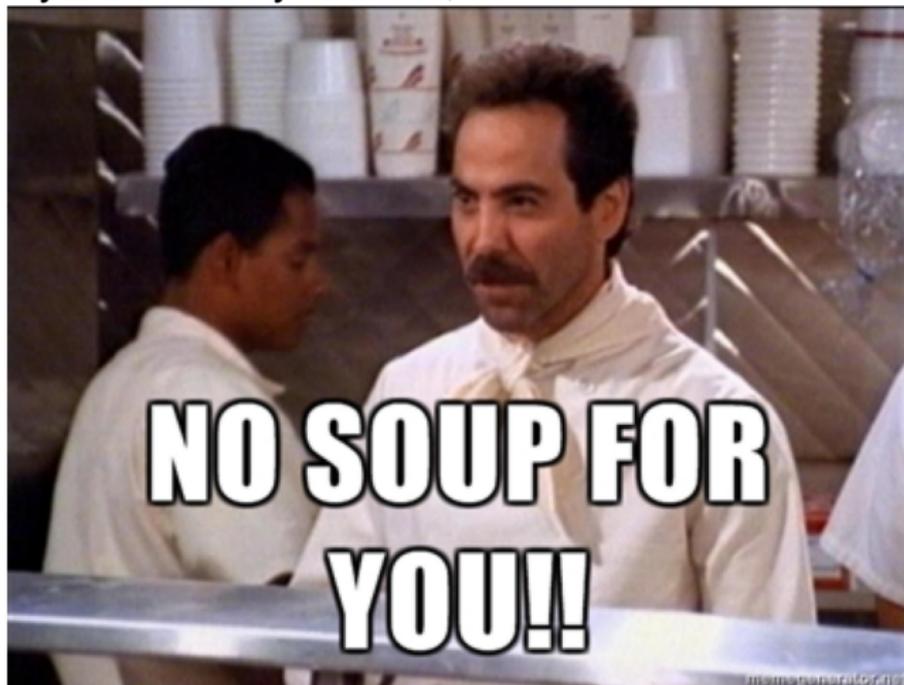
Can a computer scientist pretend to know how to code?

A Yes

B No

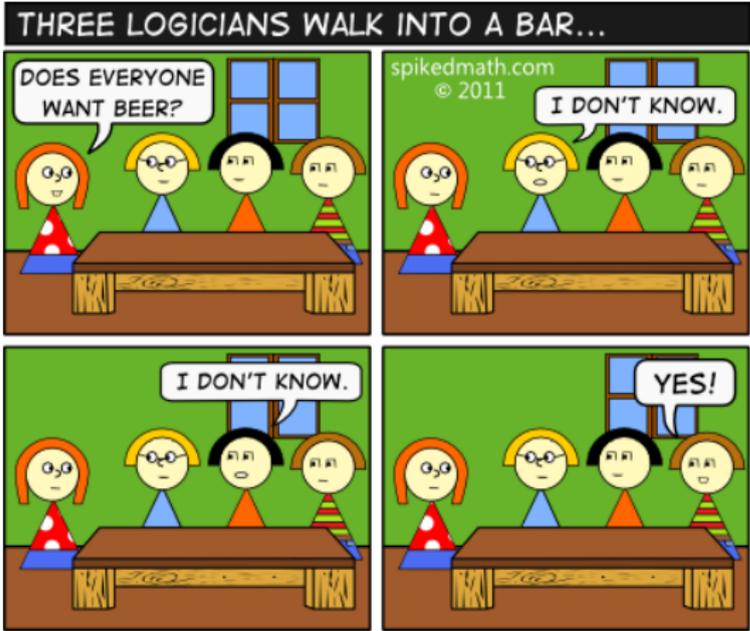
Computer language is unforgiving!

- If you make any mistake, it's over!



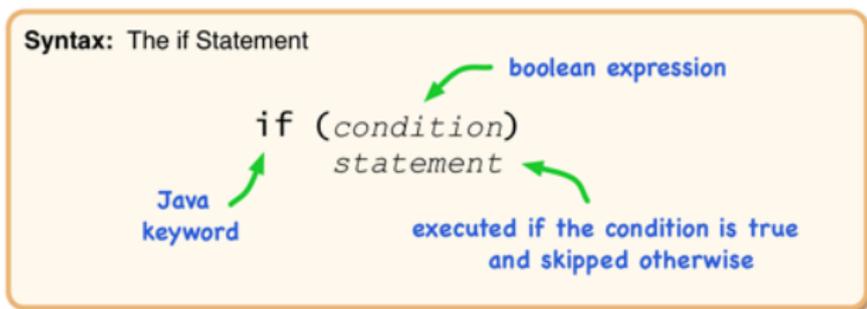
- Computer scientists must use a precise language and follow rules. This is what this course is about.

Ingredient 2: common sense (i.e., logic)



What is logic good for?

- Debug other people's code.



2

This course is not only about logic

IF:

$$\lim_{x \rightarrow 8} \frac{1}{x-8} = \infty$$

THEN:

$$\lim_{x \rightarrow 5} \frac{1}{x-5} = 5$$



No luck !

What is this course about?

- Definitions.
- Theorems and proofs.
- Think of everything as inputs and outputs.

This is not your typical math course!

IN CLASS, $2+2=4$



EXAM, IF YOU HAVE 3 BIKES, AND YOU GIVE ONE AWAY. WHAT IS THE WEIGHT OF THE SUN?

memegenerator.net

What is not covered

- Calculus and linear algebra are prerequisites.
- Probability,
- Algorithms, complexity theory (describing a computer as a dynamical system).