Computer Science I

CMPE/CSCI 1370 - 01

MW 9:25 am - 10:40 am

http://bit.ly/1370abcde

JJ Lumagbas

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Peer-instruction

Think - Pair - Share

Me:

A. Not from around here

B. Have a BS and Masters

C. Currently working on PhD

D. Worked as a programmer for 4 years

E. Taught at university-level since 2008

Me:

A. Not from around here

B. Have a BS and Masters

~~C. Currently working on PhD~~

D. Worked as a programmer for 4 years

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Me:

A. Freedived to 25ft (no scuba gear!)

B. Went skydiving with wife when son was 10mos old

C. Worked as a barista in Melbourne

D. Ate crickets and silkworms at a street stall in Cambodia

E. Had eye poked repeatedly with a needle, not by accident

How interested are you in majoring or minoring in computer science?

A. Extremely interested

B. Moderately interested

C. Mildly interested

D. Not interested at all

E. I kind of hate CS, actually

How much programming experience do you have?

A. None

B. 3 months or less

C. 6 months or less

D. 1 year or less

E. More than a year

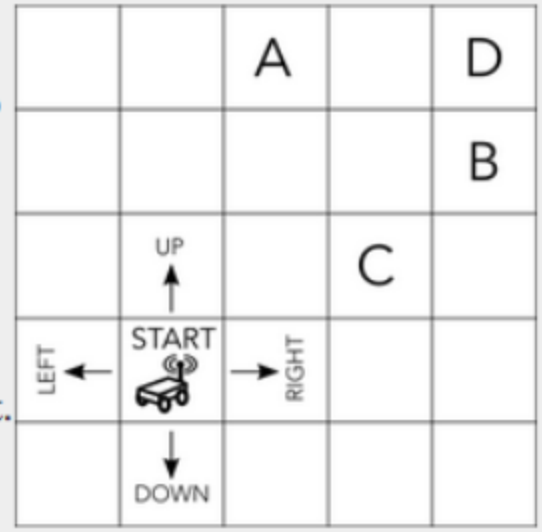
What's an example of a computer application that's interesting to you?

Complete the sentence: It would be cool if at the end of this course, I could...

Key themes

- Programmability
- Automation
- Abstraction
- Computational thinking

A team of engineering students is building an autonomous robot for a contest. To win, they must program their robot to move around a grid while avoiding obstacles. The robot moves exactly one square at a time either up, down, left, or right.



The team started by writing this program to move their robot.

```
move-up
move-right
move-up
move-right
move-right
```

Item 4a: After running the program, which square will the robot stop on.

- ○ Square A
- ○ Square B
- ○ Square C
- ○ Square D

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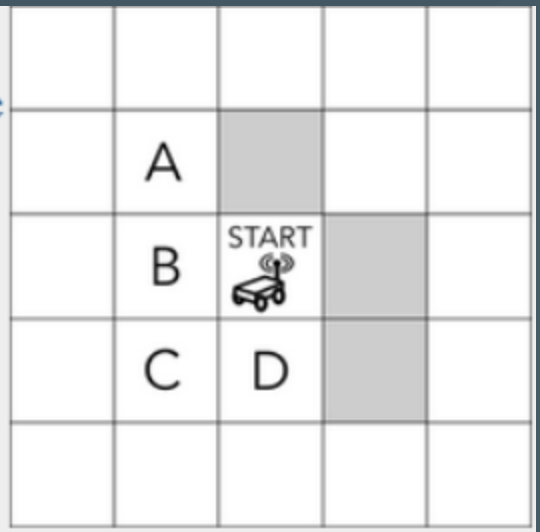
The team of engineering students added sensors to their robot to help it avoid obstacles (shown as grey squares on the grid). Then they wrote this program:




```
if obstacle-left then:
   move-right
if obstacle-up then:
   move-down
if obstacle-right then:
   move-left
if obstacle-down then:
   move-up
```

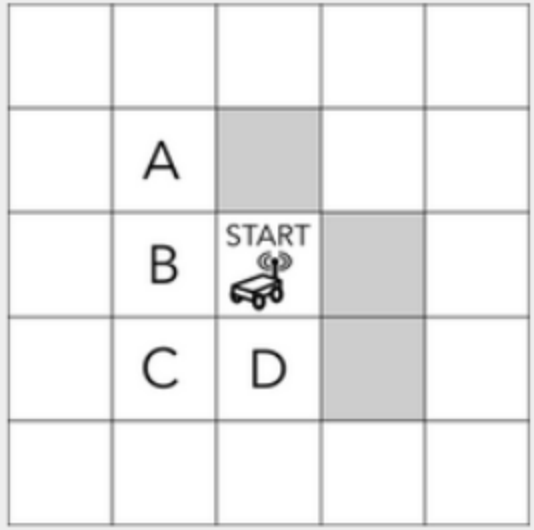
Item 5a: On which square will the robot stop?

- ○ Square A
- ○ Square B
- ○ Square C
- ○ Square D

From Northwestern University CT-STEM Computational Problem Solving Assessment

The students then changed their program to this:

```
if obstacle-left then:
   move-right
else if obstacle-up then:
   move-down
else if obstacle-right then:
   move-left
else:
   move-up
```



Item 5b: Now where will the robot stop?

- ○ Square A
- ○ Square B
- ○ Square C
- ○ Square D

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Automation: Programs

- Arbitrary
- Unambiguous
- Appropriate levels of abstraction

Key themes

- Programmability
- Automation
- Abstraction
- Computational thinking

Computers vs Humans

Few operations (but very fast)

vs

Thinking abstractly

Syllabus highlights

http://bit.ly/1370-1

http://bit.ly/1370-01-attendance

Reading for next meeting

https://htdp.org/2018-01-06/Book/part_prologue.html

Sections:

- Prologue: How to Program
- Arithmetic and Arithmetic

Photo