COMP 1002

Intro to Logic for Computer Scientists

Lecture 1
Admin stuff

• Lectures: Mon, Tue and Thu, 1pm.
• Labs: Wed 9am. First lab Jan 18th.

• Course website: follow the link from www.cs.mun.ca/~kol

• Questions:
  – Office hours? M/R 2pm
  – Comp 1000?
  – Tophat?
  – Word processing?
Marking scheme

• Lab quizzes: 25%
  – on D2L. Within the last hour of the lab.

• Assignments: 3 x 10%
  – Last assignment might be due during last week or two of classes.

• Midterm: 15%

• Final exam: 30%
Do we think logically?

• You see the following cards. Each has a letter on one side and a number on the other.

• Which cards do you need to turn to check that if a card has a J on it then it has a 5 on the other side?
Do we think logically?

- You see the following cards. Each has a letter on one side and a number on the other.

- Which cards do you need to turn to check that if a card has a J on it then it has a 5 on the other side?

B 5 2 5
Do we think logically?

• You see the following cards. Each has a letter on one side and a number on the other.

• Which cards do you need to turn to check that if a card has a J on it then it has a 5 on the other side?

B  C  2  5
Do we think logically?

• You see the following cards. Each has a letter on one side and a number on the other.

![Cards: B, 5, 2, 5](image)

• Which cards do you need to turn to check that if a card has a J on it then it has a 5 on the other side?
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Do we think logically?

• You see the following cards. Each has a letter on one side and a number on the other.

• Which cards do you need to turn to check that if a card has a J on it then it has a 5 on the other side?
  – All cards where J is visible.
  – Plus all cards with a number other than 5 visible.
“if ... then” in logic

• This puzzle has a logical structure:

  “if A then B”

• What circumstances make this true?

  – A is true and B is true
  – A is true and B is false
  – A is false and B is true
  – A is false and B is false
If A then B

• We make logical conclusions all the time
• But do we always make them “logically”? 
• Sometimes people think that “if ... then” goes both ways...
  – If you live in NL, you must pay HST. John lives in BC. Does he pay HST?
  – If today it Tuesday, then there is a COMP2000 lecture. Today is Thursday. Is there a lecture?
Natural vs. Logic language

• Natural languages are ambiguous.
• For example, the word “any” can have different meanings depending on the context:

  • Any = some
    – She will be happy if she can solve any question.
    – She will be happy if she can solve every question.

  • Any = all
    – Any student knows this.
    – Every student knows this.
Twins puzzle

• There are two identical twin brothers, Dave and Jim.
• One of them always lies; another always tells the truth.
• Suppose you see one of them and you want to find out his name.
• How can you learn if you met Dave or Jim by asking just one short yes-no question? You don’t know which one of them is the liar.