

Logic, First Course, Winter 2020. Week 2, Lecture 1, Handout.

Translating and a simple example

Example 1: "If the economy prospers, then there will be low unemployment. Therefore, if the economy prospers, then people will be happy."

Example 2: "If the weather is worse, then there will be low unemployment. Therefore, if the weather is worse, then people will be happy."

Another simple example

Example 3: "It is raining or it's not raining. If it is raining, then I am staying inside. If it's not raining, then I'm going to the beach."

An example following the recipe

Example 4. Anthony attends the meeting if and only if Briana stays at the office. If Briana stays at the office, then Cynthia attends the meeting and Dylan checks his email.

Example with negation

Example 5. If Anthony attends the meeting, then Briana stays at the office. If Briana does not stay at the office, then Anthony does not attend the meeting.

Further examples

In the following examples, we use the abbreviations:

a = Anthony attends

b = Briana attends

c = Cynthia attends

d = Dylan attends

If Anthony attends or Briana attends then Cynthia attends and Dylan attends.

If Anthony attends and Briana attends then Cynthia attends or Dylan attends.

If Anthony attends then Briana attends, and if Claire attends then Dylan attends.

If Anthony does not attend then Briana attends.

It is not the case that if Anthony attends then Briana attends.

Anthony attends if and only if Briana does not attend.

Translations and ambiguity

Anthony attends and Briana attends and Cynthia attends.

Either both Anthony attends and Briana attends, or Cynthia attends

Anthony attends, and either Briana attends or Cynthia attends

More practice with translation and ambiguity

In this set of examples, we use the following abbreviations:

f = The *f*oreign minister supports the bill

o = The *o*pposition leader supports the bill

p = The *p*rime minister supports the bill

c = The bill is *c*ontentious

a = The bill *a*ssesses

The prime minister does not support the bill or the opposition leader supports the bill or the foreign minister supports the bill.

The following is tricky only because you have to think to use a propositional connective to handle the "and in addition":

If the prime minister supports the bill then the opposition leader supports the bill; and in addition the foreign minister supports the bill.

If the prime minister supports the bill then both the opposition leader supports the bill and the foreign minister supports the bill.

The bill is contentious and either the prime minister supports the bill or the foreign minister supports the bill.

Either the bill is contentious and the prime minister supports the bill, or the foreign minister supports the bill.

Before you try this next one, remember that the key was " a = The bill passes" (we had already used p for the claim about the prime minister).

If the bill passes, then either the opposition leader supports the bill or the prime minister supports the bill.

Either the opposition leader supports the bill if it the bill passes, or the prime minister supports the bill.

These is a handout written for Logic, First Course, Winter 2020. It is run on the Carnap software, which is an:

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