

1.2 Applications of Propositional Logic

Translating English to Propositional Logic

1. Identify atomic propositions and assign variables.
2. Determine appropriate logical connectives.
3. If asked to find the converse, contrapositive, or negation, perform the operation now.
4. If asked to translate back to English, replace operators and variables with appropriate words.

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Express these system specifications using the propositions p “The message is scanned for viruses” and q “The message was sent from an unknown system” together with logical connectives (including negations).

- a “The message is scanned for viruses whenever the message was sent from an unknown system.”

$$q \rightarrow p$$

- b “The message was sent from an unknown system but it was not scanned for viruses.”

$$q \wedge \neg p$$

- d “When a message is not sent from an unknown system it is not scanned for viruses.”

$$\neg q \rightarrow \neg p$$