Introduction

Deontic Logic uses two main components: Obligation and Permissible. They are defined as follows:

- Obligation or O means that the event is obligated to happen
  - OA means A is bound to happen
  - O_aA means it is an obligation for a to make A happen
- Permissible or P means that the event is permissible or possible to happen
  - Define as P(A) = ~O~A
    - This means that A is permissible if and only if it is NOT and obligation that A is NOT true - meaning it is possible that A is true

Standard Deontic Logic Axioms

Standard Deontic Logic has the following axioms:

- $\top A \rightarrow \top O(A)$
  - Meaning is A is a tautology (meaning it is true regardless of the value of A), then O(A) is also a tautology
- $O(A \rightarrow B) \rightarrow (O(A) \rightarrow O(B))$
  - If A implies B is an obligation and A is an obligation, then B is also an obligation
- $O(A) \rightarrow P(A)$
  - If A is an obligation, it is also permissible

Examples

Here are some examples of using this logic:

- “An earthquake is going to happen today”
  - O(E), where E represents an Earthquake
- “It is possible that it will rain today”
  - P(R), where R represents raining today
- “It is impossible for me to graduate with less than 180 credits”
  - $C < 180 \rightarrow O(\sim G_{me})$, where G represents graduating and C represents number of credits I have
- "It is an obligation for Adam that Bob doesn't crash the car”
  - Logic: $O_{Adam}(B)$, Where B represents Bob crashing the car