COMP 1002 Course Notes

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1 Stuff

1.1 Implication

$$p \rightarrow q \tag{1}$$

This is read as "*p implies q.*" In this case P = it is raining, and Q = there are clouds. Implication Insert truth table

1.2 Biconditional

$$p \iff q \tag{2}$$

This is read as "*p if and only if q.*" Both P and Q must be the same value. This differs from $\wedge$ in which both values must be *true.* For example, P = taking a flight and Q = buying a ticket. It is false when they have opposite values. You can take the flight if and only if you buy a ticket.

2 Hmm

2.1 Canonical CNF

$\equiv \in \notin \emptyset \forall \exists \rightarrow \leftrightarrow \sigma \psi \phi$

3 Predicates, Quantifiers, Sets

3.1 Sets

A set is a collection of objects:
$\emptyset$ for the empty set
$\mathbb{S} = \{1, 2, 3\}$
$\mathbb{N} = \{1, 3, 3 \cdots\}$ is the set of *natural* numbers.
$\mathbb{Z} = \{\cdots, -2, -1, 0, 1, 2 \cdots\}$ is the set of integers

So, on forth for real numbers, complex, rational, etc.

3.1.1 Set Elements

Means that element a is in set S:

$$a \in S \tag{3}$$

Means a is not in S:

$$a \notin S \tag{4}$$

Susan is not a bankteller:

$$Susan \notin Banktellers \tag{5}$$

3.2 Test

Here I talked about Negation and

Glossary

Implication Asserts that P is true on the condition that Q is also true. For example, it can't rain without clouds but it can be cloudy without rain.. 2

Negation The same as saying NOT, or using ¬ Symbol. 3