The definition of Logic is intrinsically locked with intuitive leaps, coupled with strict laws and procedures.

We use logic as the definite solution between of a Boolean statement. A Boolean statement is a statement that can be evaluated as having a single solution one which can be reduced to either TRUE or FALSE.

We couple comparisons with logic, because of their definite value. We use, greater than, less than, greater than or equal to, less than or equal to, equal to, and not equal to. These values are comparisons that we define with mathematical procedures and rules. We can use them to better define the way in which we state conditions, or evaluate values/terms.

Logic functions contradictory to the English Language in its definition at times, because our language tends to be more heavily implied meaning, than logical statements can allow for. All this means for us as programmers is that we need to be literal and be specific.

AND – the and statement is going to be the first thing we talk about, anytime we compare two Boolean statements, we either judge the intersection, the union, or the inverse of the set. AND is the intersection, it is characterized as the resultant true from any AND statement contained both Boolean statements being true. If A and B is true, both A and B were true, and if either A or B were False, then the resultant would be false, also if both A and B are false, the resultant is false.

OR – the or statement is going to be similar to the and, but the difference between the or we use in speech and the or of logic, if someone offers two things and says you can have one or the other, they are implying you cannot have both. In logic, the OR is only false when both A and B are False, and is true as long as either A is true, or B is true.

NOT – simply the opposite, this is NOT A is true when A is false, and false when A is true.

XOR – this is the exclusive or, above we talked about including the choice of both, but in XOR we specifically state that we are looking for one, or the other, but not both. XOR is our first complex statement using AND OR and NOT in the Definition.

A xor B is the same thing as stating (A OR B) AND NOT( A AND B).

SYMBOLS

NOT will be represented in Code and shorthand by the exclamation symbol !

AND will be represented in Code and shorthand by double ampersand &&

OR will be represented in Code by the double Lines made by pressing Shift + Backslash ||

DeMorgan’s Law

What is the opposite of A && B?

What is the opposite of A || B?

The opposite of A && B is the same set, as everything that isn’t formed by the intersection of two sets. Even values that are not B nor not A, hence we Evaluate the opposite of A&&B as !A||!B.

Likewise the opposite of A ||