NPTEL
NPTEL ONLINE COURSE
Discrete Mathematics
Logic
XOR operator - Part 3
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Remember what is XOR rather exclusive OR. Remember it's truthtable. It looks like this right. Whenever P and Q are such that one of them is 0, one of them is 1 only then you have a one. Otherwise it's always 0. Now extending this to three variables XOR is defined this way. PXOR, QXOR OR will simply be first compute PXOR Q and then for the resultant you compute XOR OR. So write down all the truthtables. PQQ eight lines. So PXOR Q will be what? 0, 0 will give me 0. Again the next line has 0. Next one has precisely 1, 0 and 1, 1 so it's 1. And then again 1 here, 1 here because you have a 1 and 0, 1 here because you have a 1 and 0. 0 here because you have 1 and 1. 0 here because it is 1 & 1. Now what is PXOR Q, XORR right. So you take this and XORP, XORQ with R these two entries. 0 XOR is 0, 0 XOR 1 is 1. 1, 0, 1, 0, 0 and 1. Now you see when you have three 1s you're getting a 1. When you have two 1s you're getting a 0. two ones you are getting 0. When you have a single 1 you get a 1, two 1s again gives you 0. I'm going from bottom to up. When you have single 1 you get a 1. Single 1 gives you 1 and no 1s gives you 0. Please note whenever you have a single 1 you get a 1 when you have precisely two 1s you get a 0. When you have three 1s you get a 1.

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