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Discrete Mathematics Relations
Antisymmetric Relation
With
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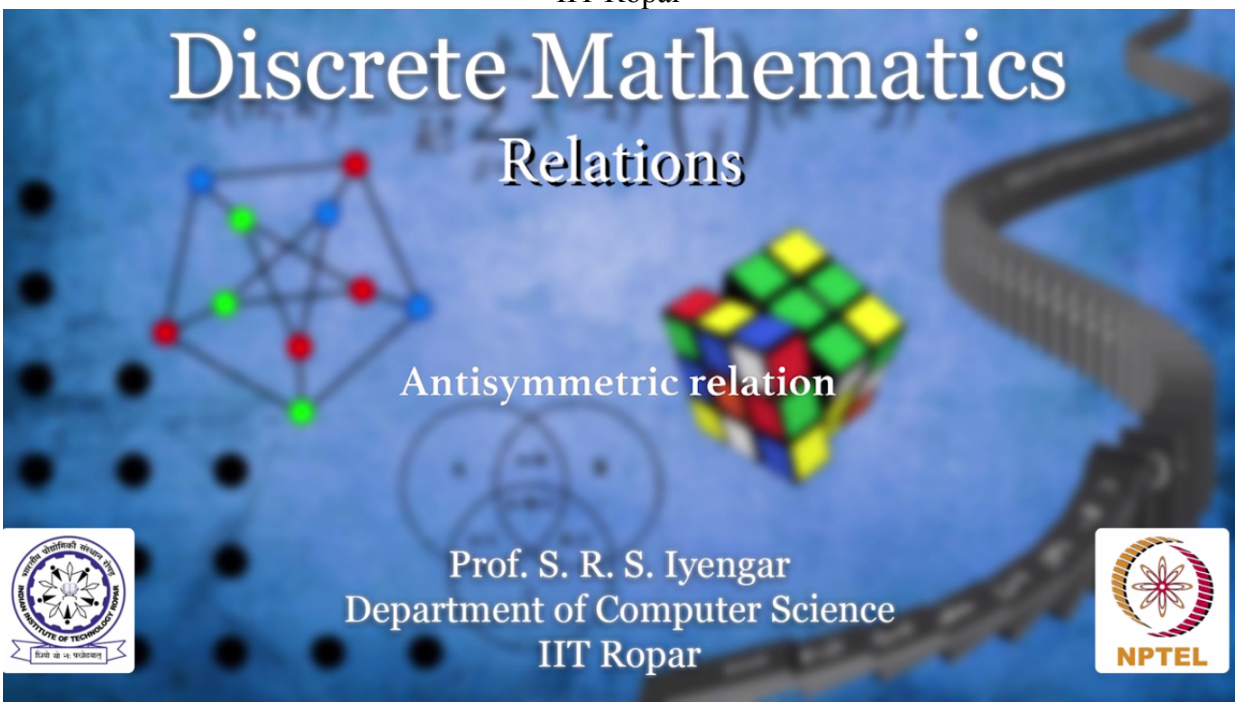

Next in the sequence is what when calls an antisymmetric relation. Sounds a little complicated but let me motivate you all with an example. Let's get back to the height relation. A classroom with 50 people. (a, b) belongs to R if a is taller than b. Something is strange about this relation, do you observe?

Please note, in this classroom no two people are of the same height. Take any two people, they are of different heights, that's assumed, out of 50 people.

Now whenever you take an a and a b you will observe that either a is this fellow is taller than this fellow or this fellow is taller than this fellow. I told you there is no two people who are of the same height.

Such a relation is called an antisymmetric relation. So what's an antisymmetric relation? A relation where (a, b) if it is present in the relation, then (b, a) cannot be present in the relation. So think about it for a minute. In a relation there are also elements of the type (a, a).

What's a relation? A relation is a subset of a x a. So there is a possibility for (x, x) to be present, (a, a) to be present. But then I said, when (a, b) is present, (b, a) should not be present.

Now, when (a, b) is present, (b, a) should not be present, I read a is not equal to b.

Let me summarize. An antisymmetric relation is a relation where whenever (a, b) is present then definitely (b, a) is not present unless a is equal to b.

I am simply stating a very simple definition. Think about it, it will be very clear to you.

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