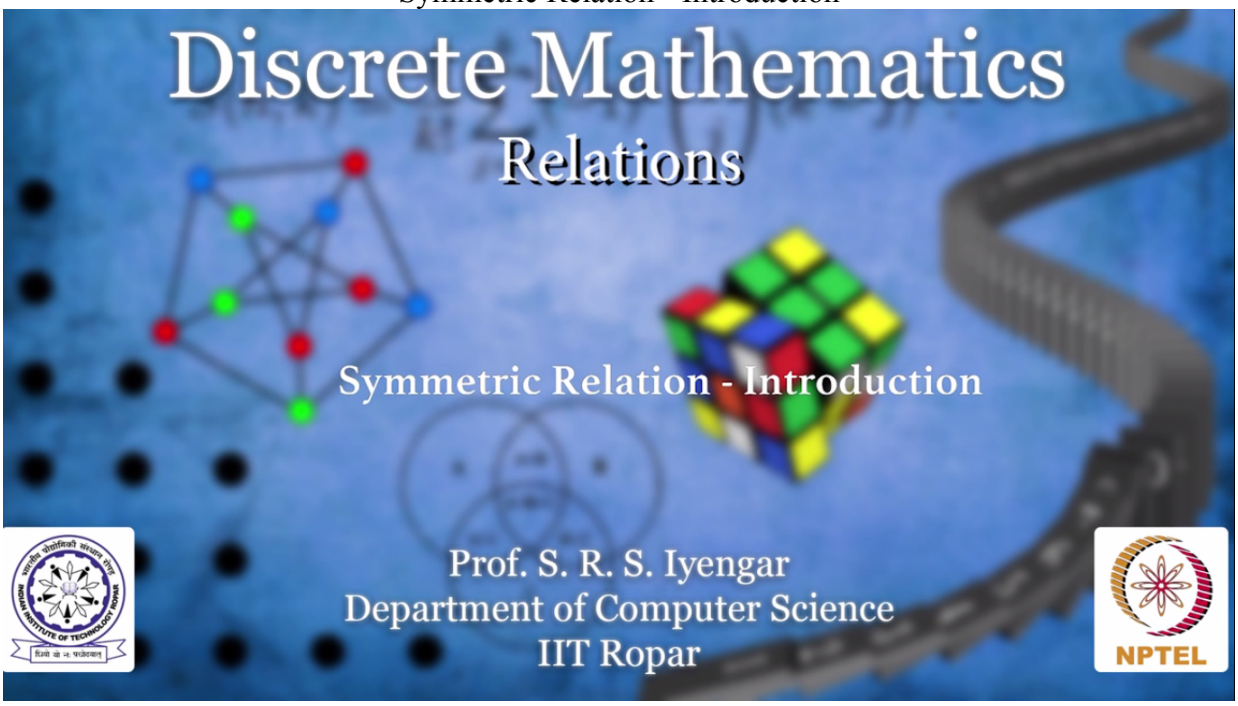
NPTEL
NPTEL ONLINE COURSE
Discrete Mathematics
Logic
Symmetric Relation - Introduction



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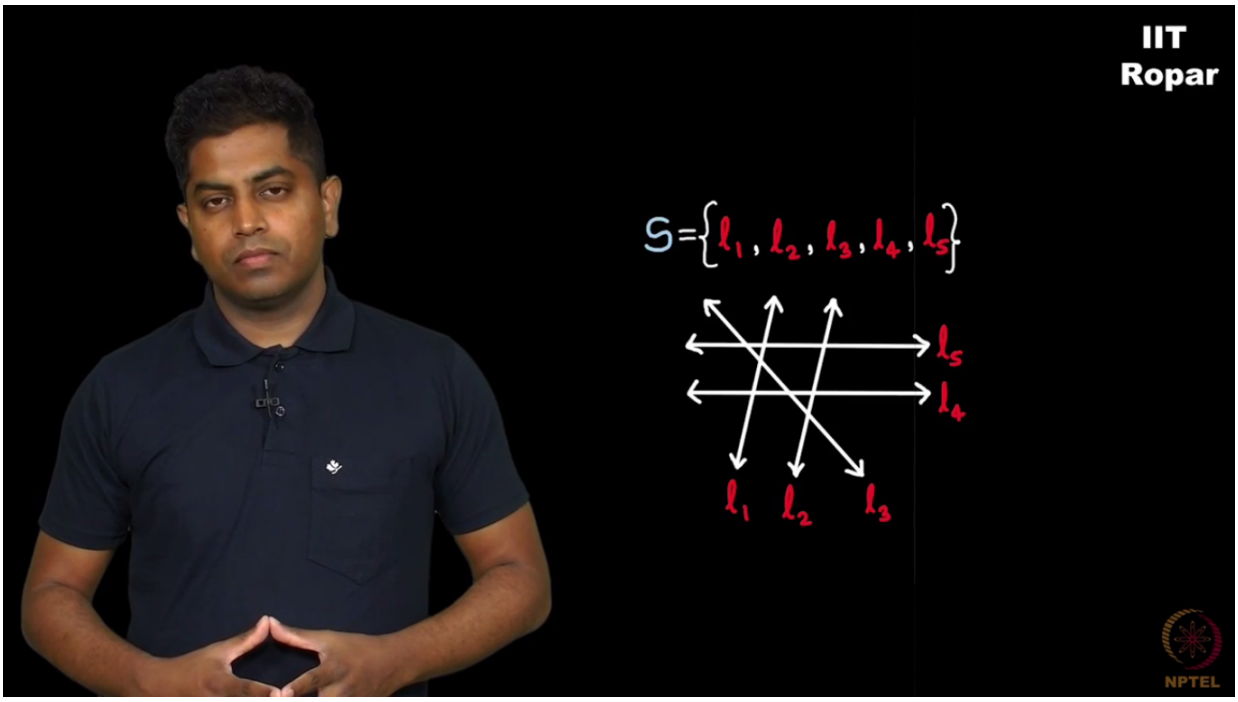
Remember the example of parallel lines that I gave you, let us revisit that example. Assume you have a set S with five lines; l1, l2, l3, l4, and l5. I am writing it as a set right now. They're actually lines.



By a relation R here I mean two lines let's say l1 and l2 are considered in the relation if l1 is parallel to l2. Not otherwise. So I will have l1, l2 written here. First entry. Now it's only obvious for us to observe that once l1, l2 comes here l2, l1 naturally comes there. Why? When this line is parallel to this line so is this line parallel to this line. It's like stating the obvious. So l1, l2's presence implies the presence of l2, l1 in the relation that I have defined here which is about lines being parallel. Correct? In general whenever you have li, lj here you have lj, li naturally being present here. Such a relation is called a symmetric relation. So what do you mean by symmetric relation? Whenever you have A, B in the relation set B, A should belong to the relation set. We will see more examples which will help you understand symmetric relations better. We will currently take an example where a relation is symmetric and another example where a relation is not symmetric.