**NPTEL**

**NPTEL ONLINE CERTIFICATION COURSE**

**Discrete Mathematics**
**Graph Theory - 1**

**Connecting connectedness and path**
**- An illustration**

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So it must be clear by now by what we mean by connected graph,
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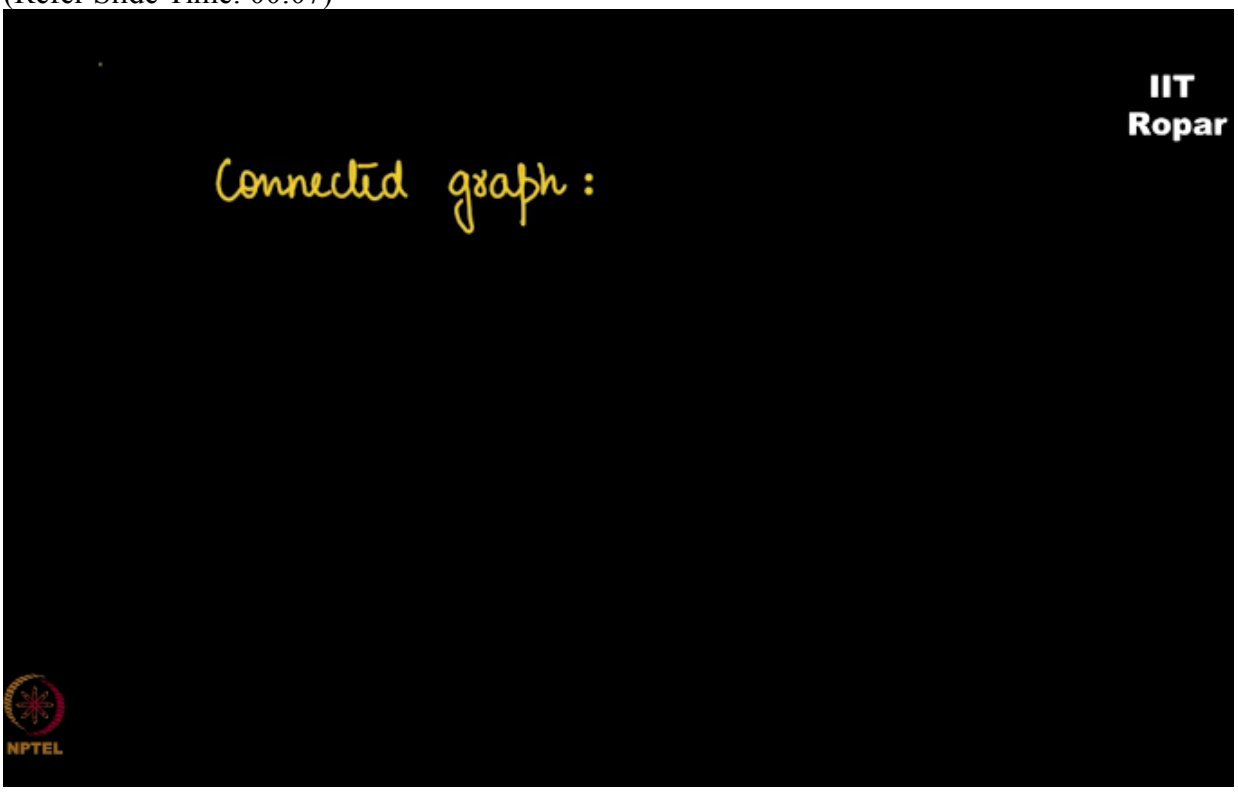


the professor has already introduced it, professor Lemma he mentioned that a graph is said to be connected if there exists a path between any two vertices in the graph, then the graph is connected.
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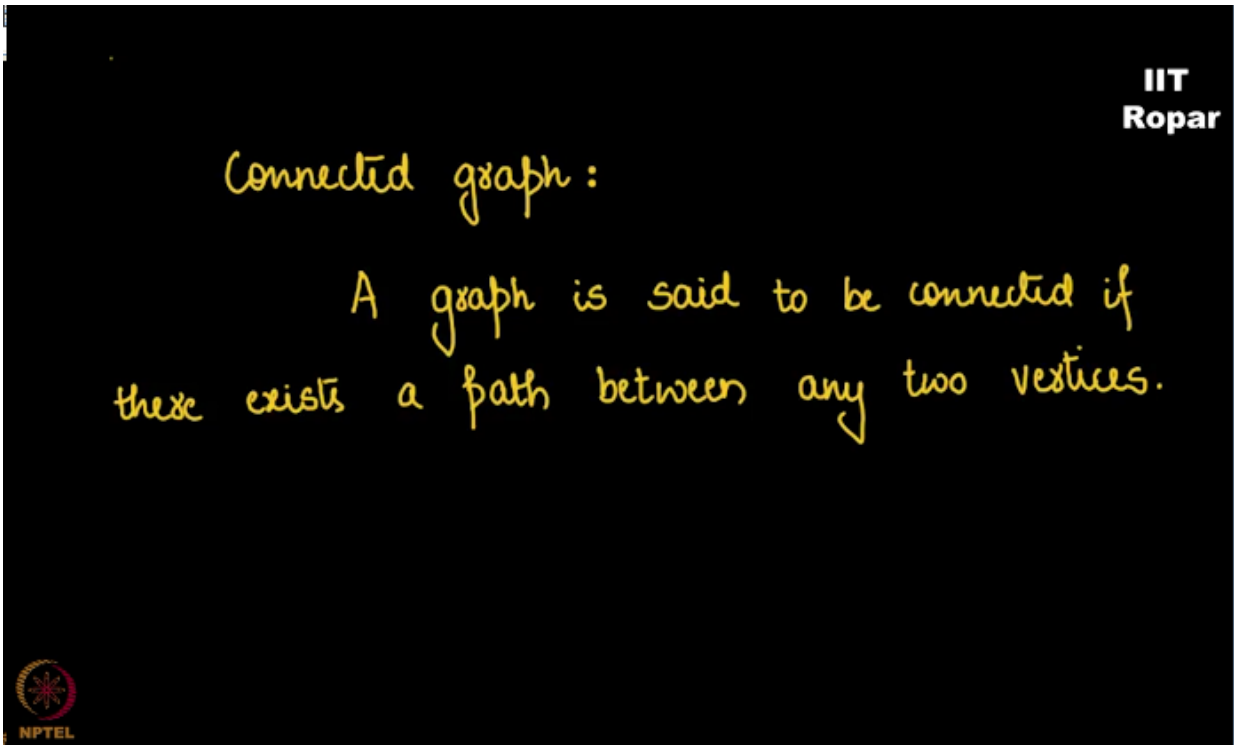


Let me take a quick example and explain it, consider this graph, now if I see this as vertex A, and this as vertex B there should be a path here,
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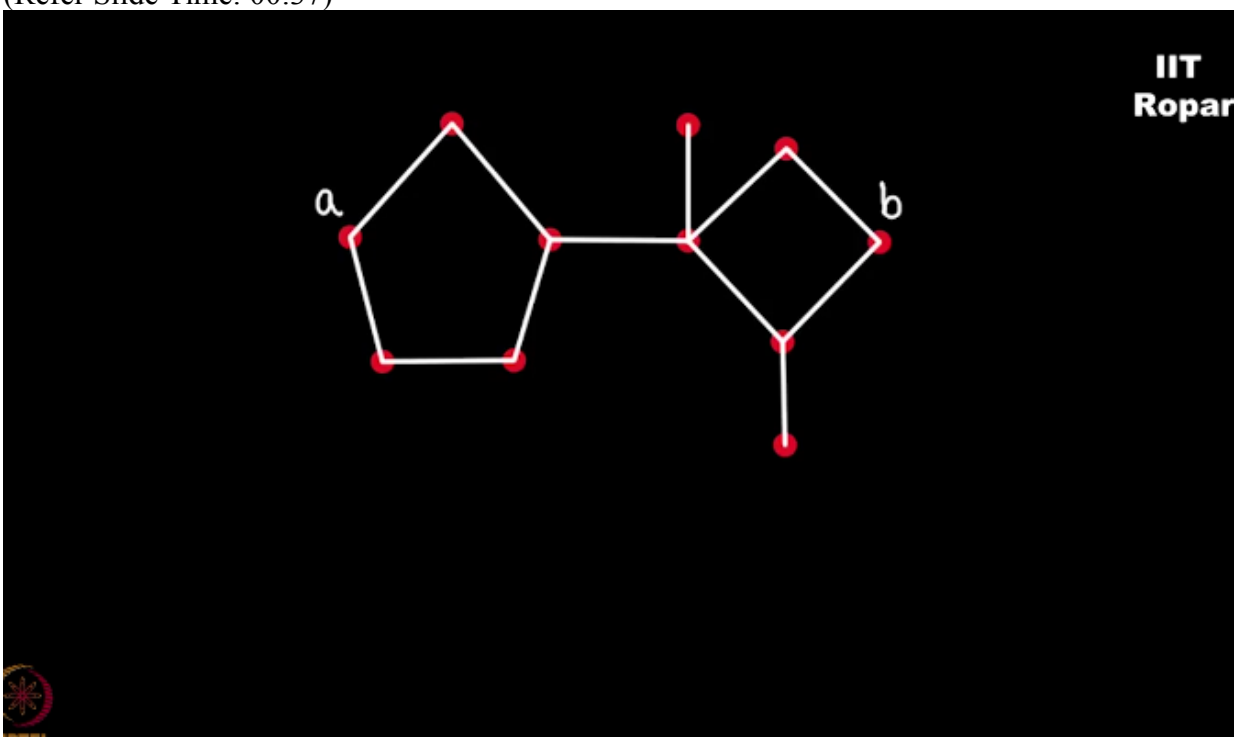


what is that path? Like this, do you see a path here, now if I take this vertex let me say C and this vertex D, do I find the path here? Yes, there is a path,
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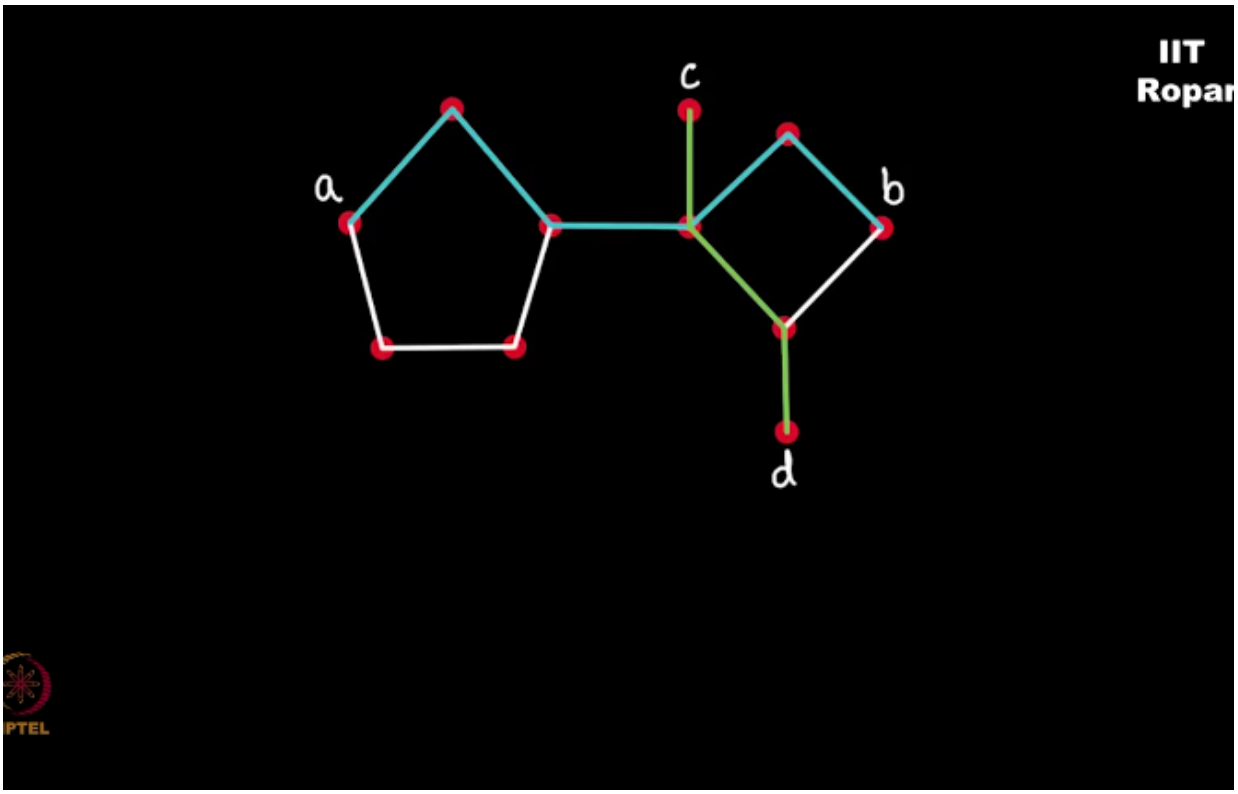


now like this if I go on finding out path between any two vertices I must be able to give a valid solution, it must not so happen that there is no path between some two vertices, then we cannot see that the graph is connected, like if I bring in the new vertex here with no edge in middle

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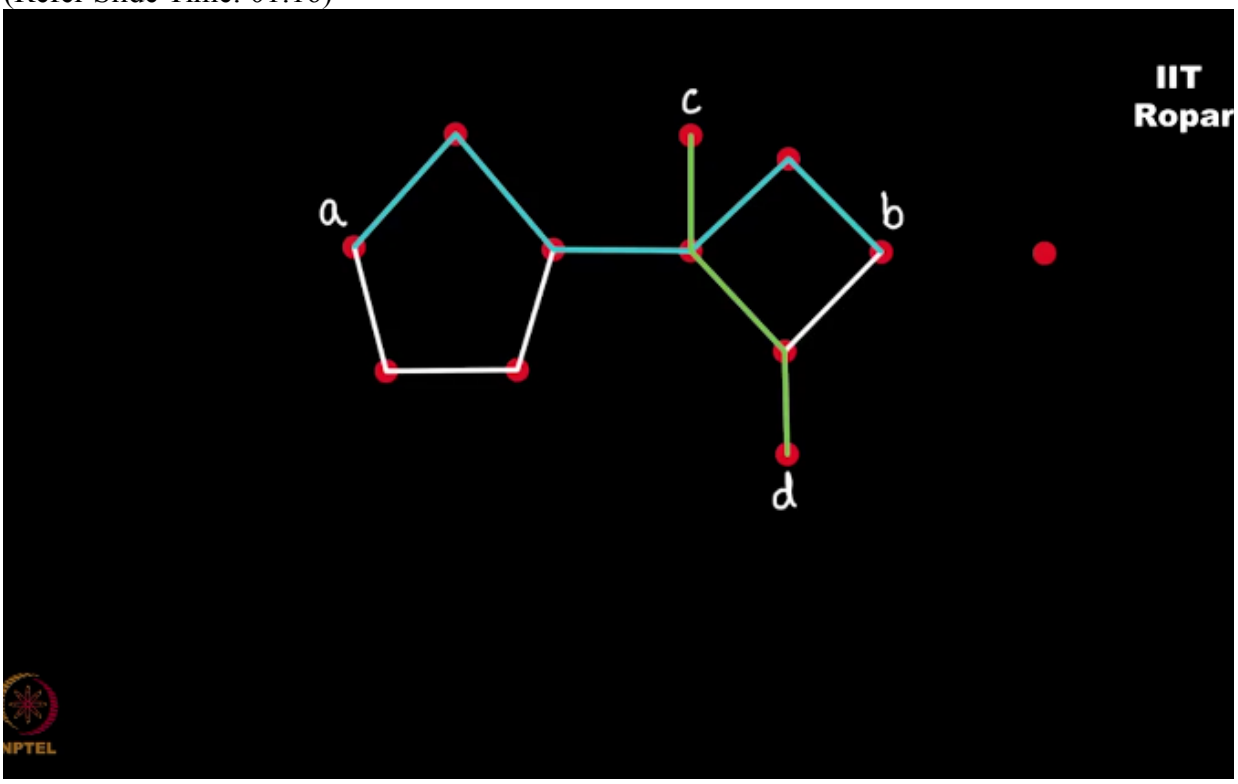

then can I find the path between this vertex A and this vertex, let me call it as X,
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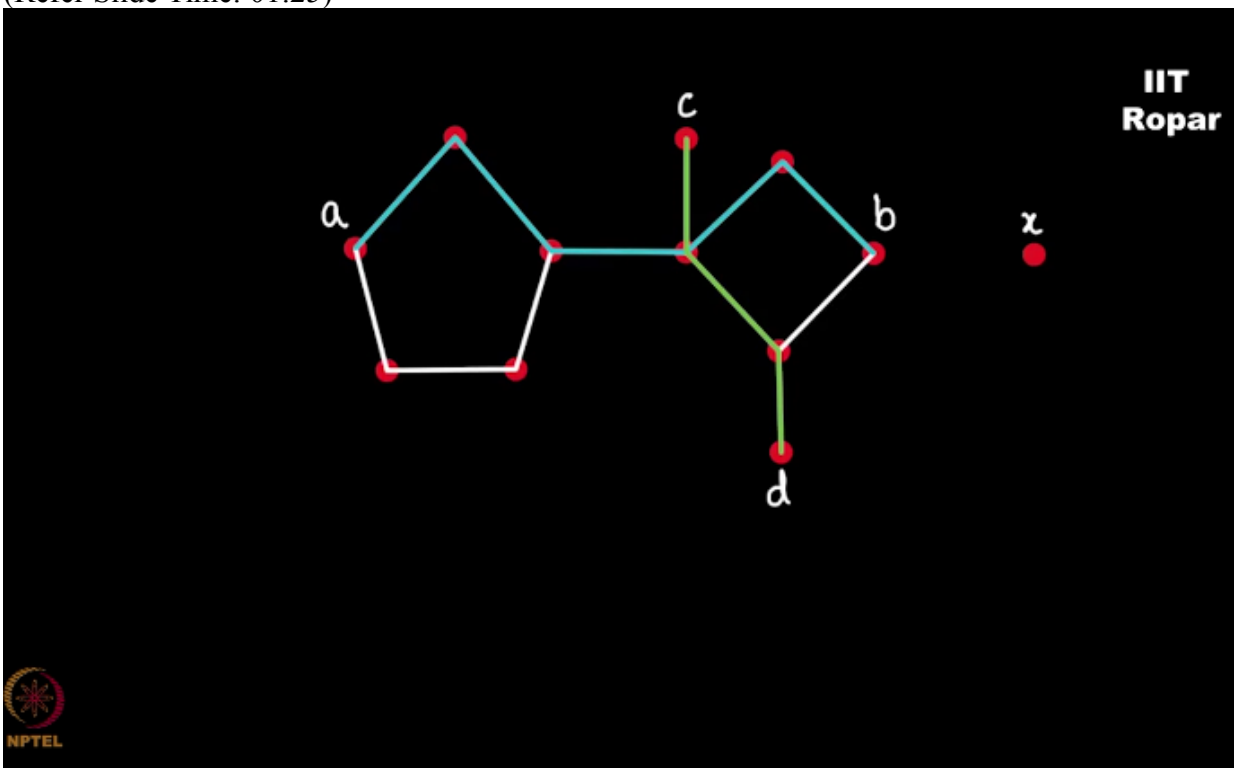


no because I'll end up till here and there is no path here, right, there is no edge here, then this graph is not connected.
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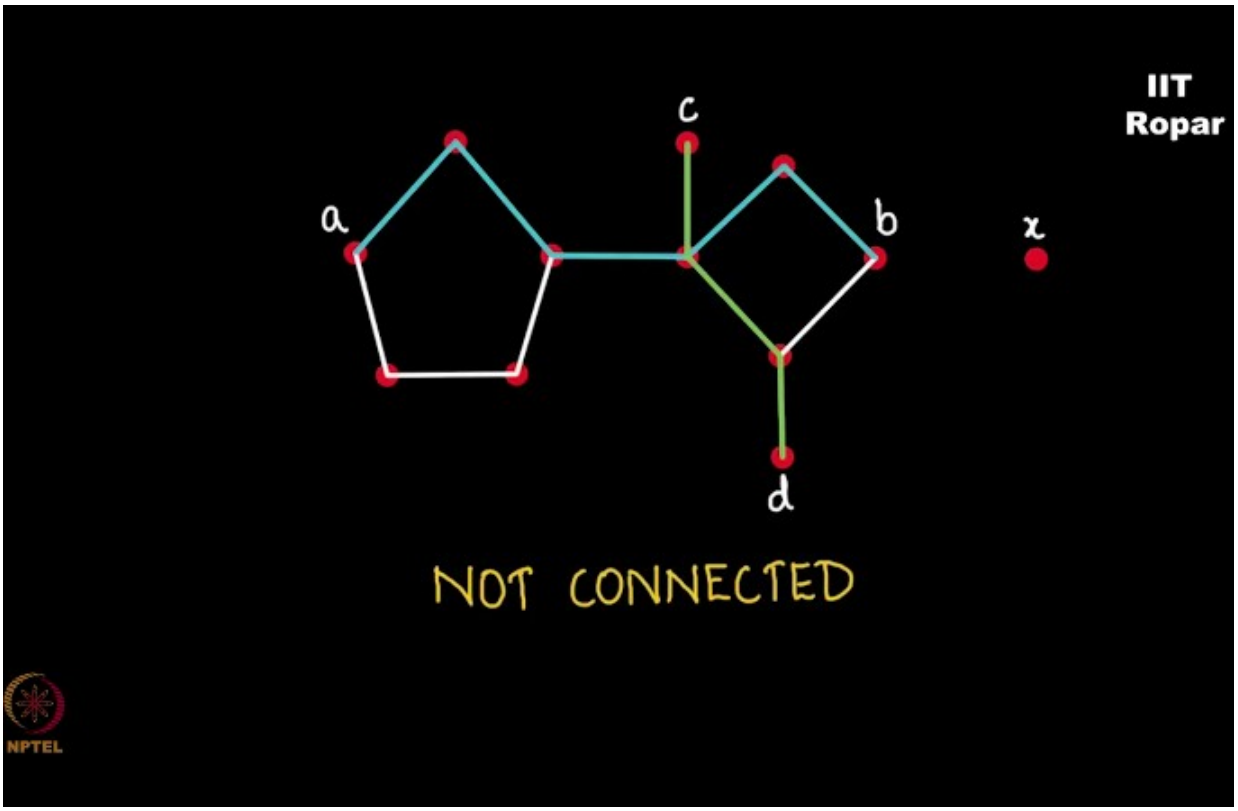

I hope it is clear with what I was trying to tell you with that.

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