Consider a graph
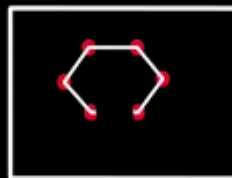(Refer Slide Time: 00:05)
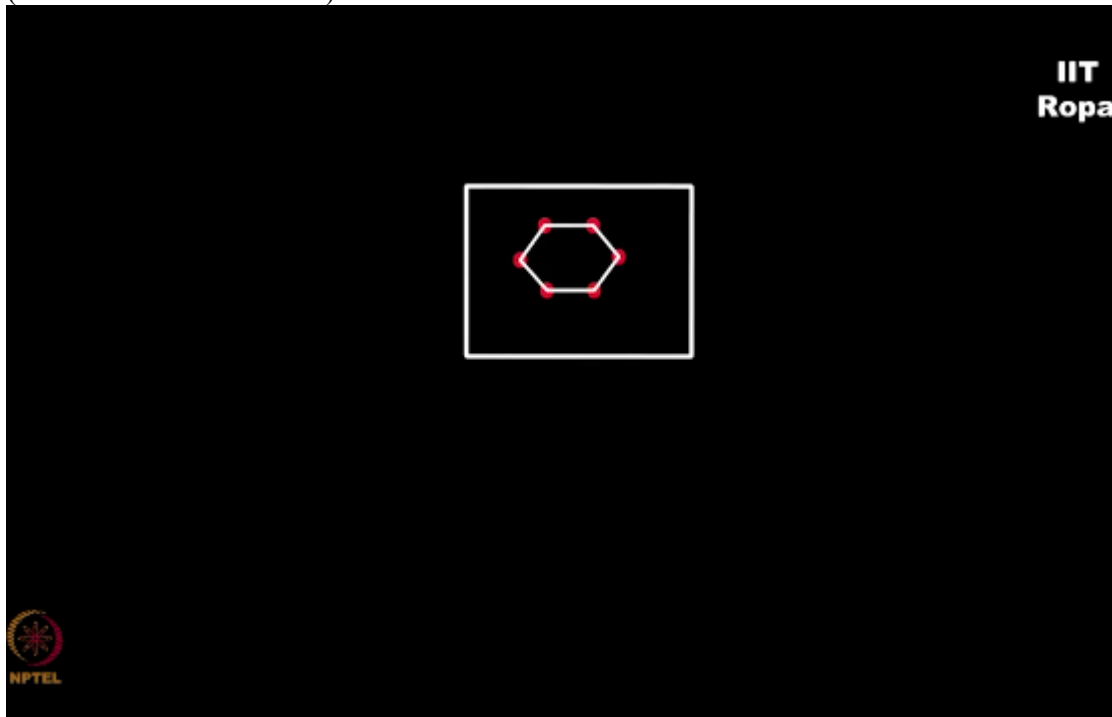
which has some cycle in it, so if I take a graph G with the cycle, and now what I am going to do is I will remove an edge in the cycle,
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this edge is removed assuming this is a cycle and it remove this edge.

Now will it disturb the connectivity of the graph?
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What do I mean by will it disturb the connectivity? By removing this edge does it make the graph disconnected or the graph still remains connected, in the next few minutes we will be answering this question, so we have a graph and there is a cycle here,

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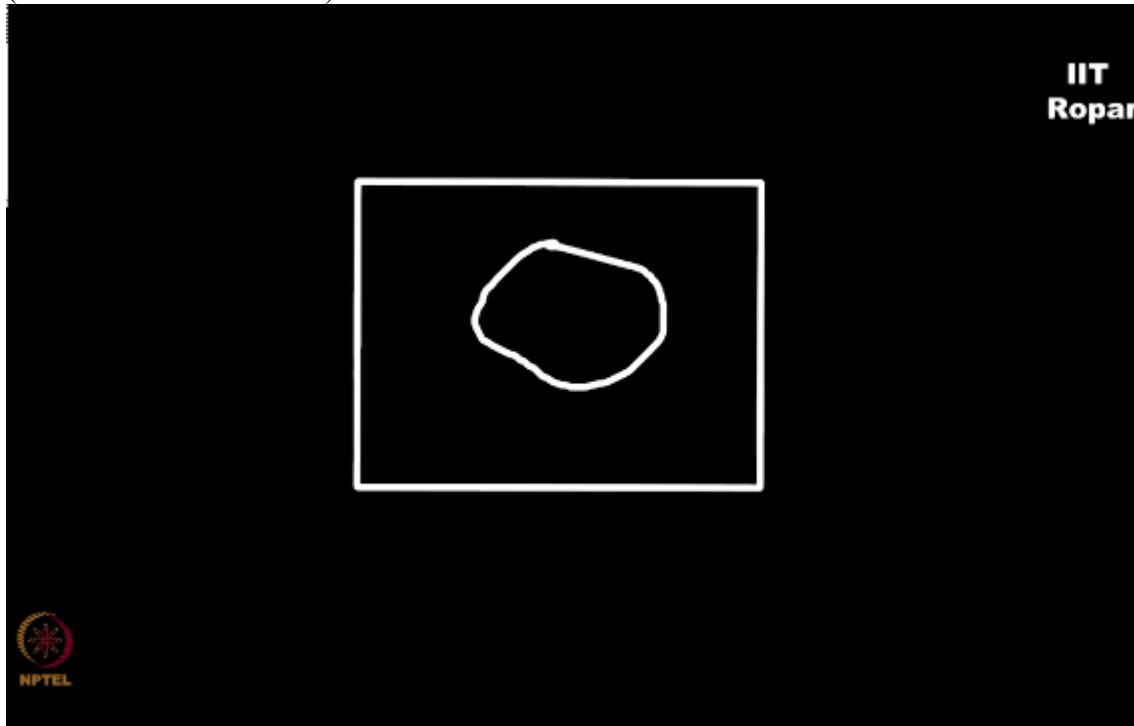
cycle is part of this graph, I'm going to remove an edge of the cycle,
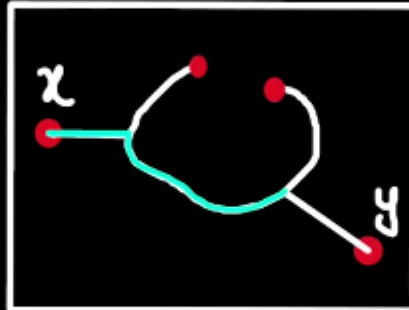
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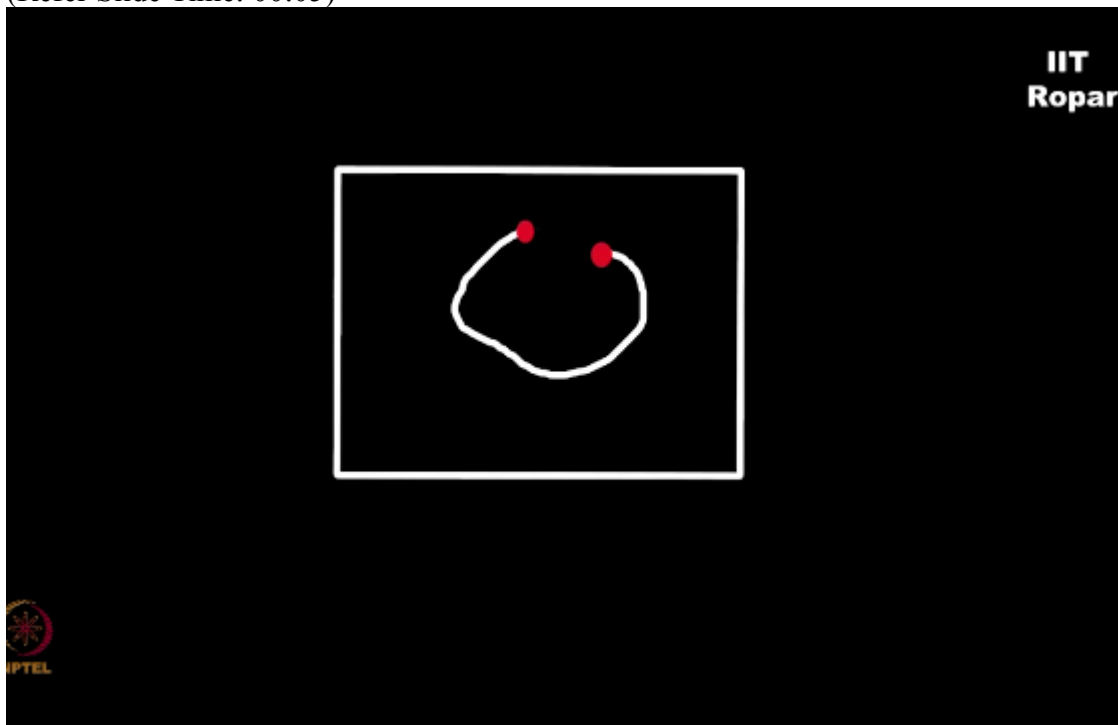
don't you think the graph will still remain connected, let me quickly give you an inductive proof for this, that we say that the graph is connected we must be able to show a path between any two vertices, right, that was the definition of connected this.

Now see there is some vertex X here, and some vertex Y here,
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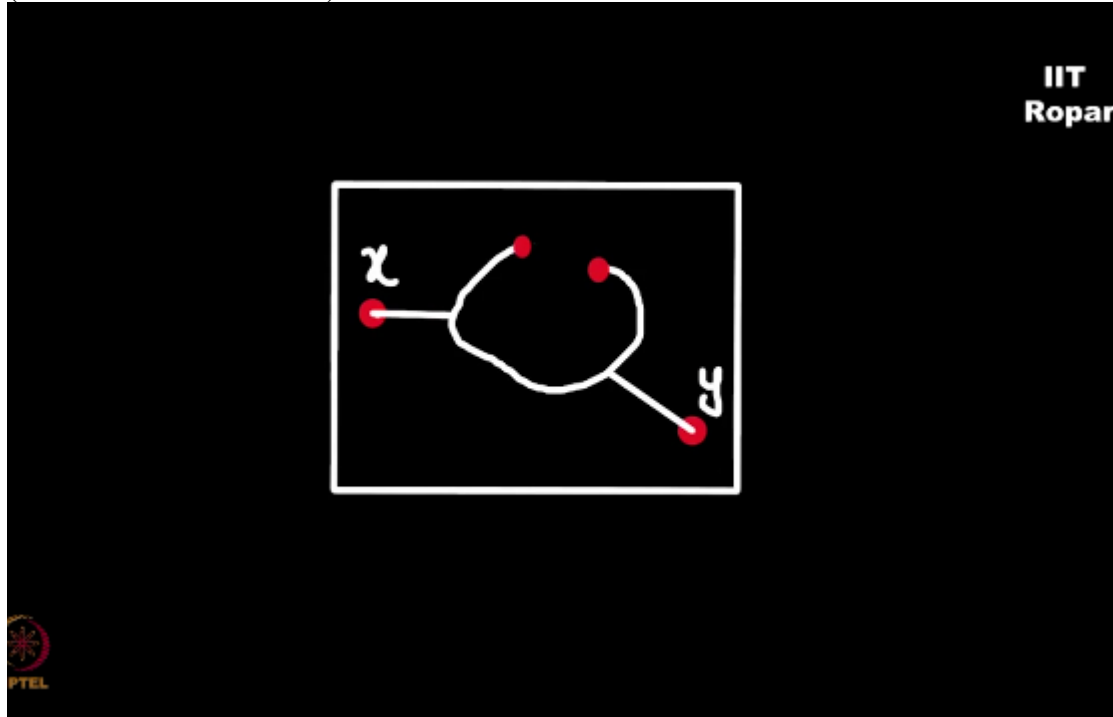
if the graph is still connected, I must be able to give a path between these two vertices X and Y, now see it is connected like this, and I remove this edge, now this edge is removed actually, if I'm able to make the path from X to Y then the graph is connected, we'd like to able to do that, let us see.

Now I come to here, I take the path to here, and I take this round path of the cycle
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and reach this point, now I quickly go to Y, yes we have reached Y from X,
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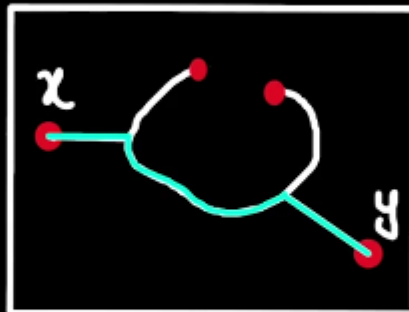
though it was a longer route we still have found of the path from X to Y, did you observe that removing an edge from a cycle which is a part of this graph hasn't disturbed the connectivity, so let me state the result formally, in a graph G if a cycle is present and if an edge is removed from the cycle the graph will still remain connected.
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In a graph G, if there is a cycle and if an edge is removed from the cycle, the graph will still remain con