NPTEL

NPTEL ONLINE CERTIFICATION COURSE

Discrete Mathematics
Graph Theory – 2

Can you traverse all location?

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Let this network represent a city,
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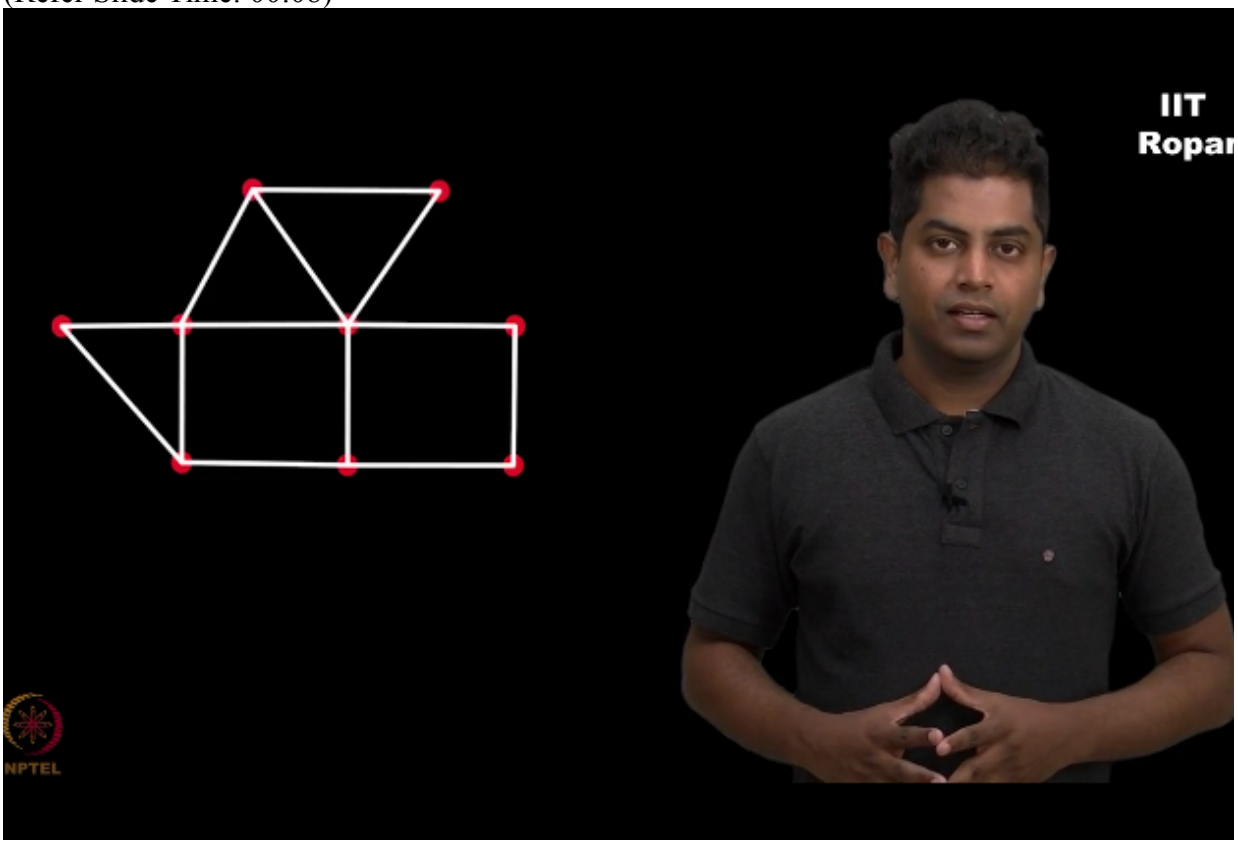

edges represent the roads, and vertices represent the locations,
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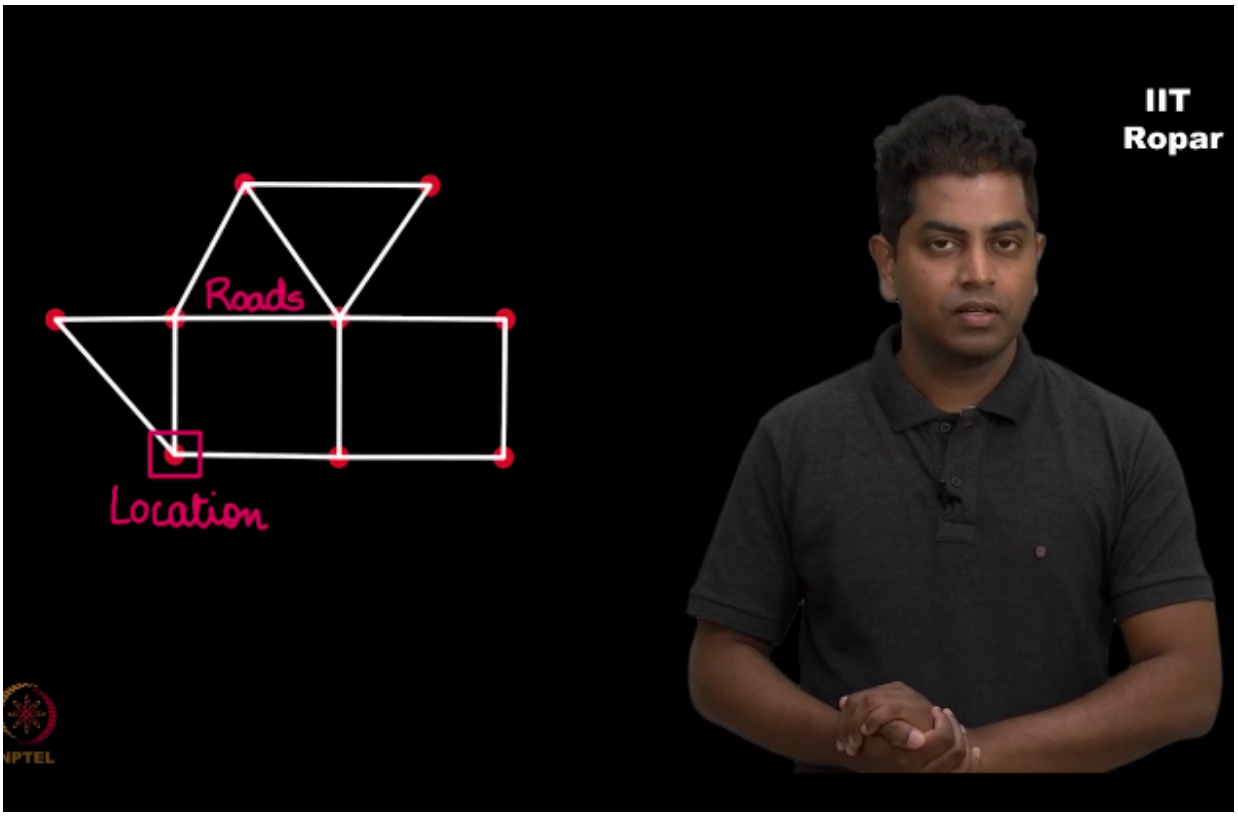

here goes my question, do you think someone can start from a location, go through all the locations as an comeback to the location from where we started,

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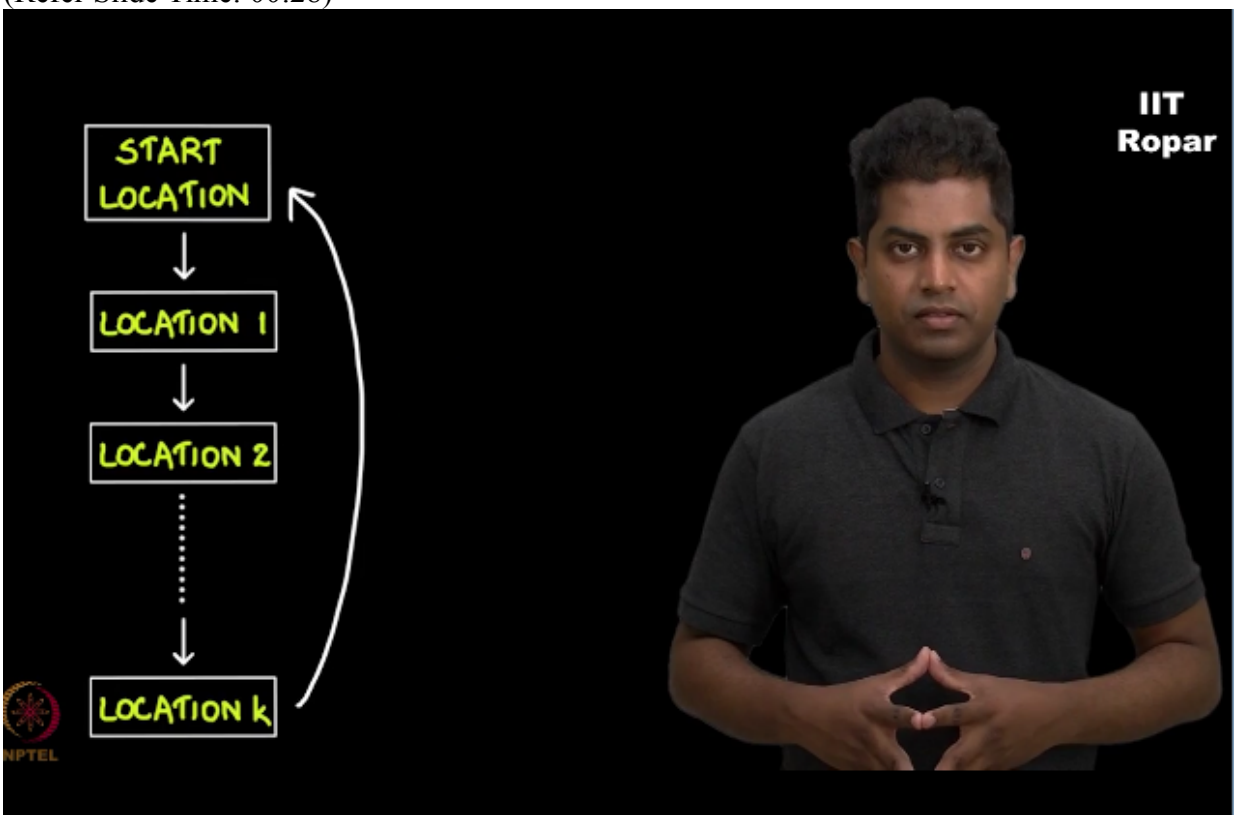

please note this is different from the topic that we discussed so far, this is nothing to do with Eulerian graphs, back there we were discussing exhaust all the edges,
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here we are saying exhaust all the vertices,
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you may want to visit all locations of the city, you are not interested in visiting all possible roads, only the locations.

Now look at this graph,
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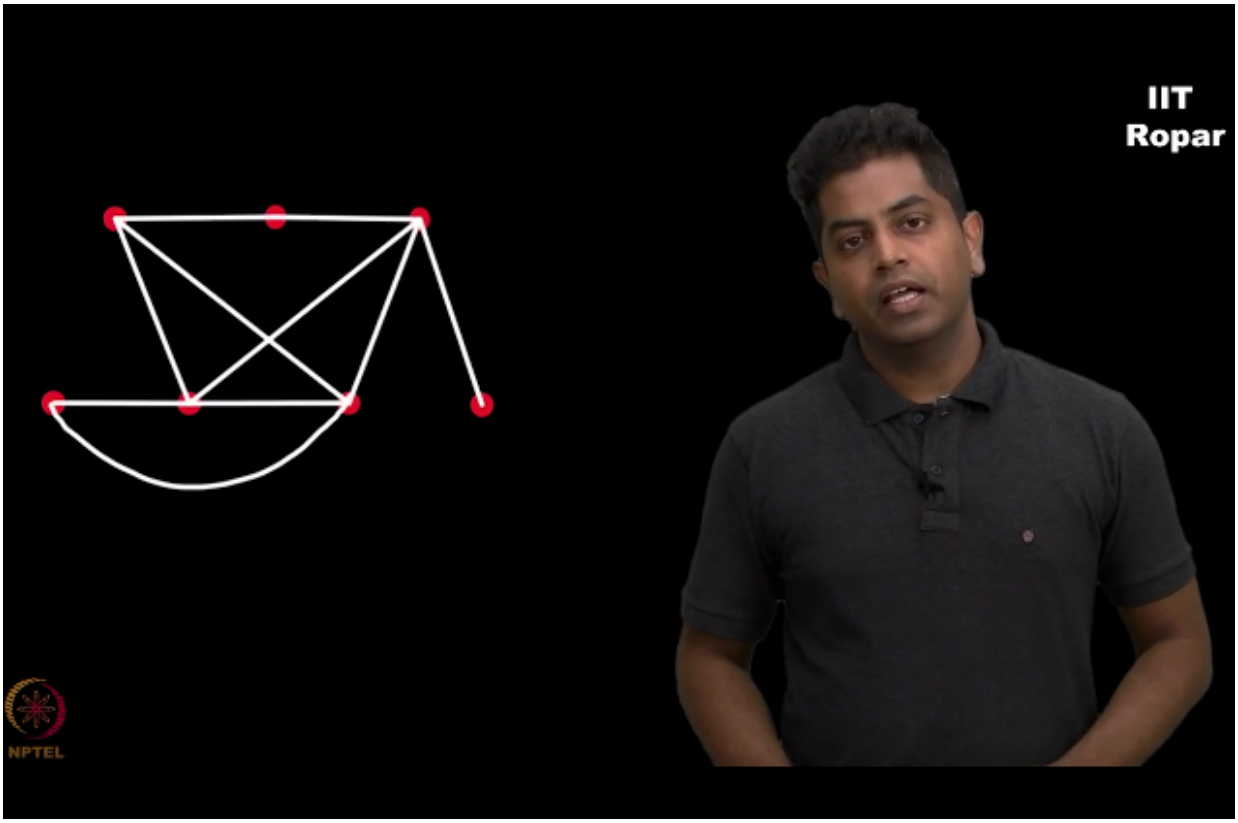

is there a possibility for one to visit all the locations and then get back to the same point where one started, can you try answering this question for this graph?

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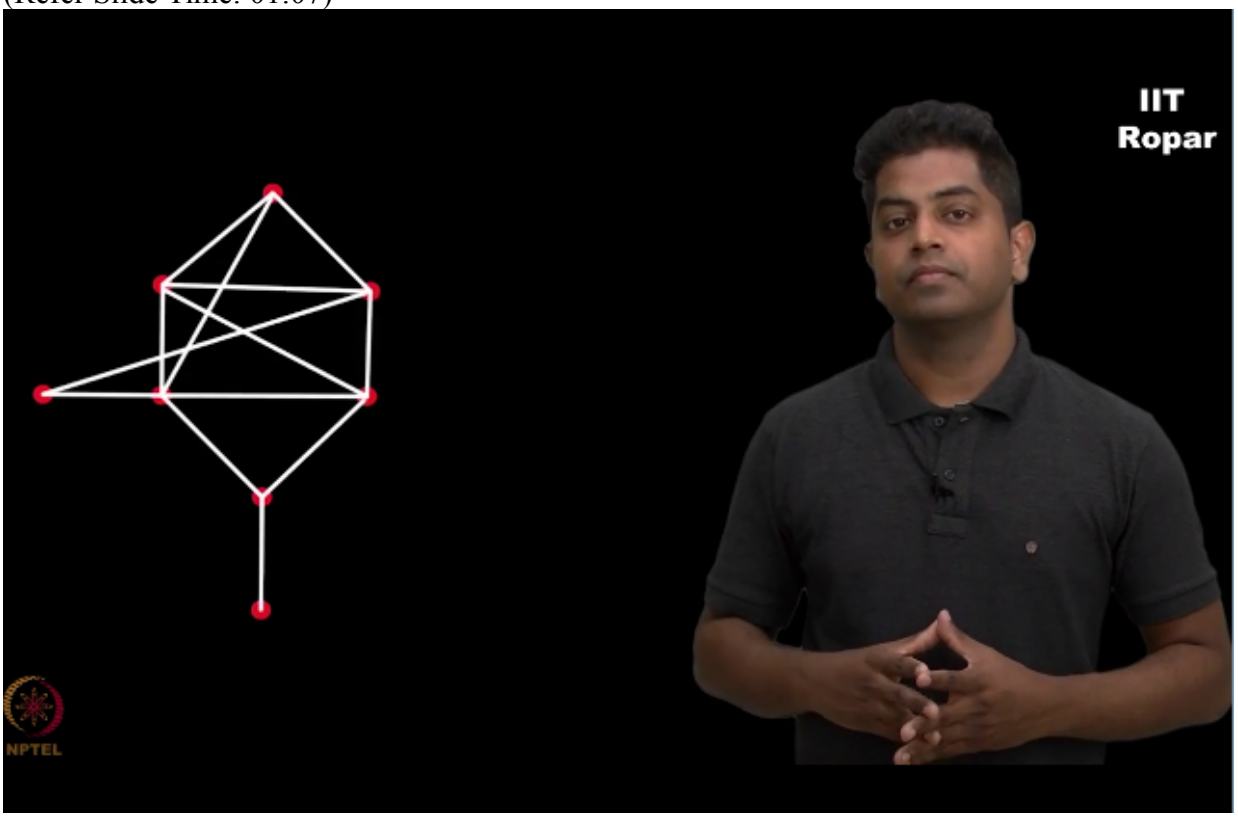

How about the star graph?
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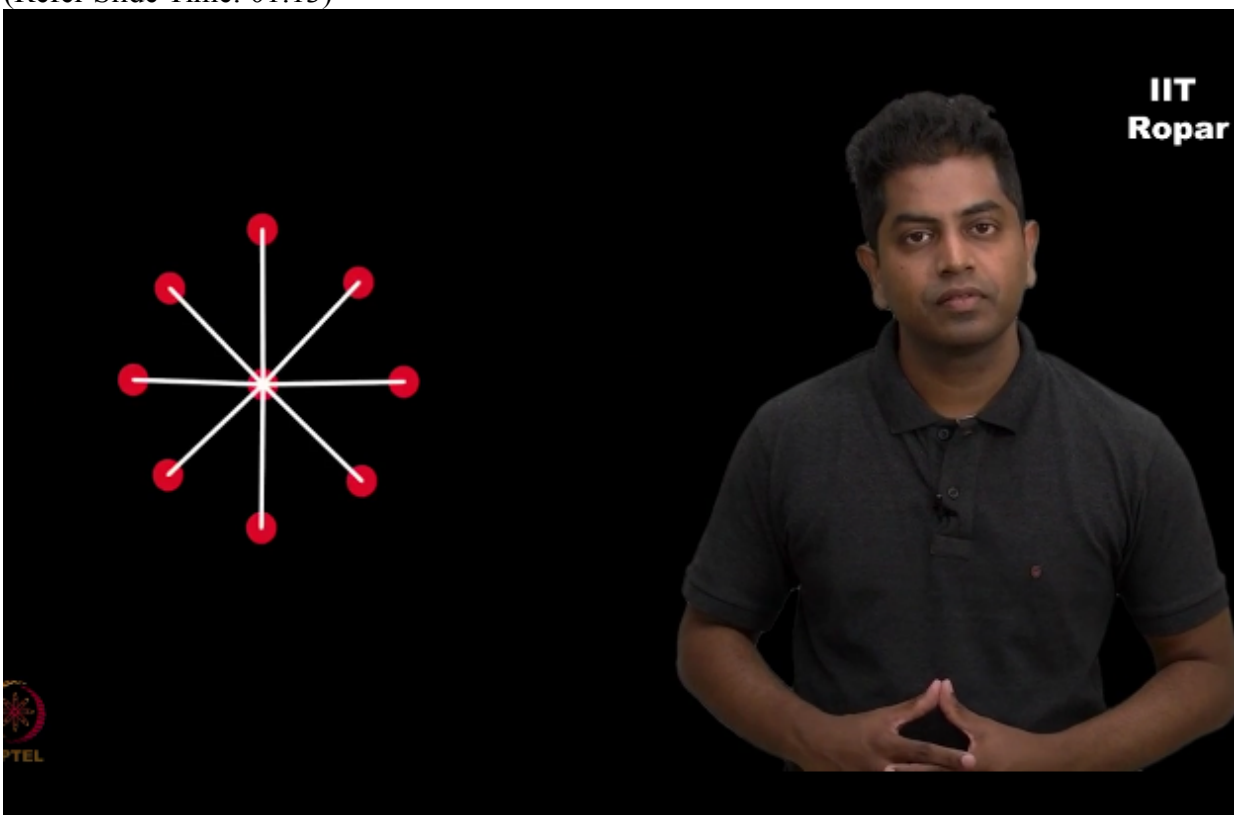

Can you go through all the nodes? Now, of course the condition is that you cannot repeat an edge twice, nor can you repeat a vertex twice and you must exhaust all the vertices, on a star graph you obviously cannot do it, why? You start from A, you go to the center point C, and then you come back to let say B, and you're locked,
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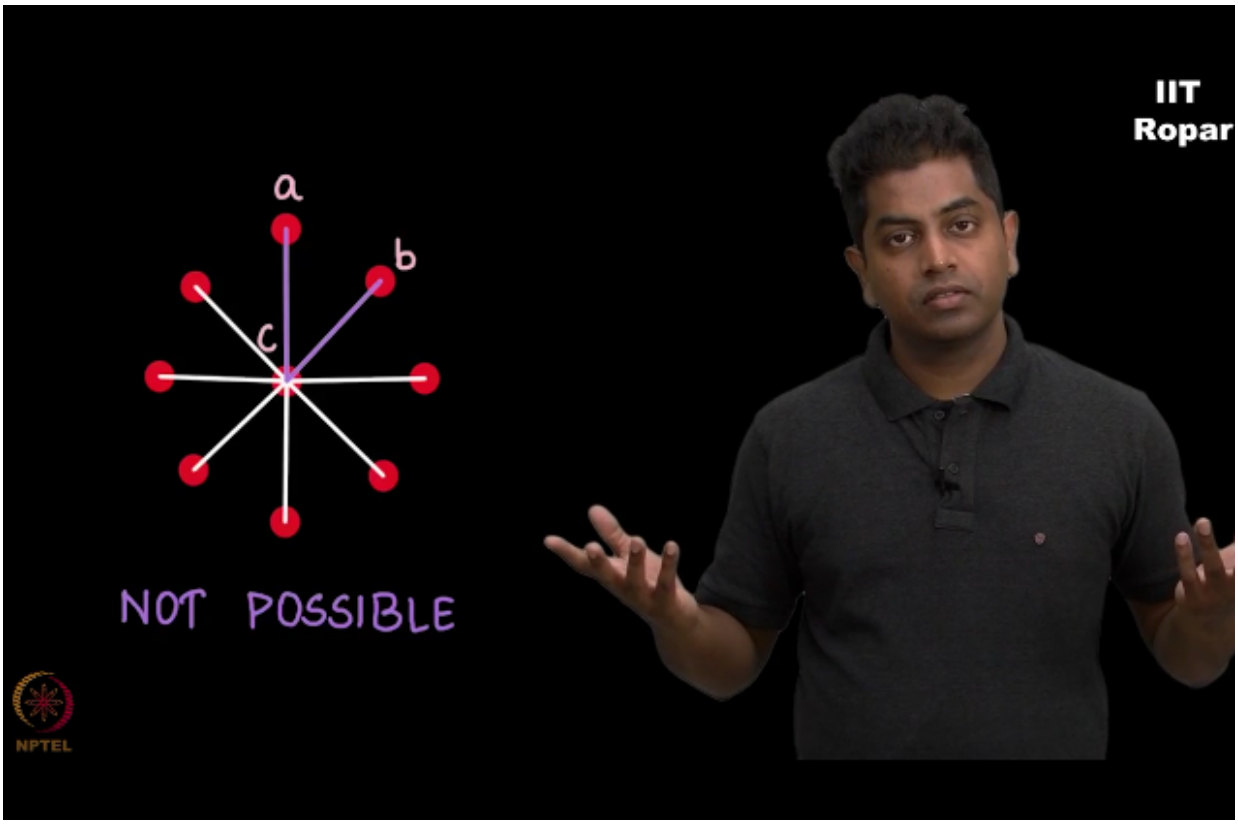

you cannot go ahead and then exhaust all possible vertices here, so this graph one cannot travel through all possible vertices.

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