NPTEL

NPTEL ONLINE CERTIFICATION COURSE

Discrete Mathematics
Graph Theory - 1

Walk

By
Prof. S.R.S Iyengar
Department of Computer Science
IIT Ropar

Consider this graph on 7 vertices let me write the edges like this
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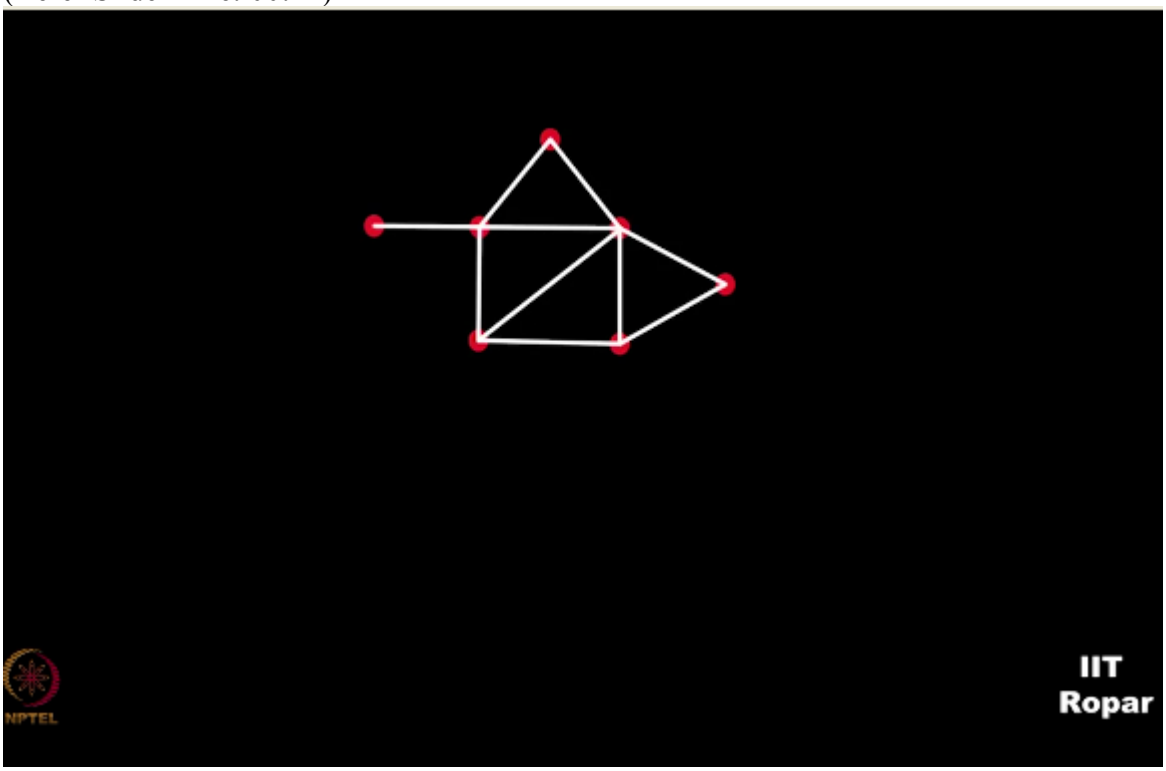

so here I'm, the edges and vertices, this is the graph, now let me label the vertices as A, B, C, D, E and these two as U and V,
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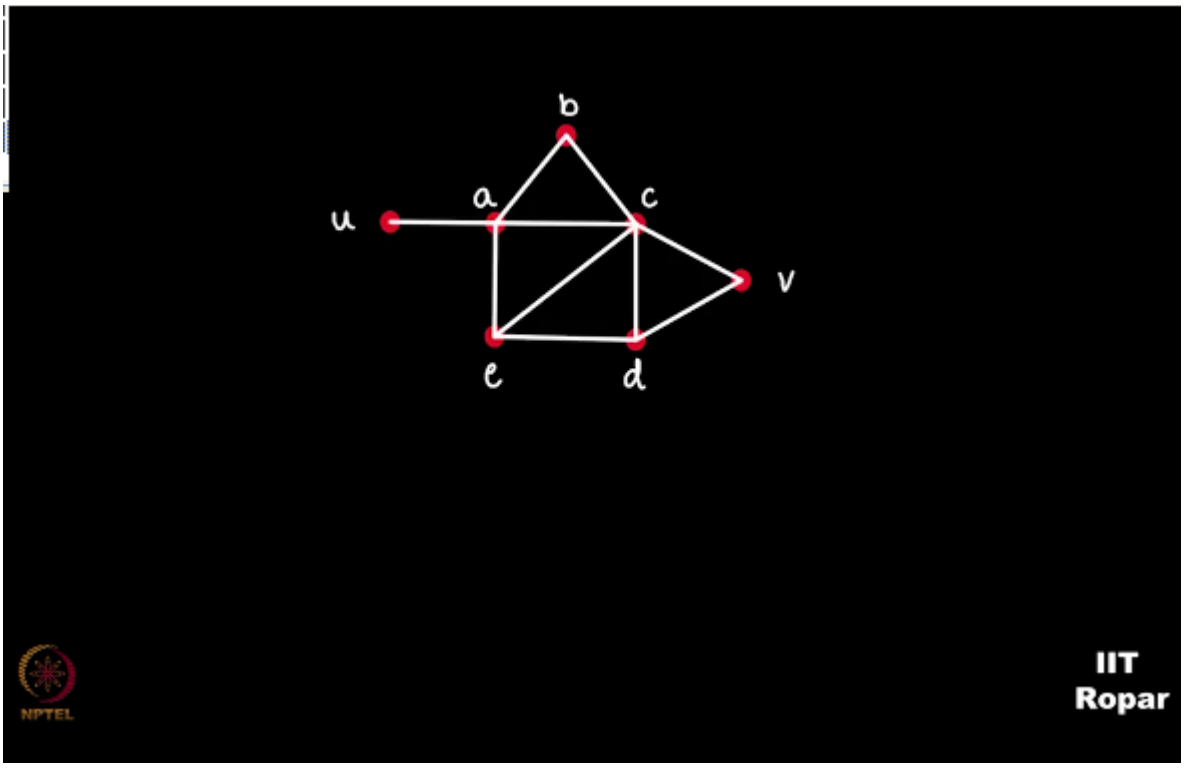

so we have 7 vertices and these edges sprinkled here.

Now if I have to reach V starting from U, how will I go?
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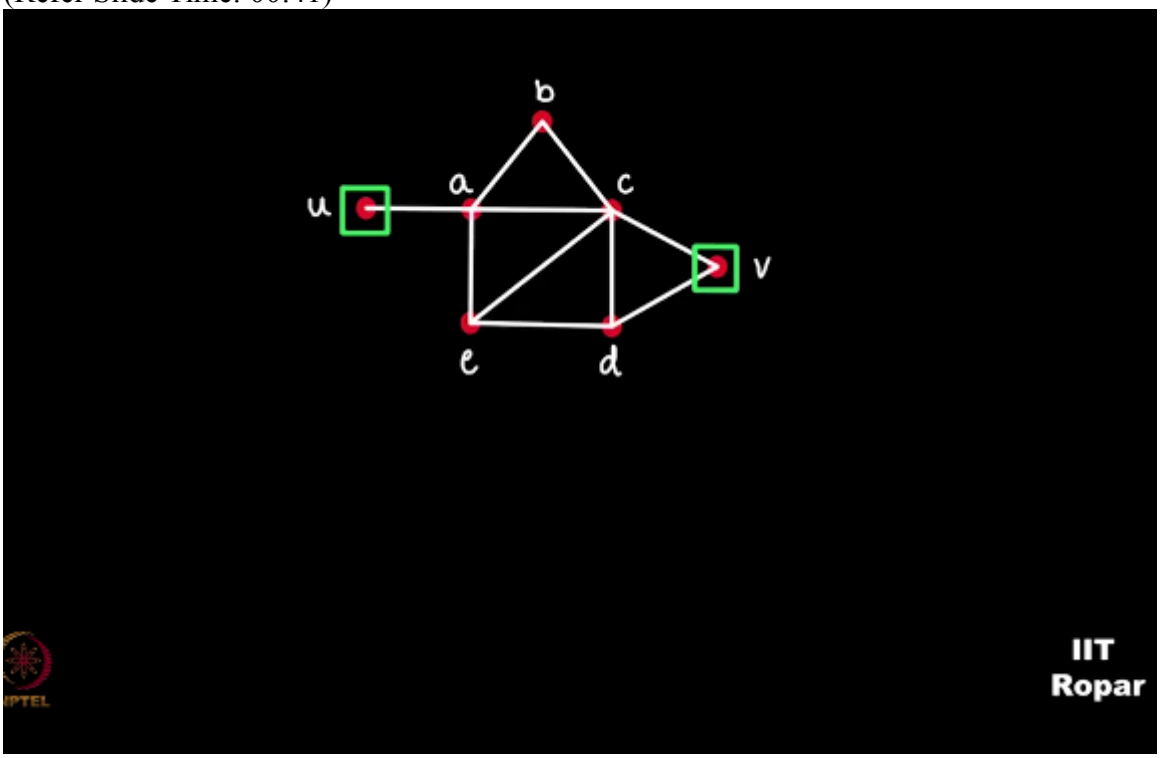

I start walking from U and I have to reach V, what is the possible way that I can take, I can go from U to A, A to B, B to C, C to V

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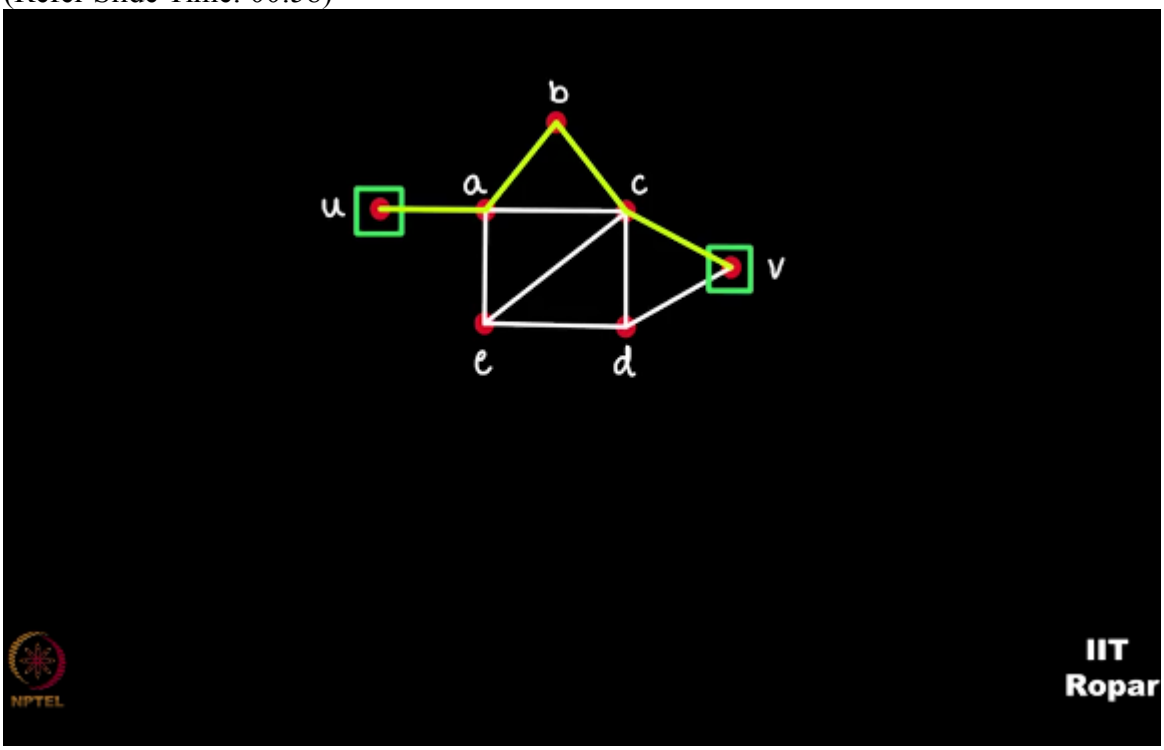

let me write that down like this, U, A, B, C, and V

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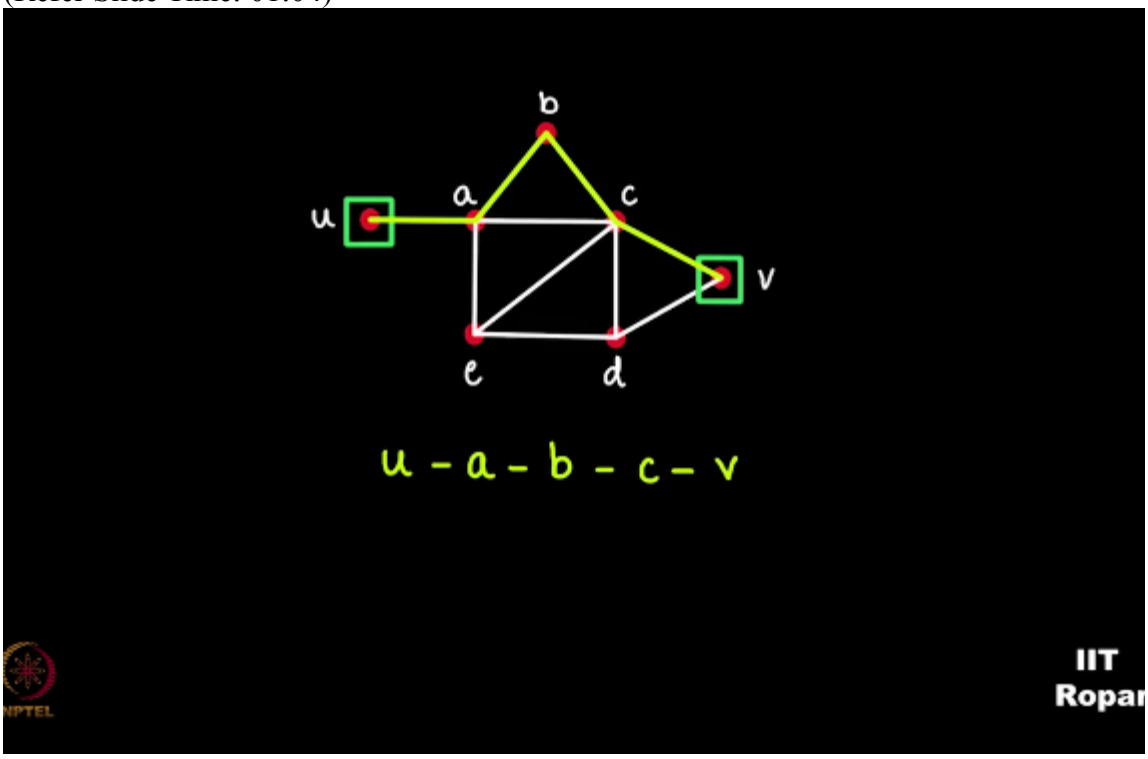

so this is the way taken by me from U to reach V, where you can tell that there is another one, let me write that, U, A, C, E, A, C, V, this is a valid one
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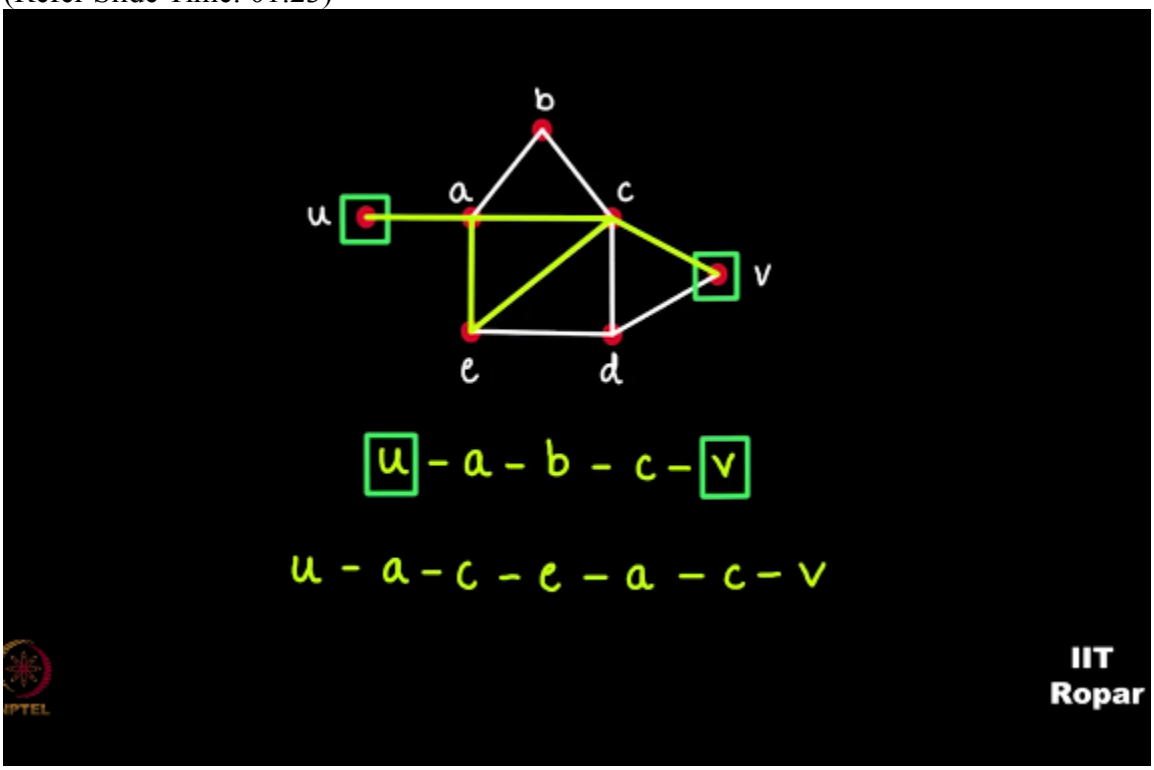

I start walking from U and I reach V, another one could be U, A, E, D, C, and V
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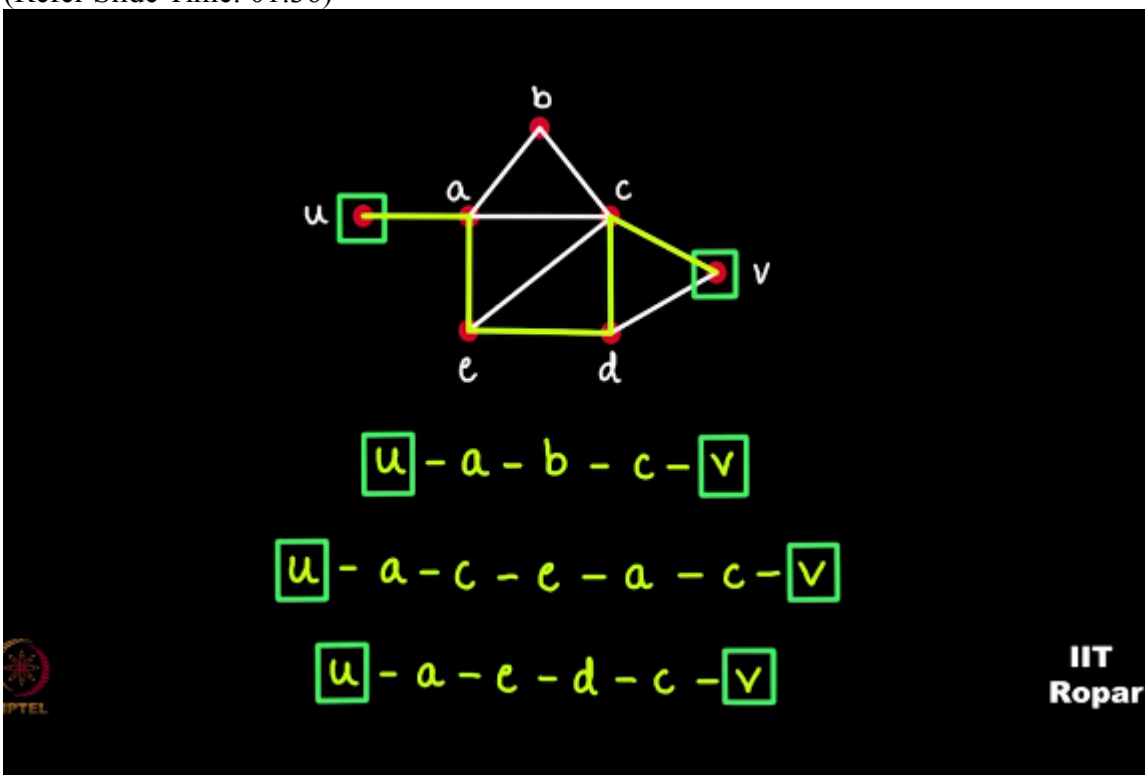

this is also valid one.

Now let me define something, we call this as a walk, well, what is a walk? A walk is nothing but just a sequence of vertices and edges, let me make a clear if I consider this to be a walk, let me call that as a walk W from U to V, I write it like this
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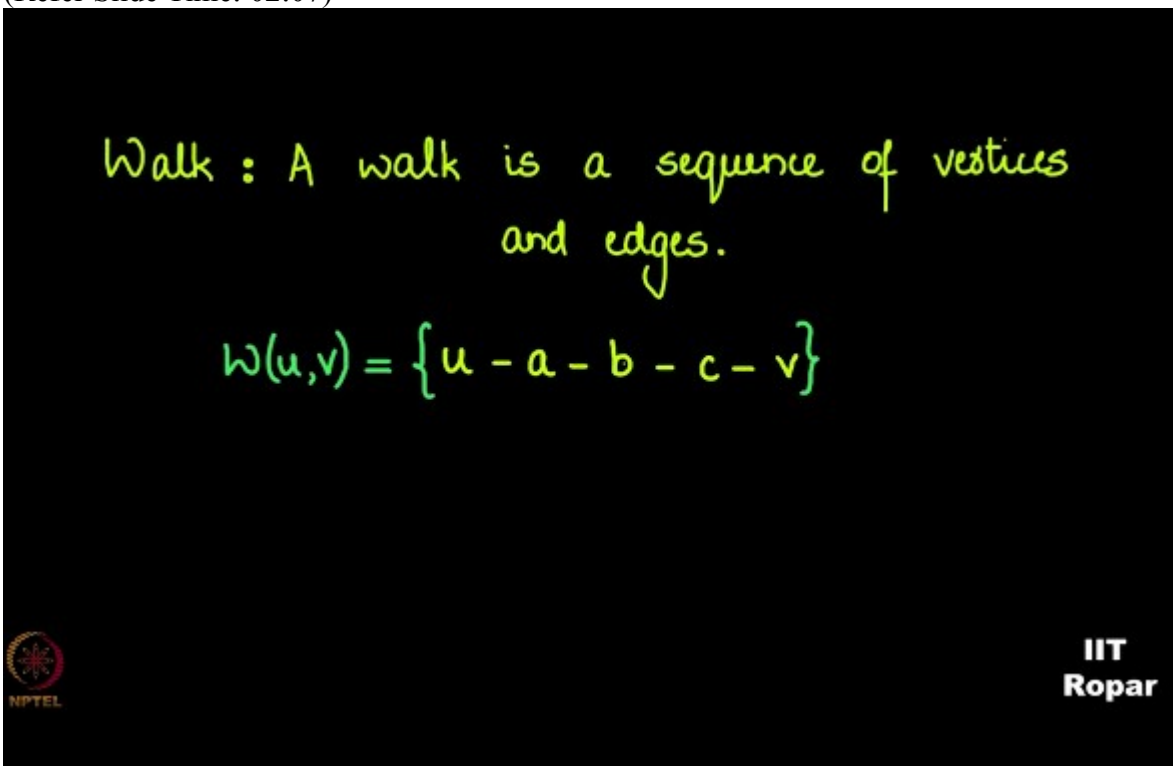

so it is U, A, B, C, V this is a walk, U, A, C, E, A, C, V this is yet another walk
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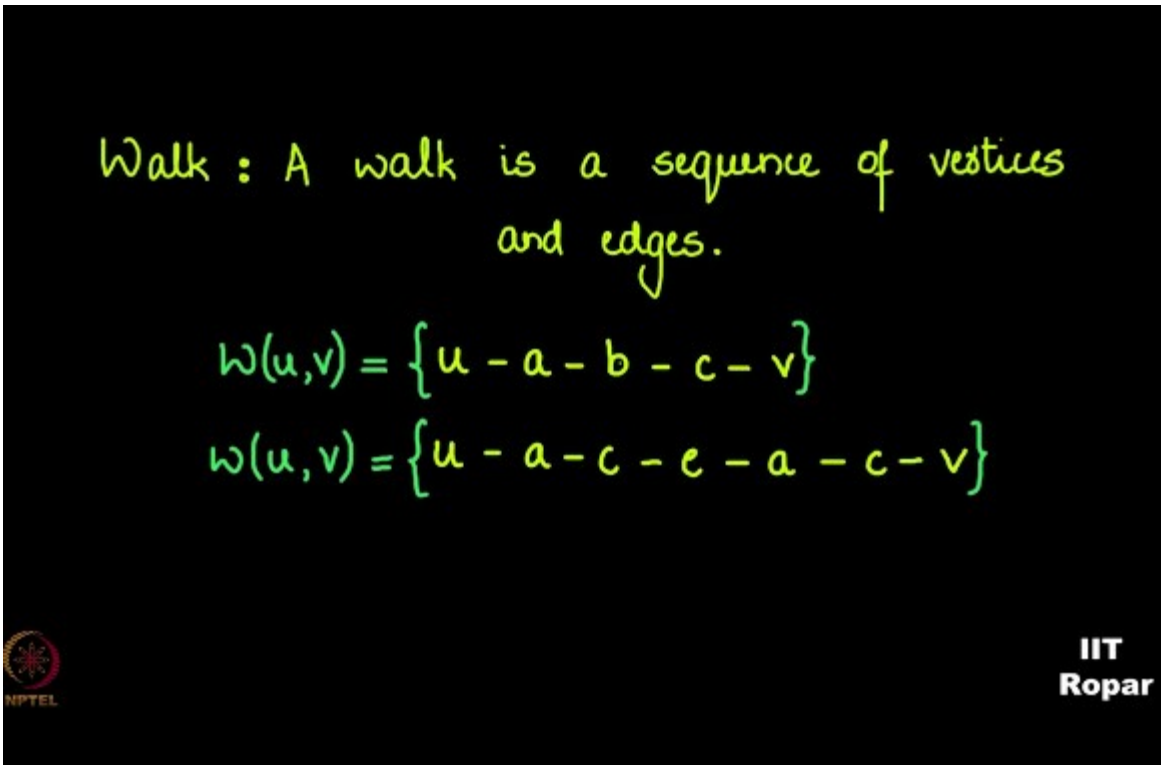

what we had written, I think you can find out several many, but please note in a walk you can pass from one vertex, how we went here, U, A, C, E, I am again coming back to A, this is valid, this is allowed, in a walk you can go through vertex several times that is U, A, C, A, C, A, C, A, C, V this is a valid walk,

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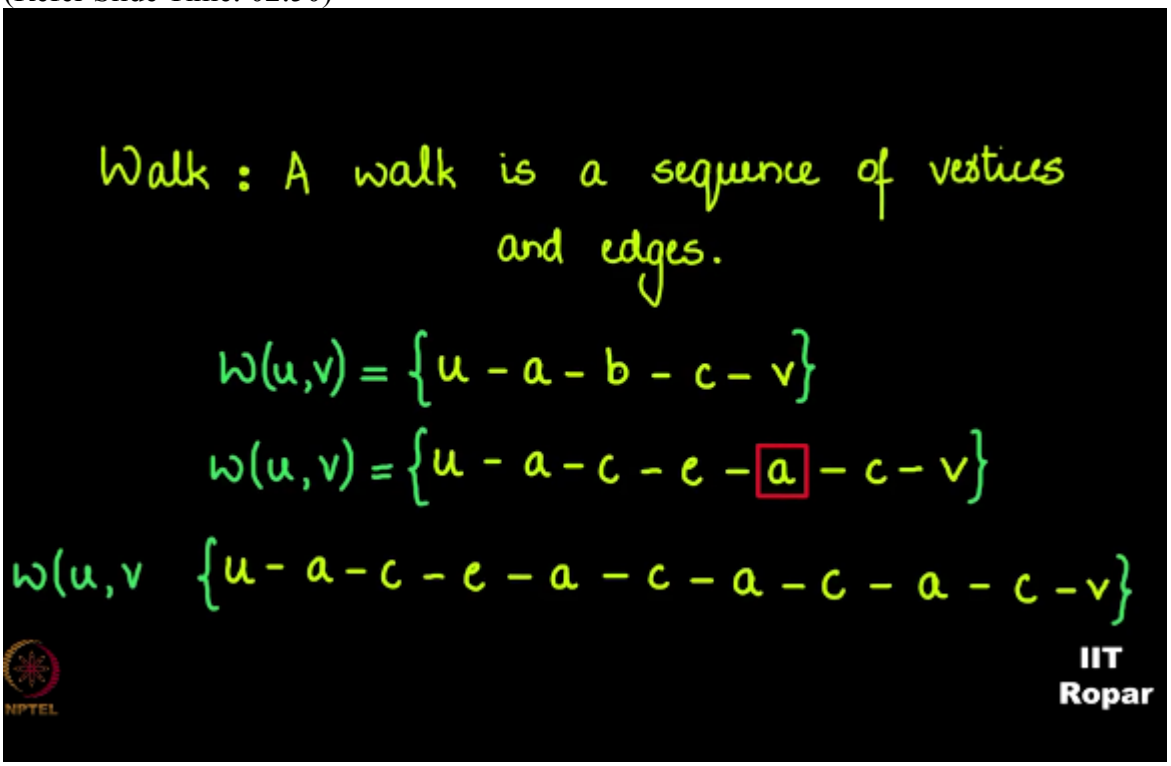

I'm just walking back and forth from A to C, but it is a valid walk, I hope it is clear that a walk is a sequence of vertices and edges.

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