NPTEL

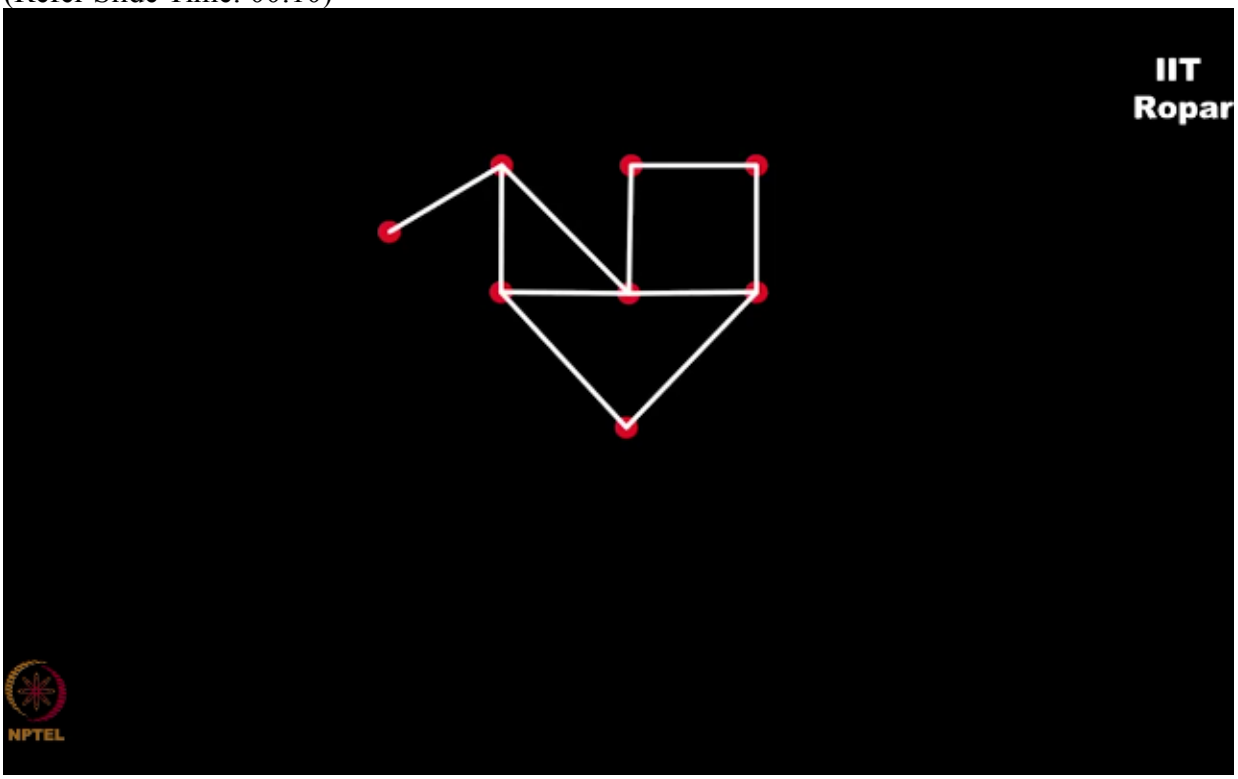
NPTEL ONLINE CERTIFICATION COURSE

Discrete Mathematics
Graph Theory - 1

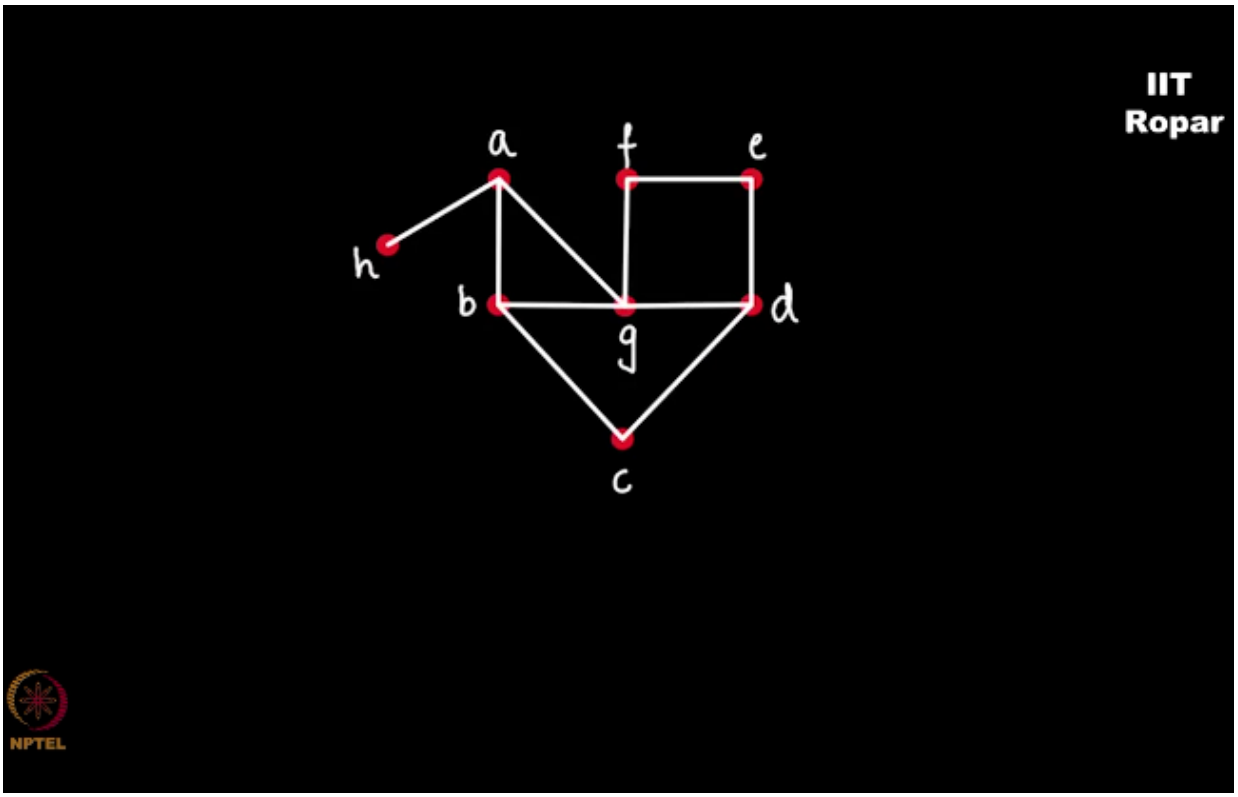
Examples of walk, trail and path

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

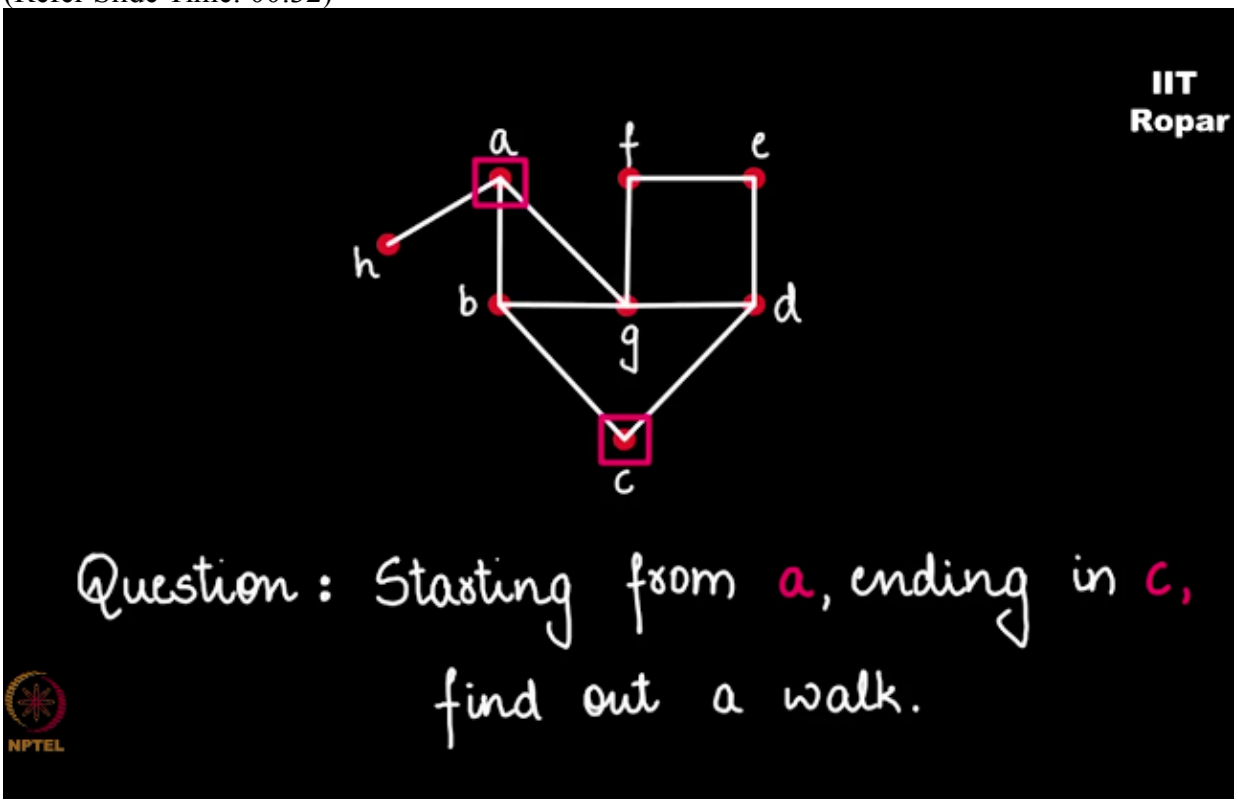
As an example let us consider these 8 vertices, and these edges on 8 vertices,
(Refer Slide Time: 00:10)



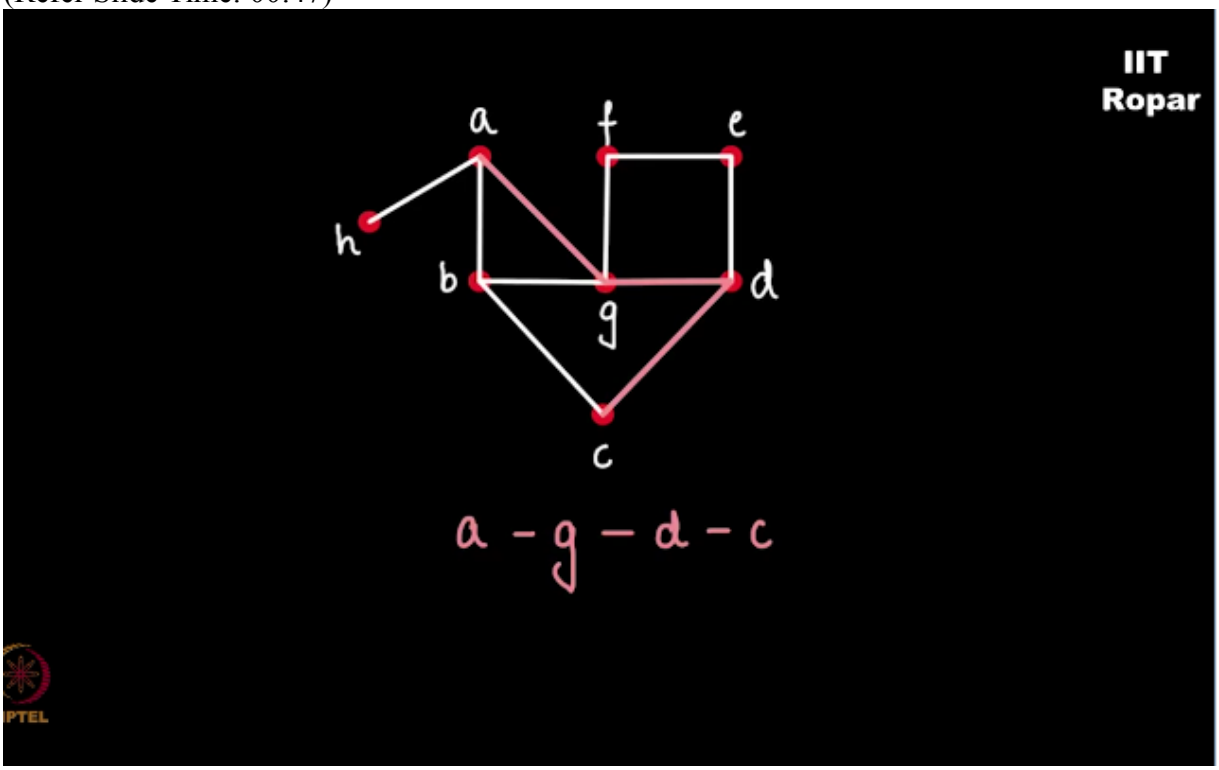
so we get this graph, let me label it as A, B, C, D, E, F, G and H.
(Refer Slide Time: 00:19)



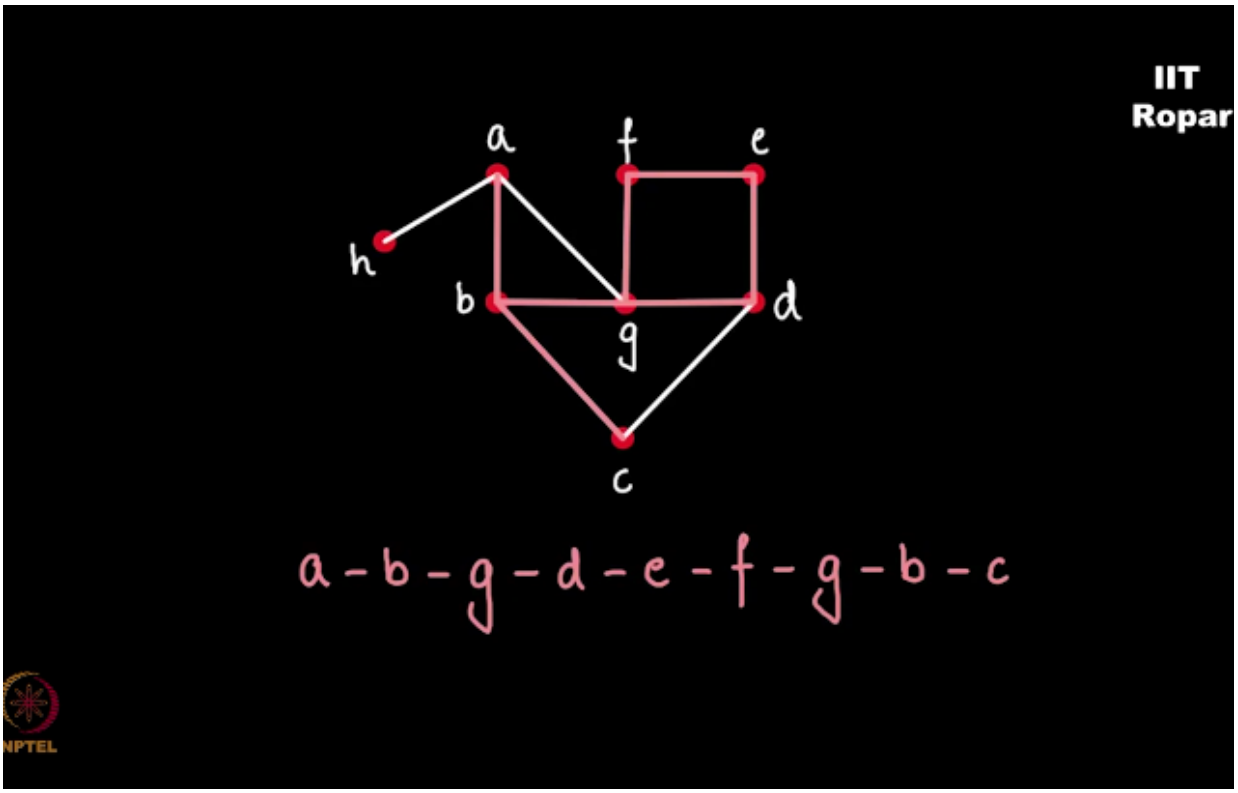
Now the question is starting from A and ending in C, find out a walk,
(Refer Slide Time: 00:32)



so you must write and practice all this, you can get several walks from A to C, let me just write 2 of them, A, G, D, C, is one such walk.
(Refer Slide Time: 00:47)



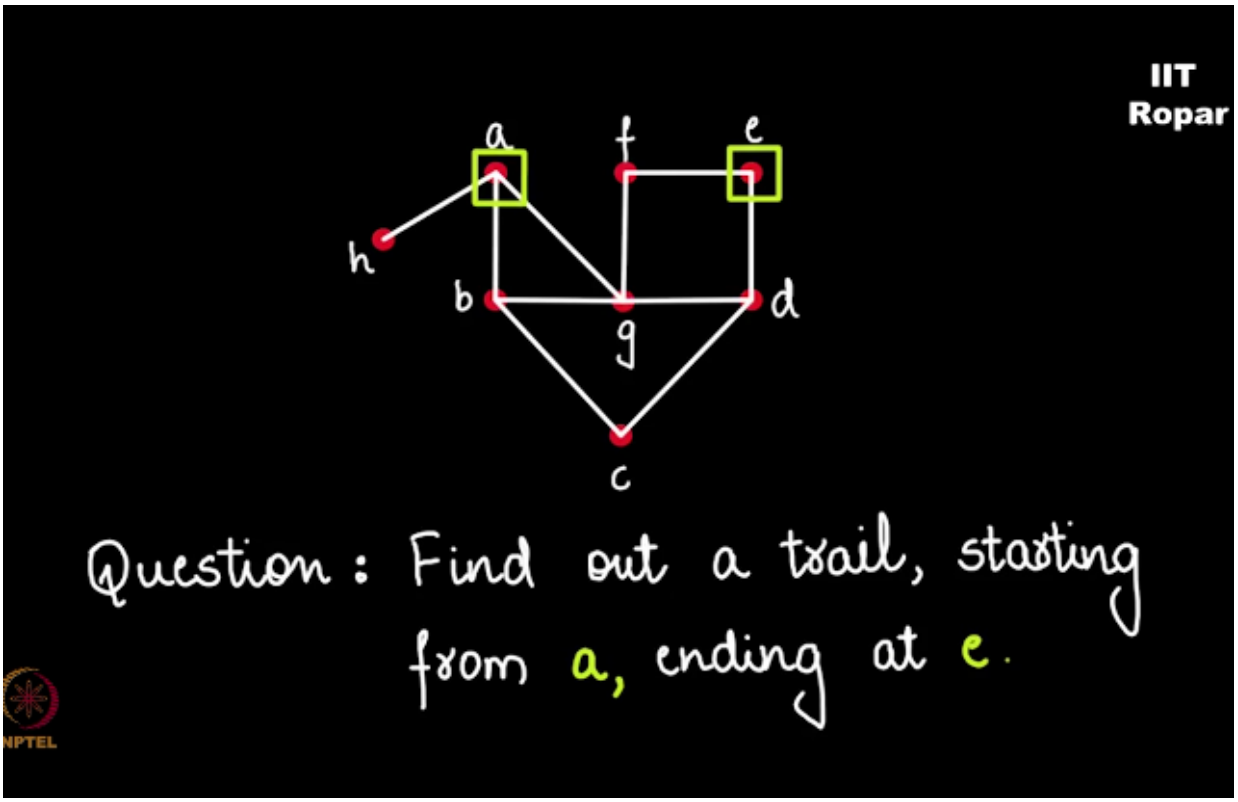
Let me write another one, A, B, G, D, E, F, G, B, C,
(Refer Slide Time: 00:58)



I've taken a long one and short one, both of these are walks, although they are repetitions of vertices that does not matter since it's only a walk.

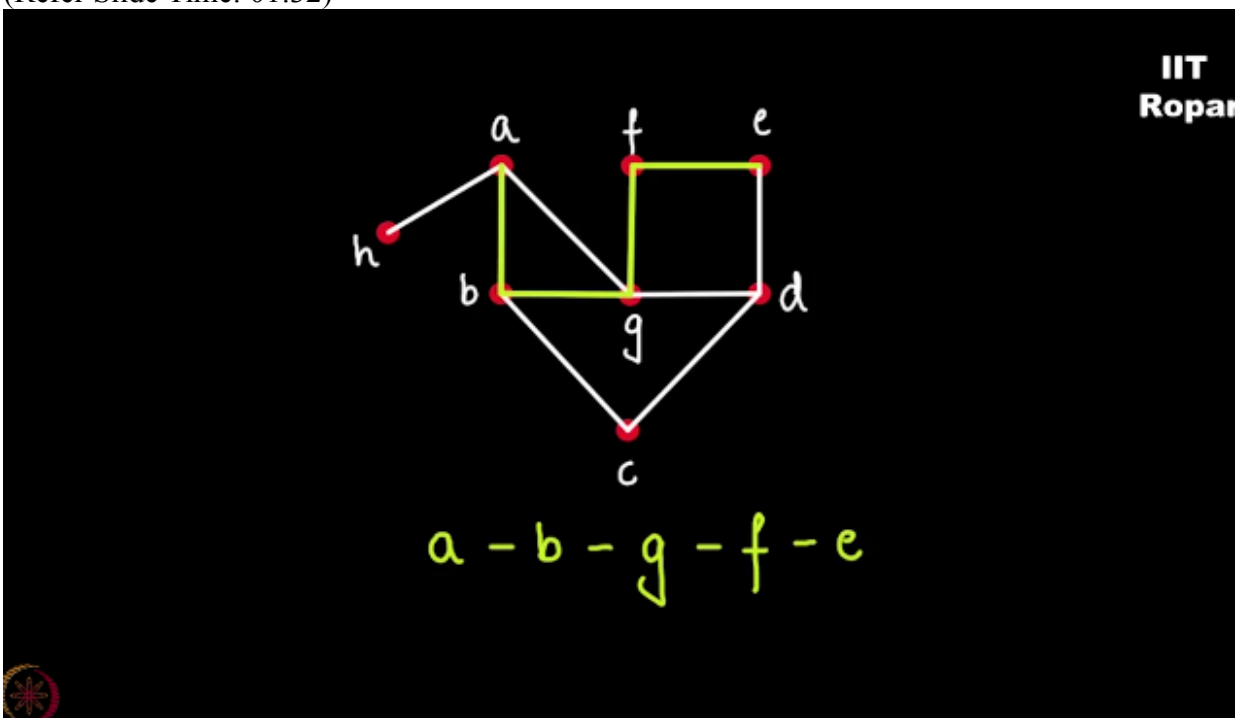
Now give me a trail starting from A and ending at E, a trail should not include repetition of edges,

(Refer Slide Time: 01:21)



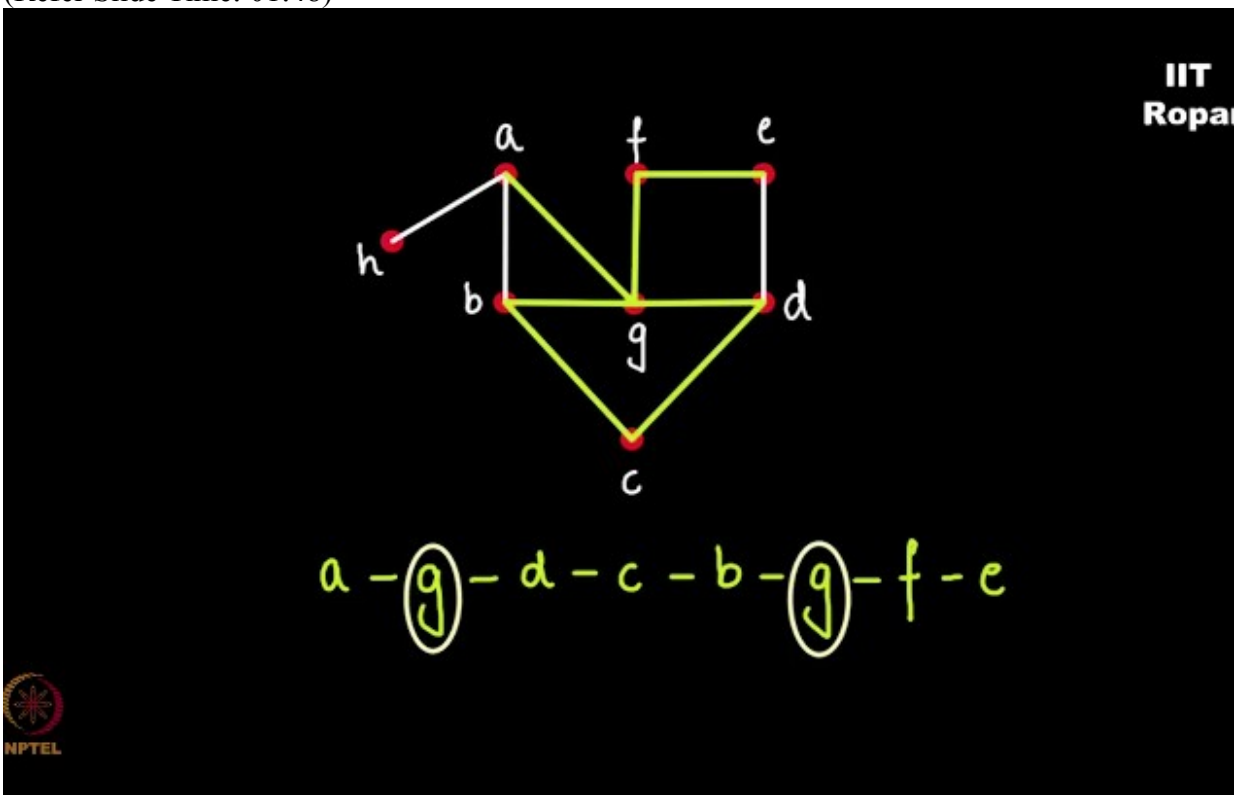
you can have the vertices, so let us write that one A, B, G, F, E, well this is a trail.

(Refer Slide Time: 01:32)

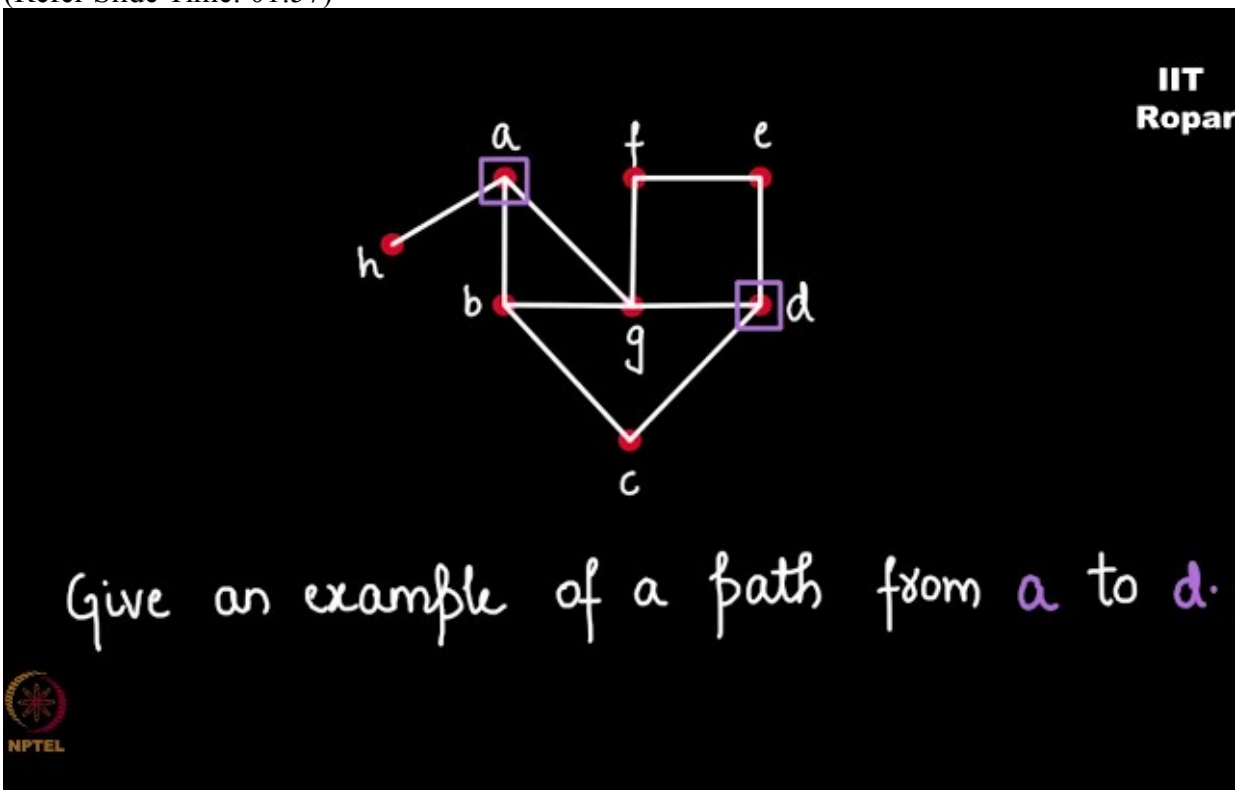


Let me write down another one, A, G, D, C, B, G, F, E, do you see that vertex G is repeated, but the edge is not getting repeated, this is the good example of a trail.

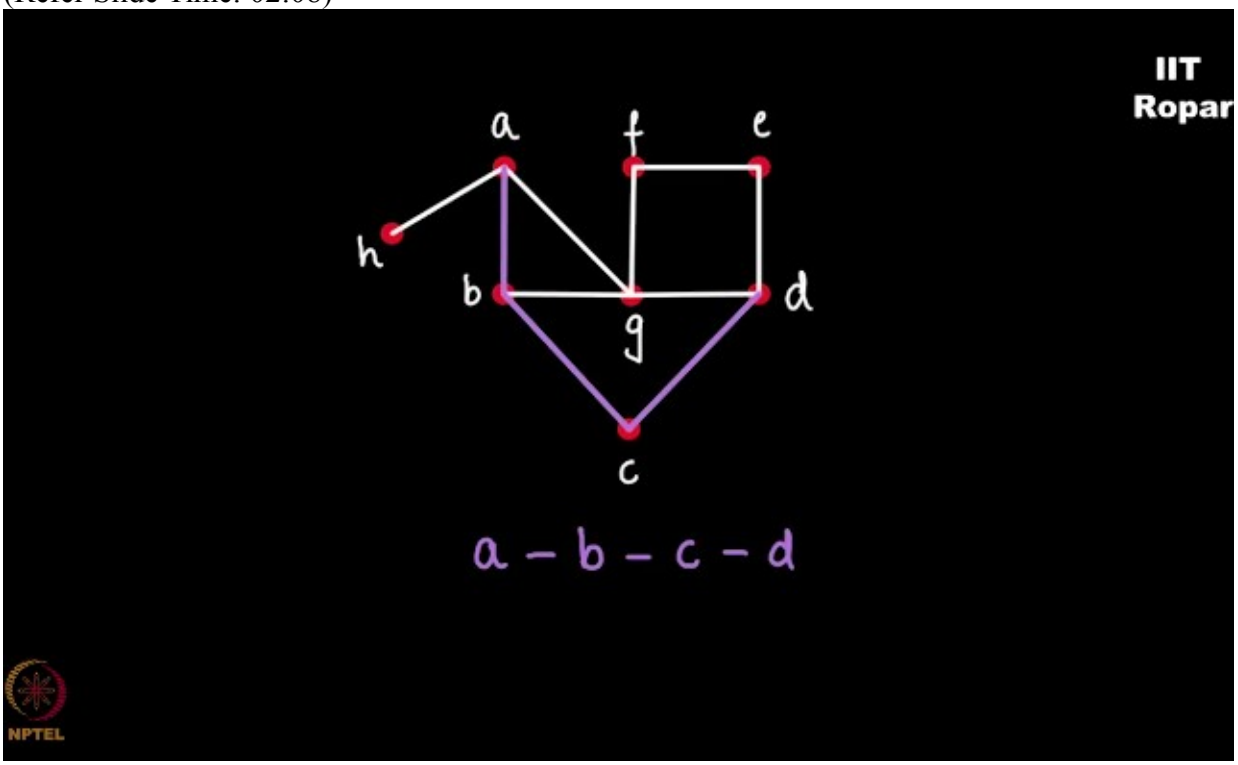
(Refer Slide Time: 01:48)



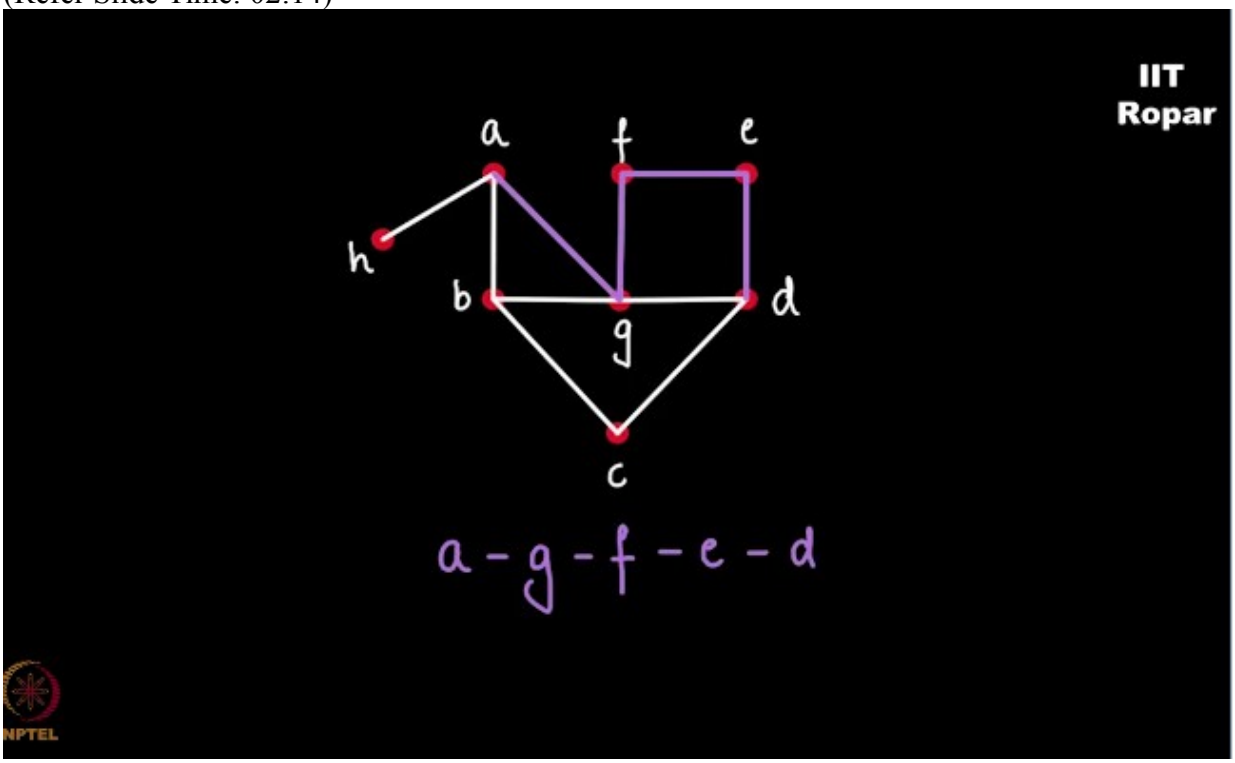
Now can you give an example of a path from A to D,
(Refer Slide Time: 01:57)



let us see what it is, you should not repeat vertices and hence obviously edges will not get repeated, so it goes like this A to D sort as A, B, C, D
(Refer Slide Time: 02:08)

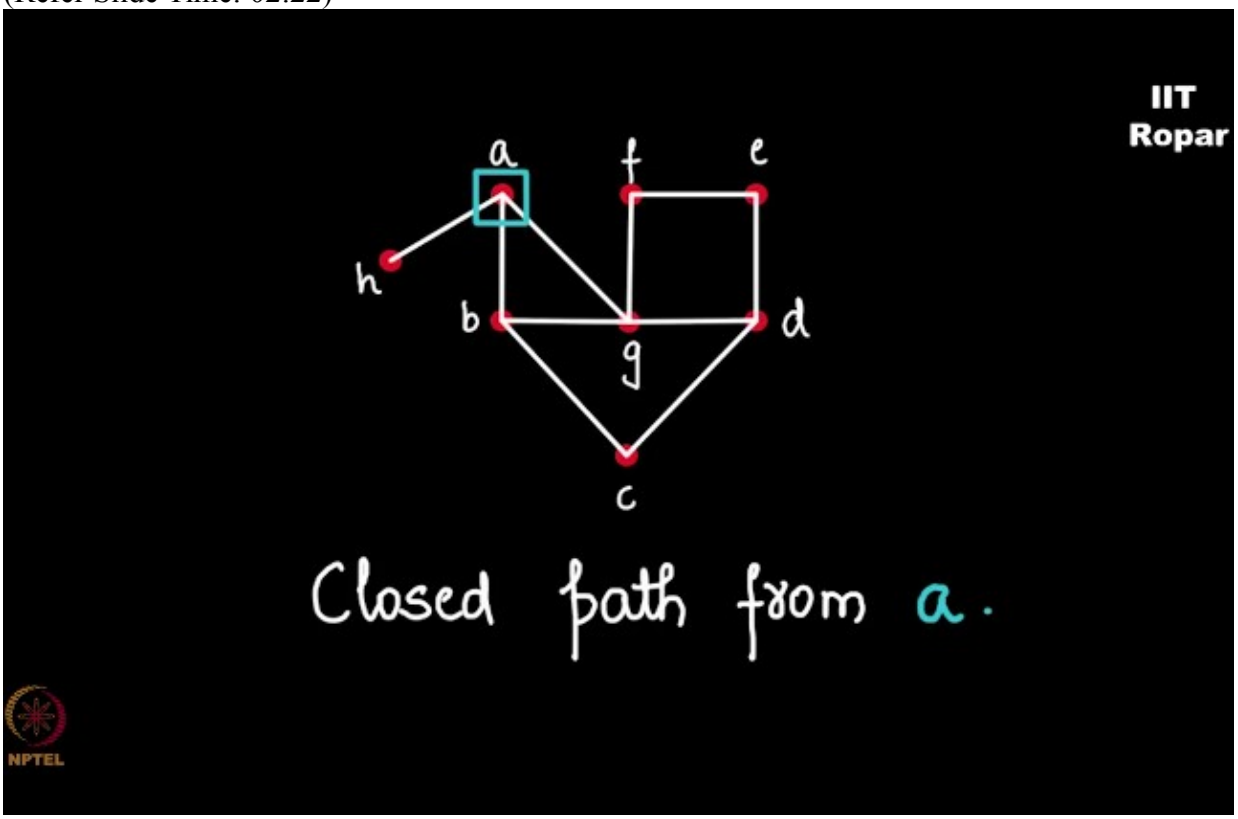


this is a valid path, A, G, F, E, D,
(Refer Slide Time: 02:14)

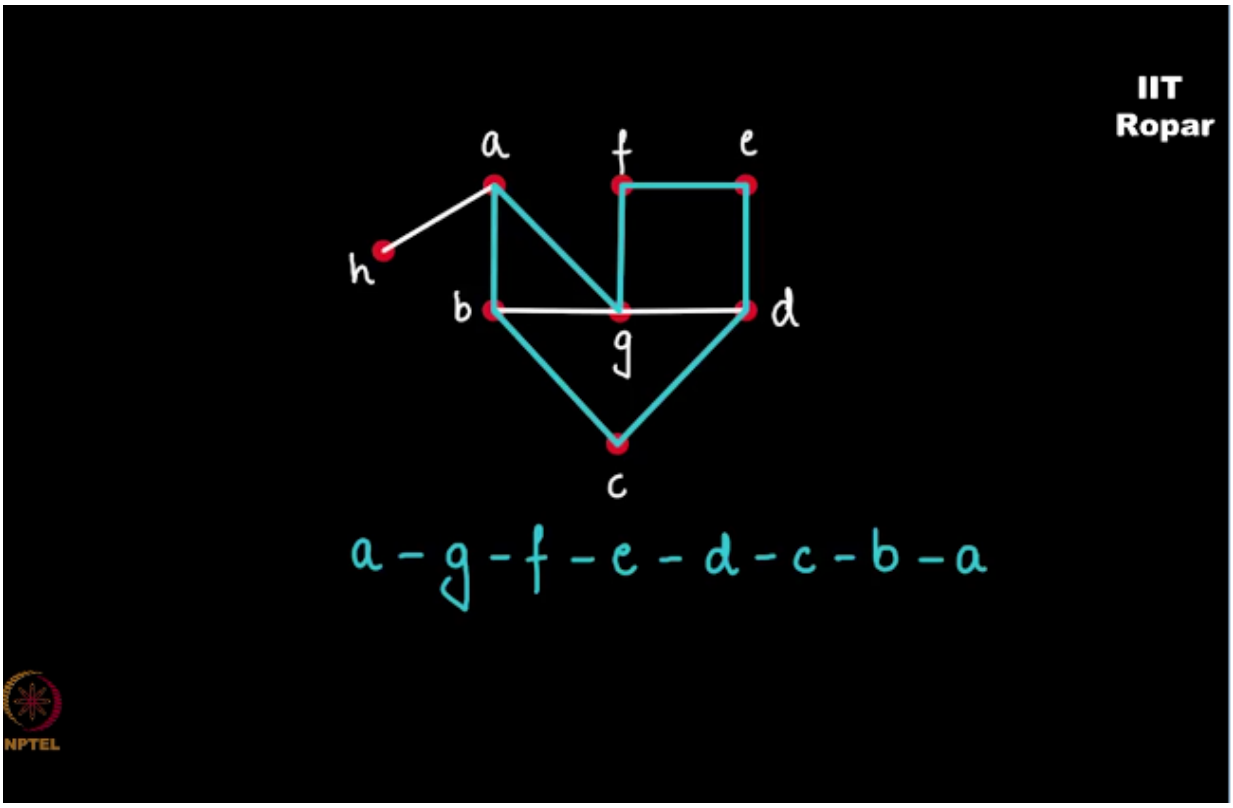


this is yet another valid path.

Now let us write a closed path starting from A and ending at A,
(Refer Slide Time: 02:22)

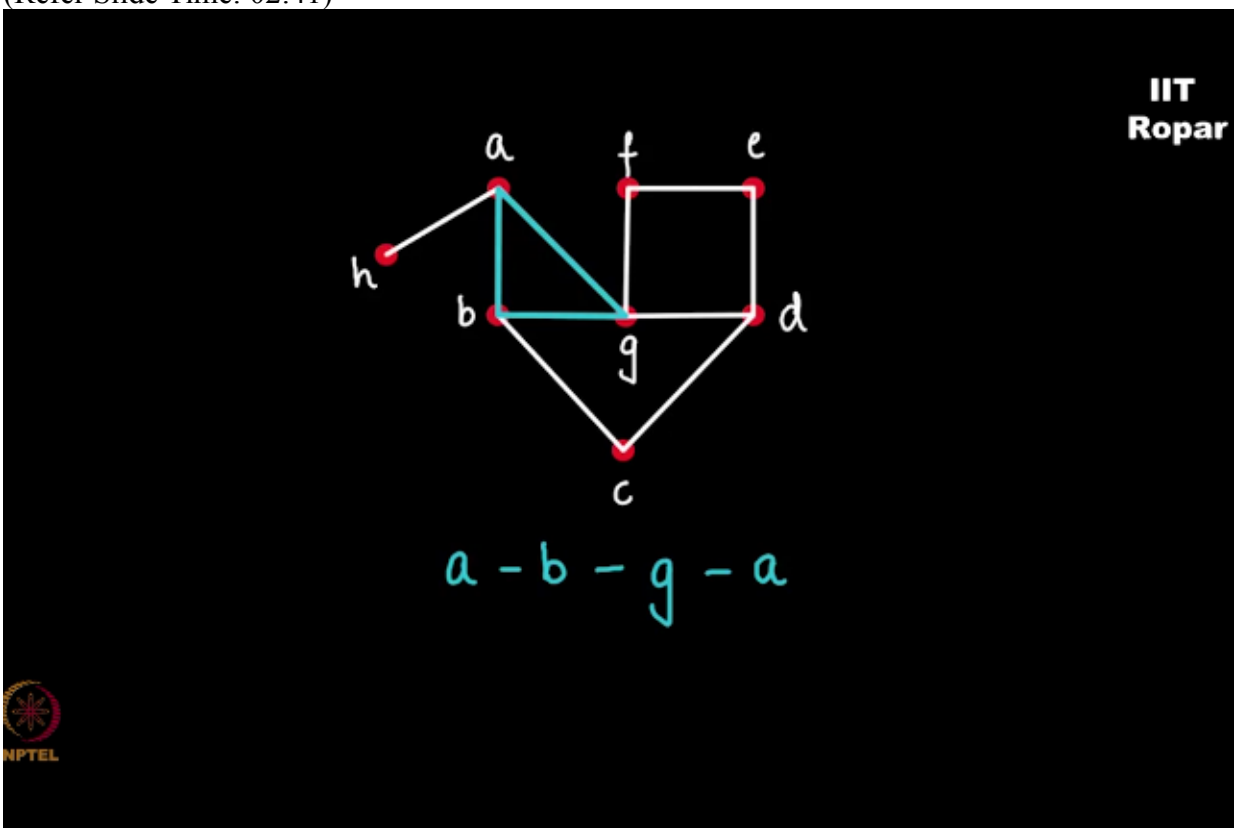


so what does it can be, it has, A, G, F, E, D, C, B
(Refer Slide Time: 02:31)



this is one closed path, another one would be A, B, G, and again A,

(Refer Slide Time: 02:41)



this is another valid path.

IIT MADRAS PRODUCTION

Founded by
Department of Higher Education
Ministry of Human Resources Development
Government of India

www.nptel.iitm.ac.in