Discrete Mathematics
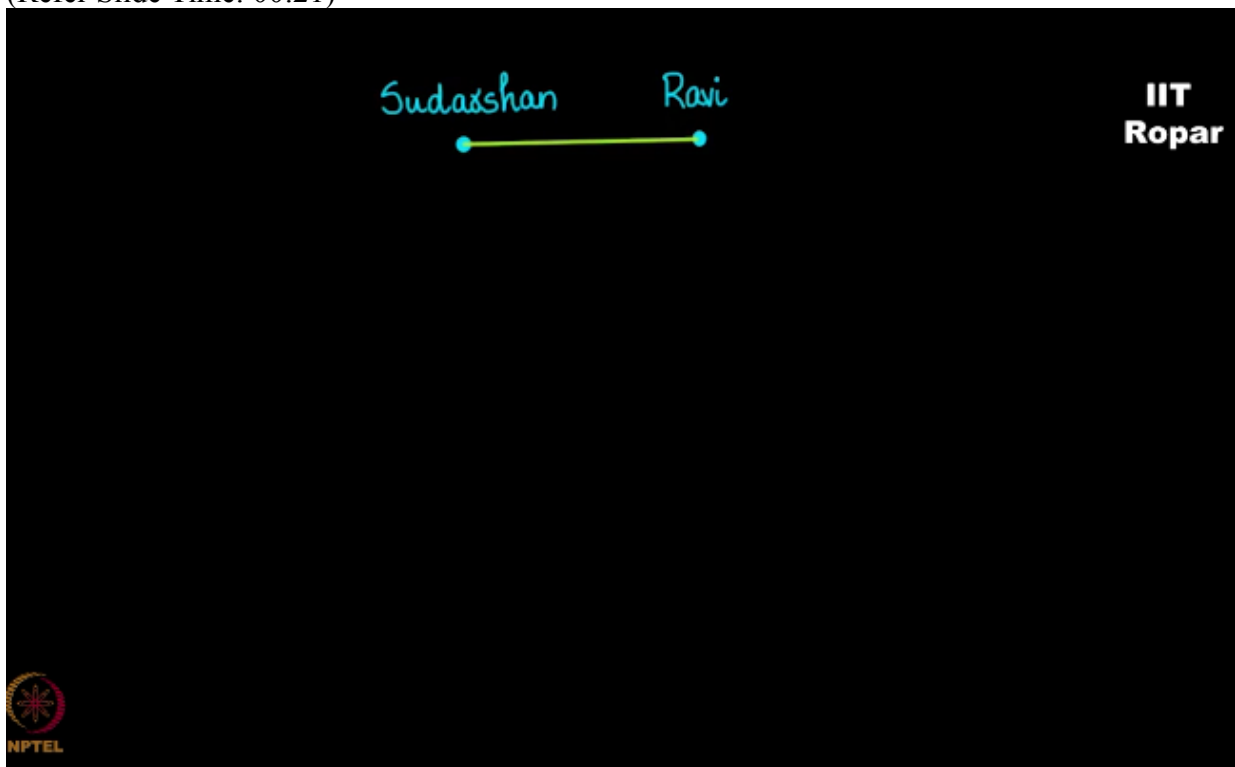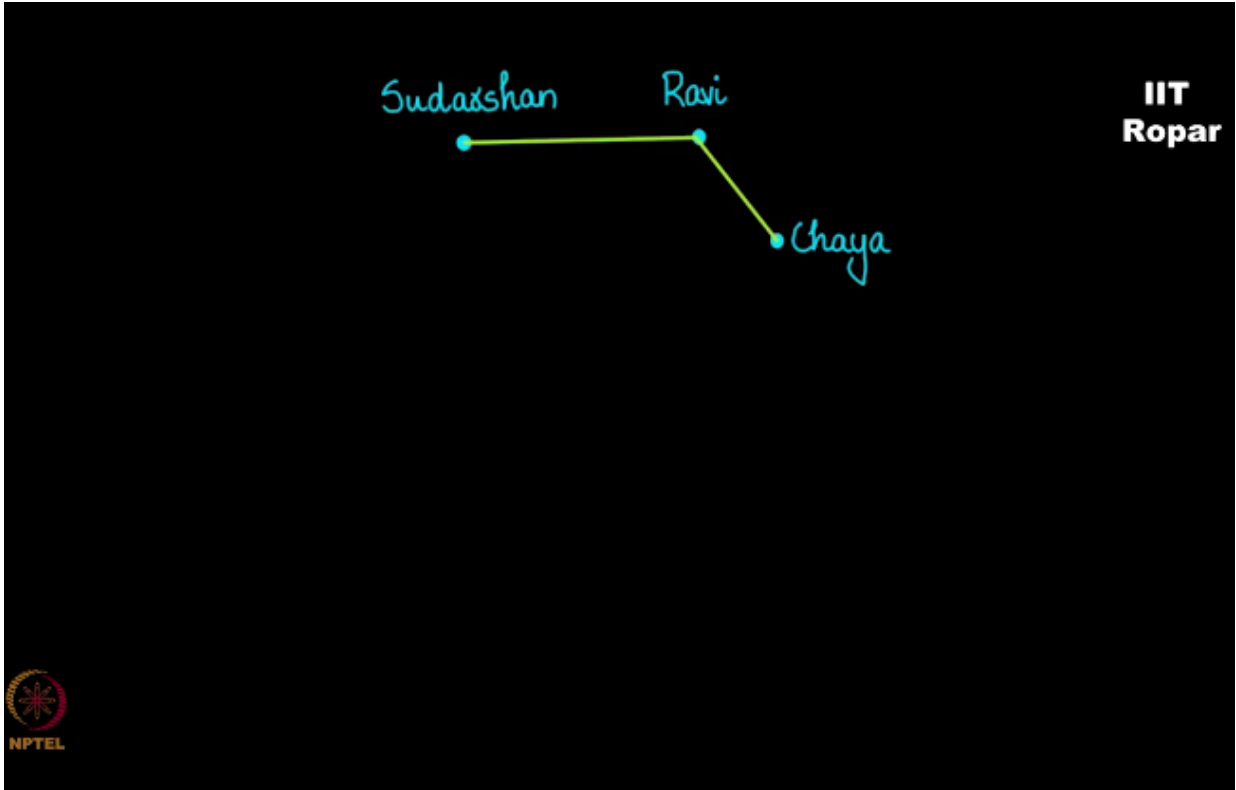**Graph Theory - 1**

Definition of Graph

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My name is Sudarshan, I have a friend called Ravi, so I'll represent myself as Sudarshan a node and I'm friends with Ravi which means I'll put a line between me and Ravi, line represents friends,
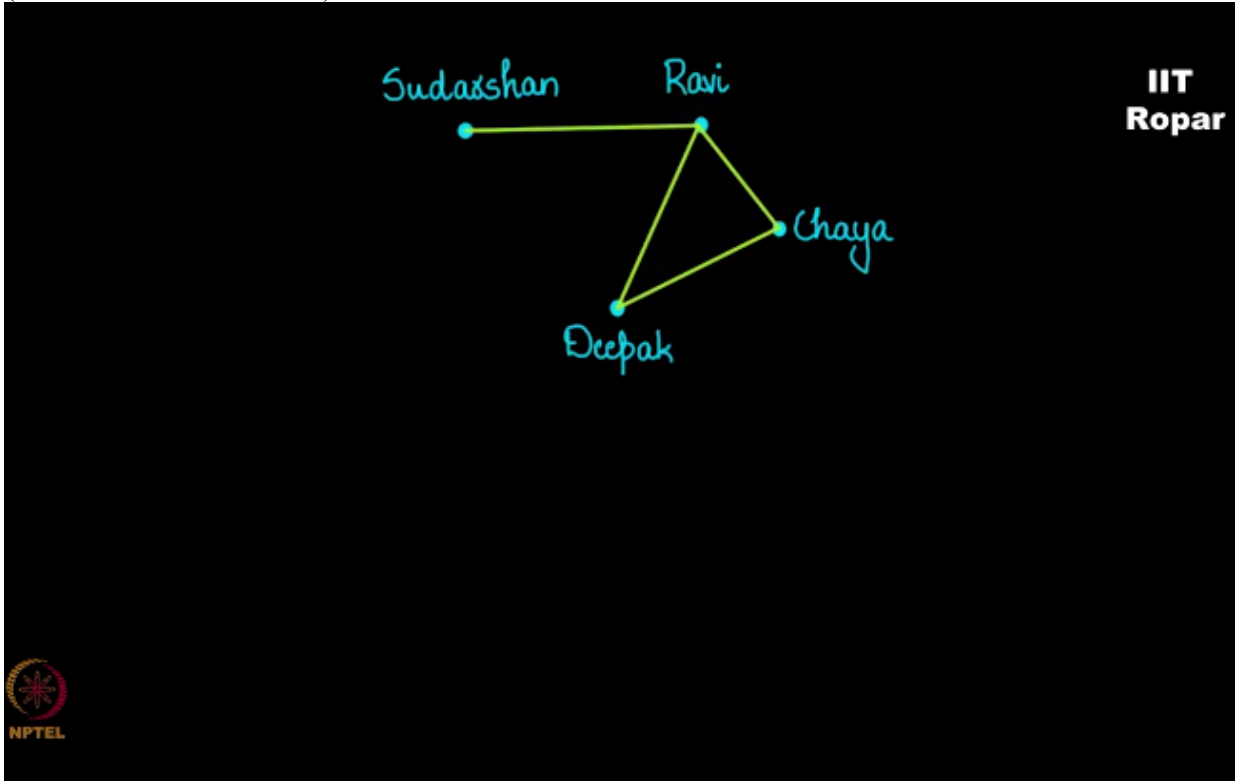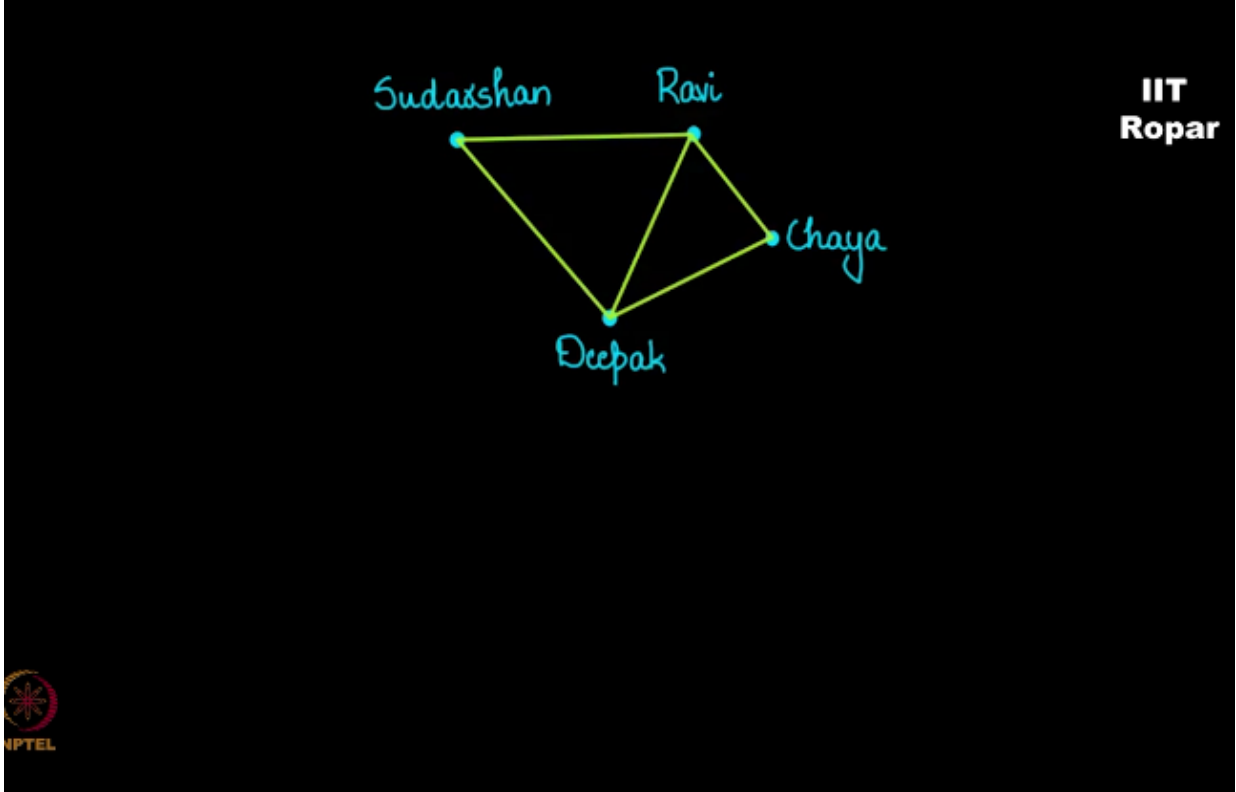(Refer Slide Time: 00:21)

and Ravi joins a company and he meets this new friend called Chaya,
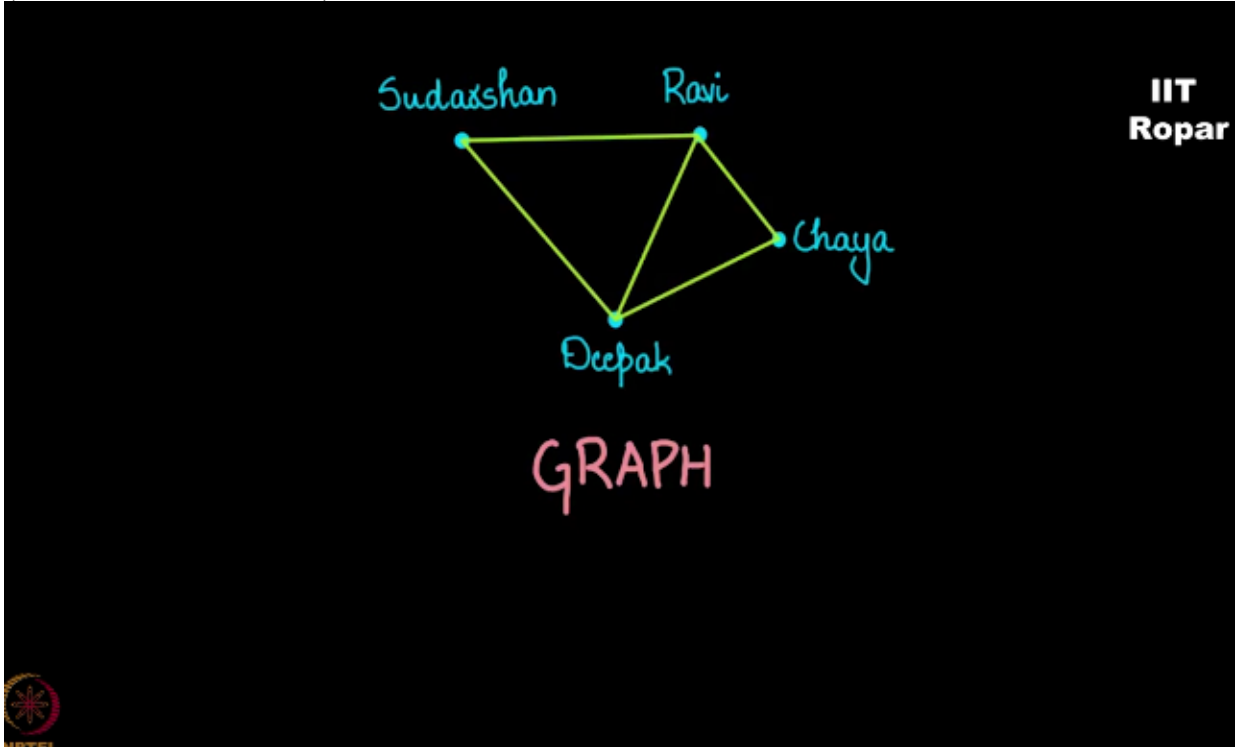(Refer Slide Time: 00:29)

and he realizes that he answer him and Chaya both know this person called Deepak,
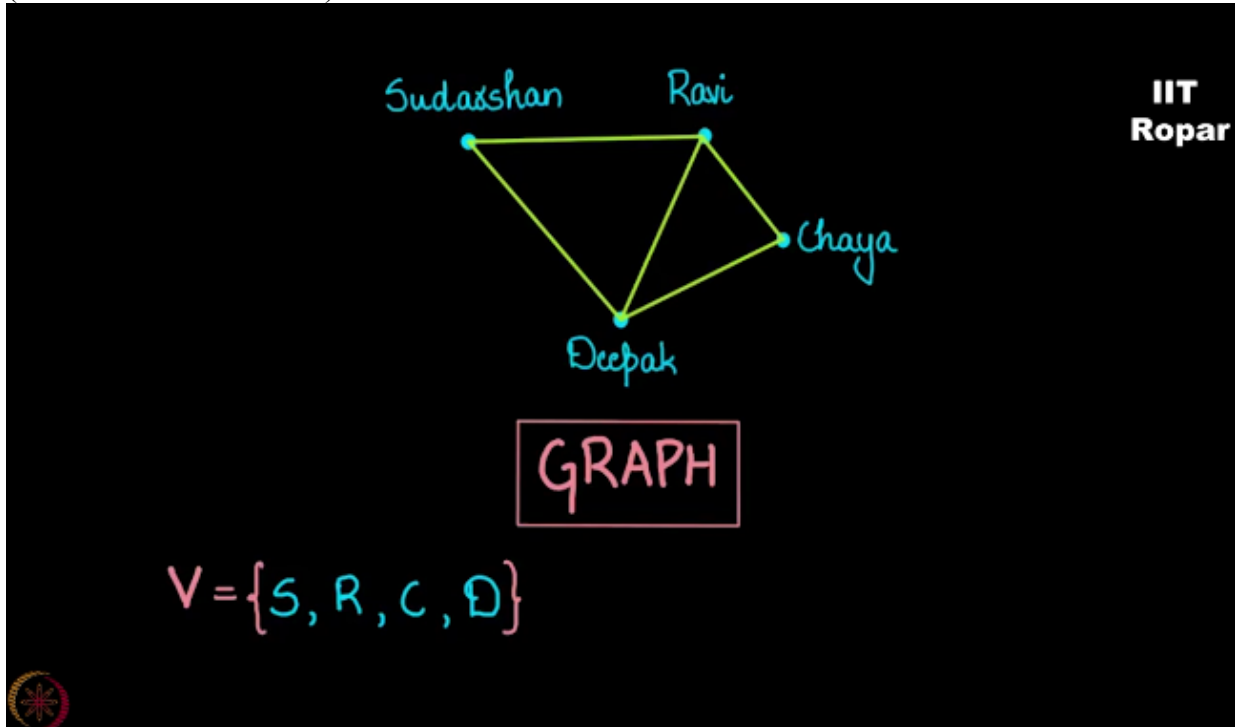(Refer Slide Time: 00:35)

and it so happens that even Sudarshan knows him,
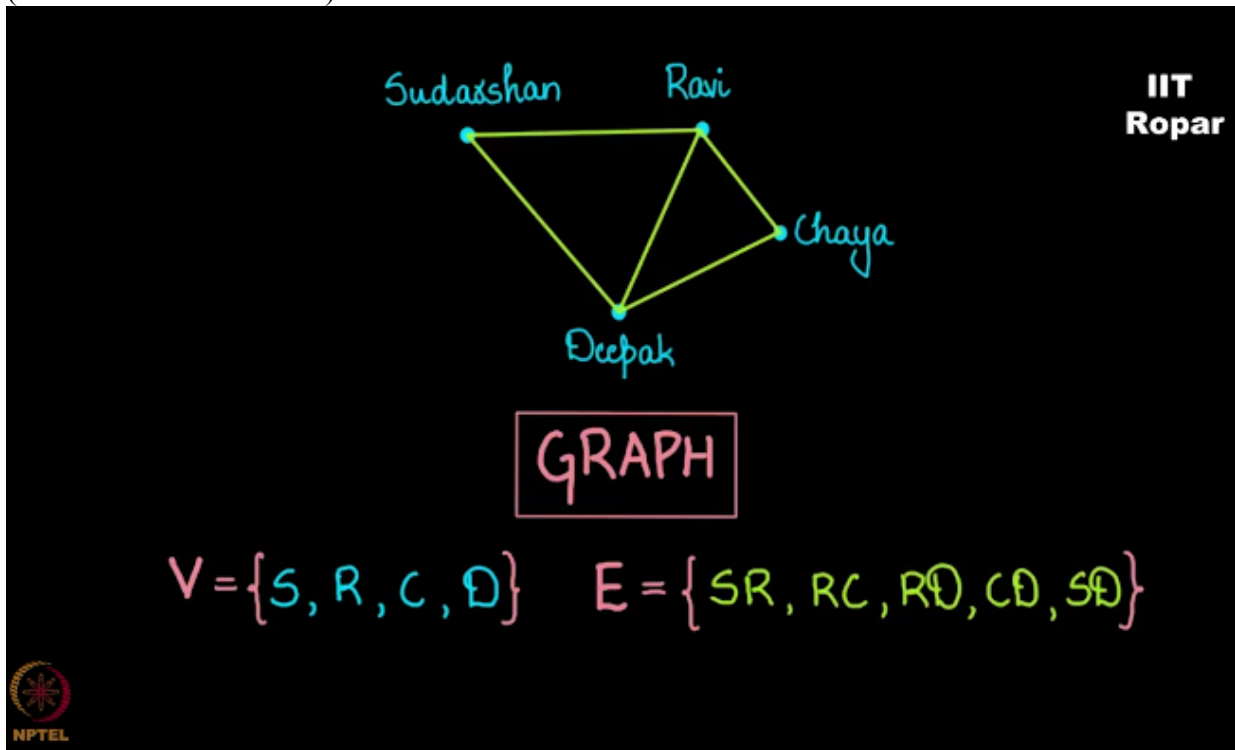(Refer Slide Time: 00:39)

do you see I have represented the friendships between these four people by points and lines, this is what we call a graph.
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A graph with nodes represented by V, let me write that down, Sudarshan let me simply write S for Sudarshan, R for Ravi, C for Chaya and D for Deepak,
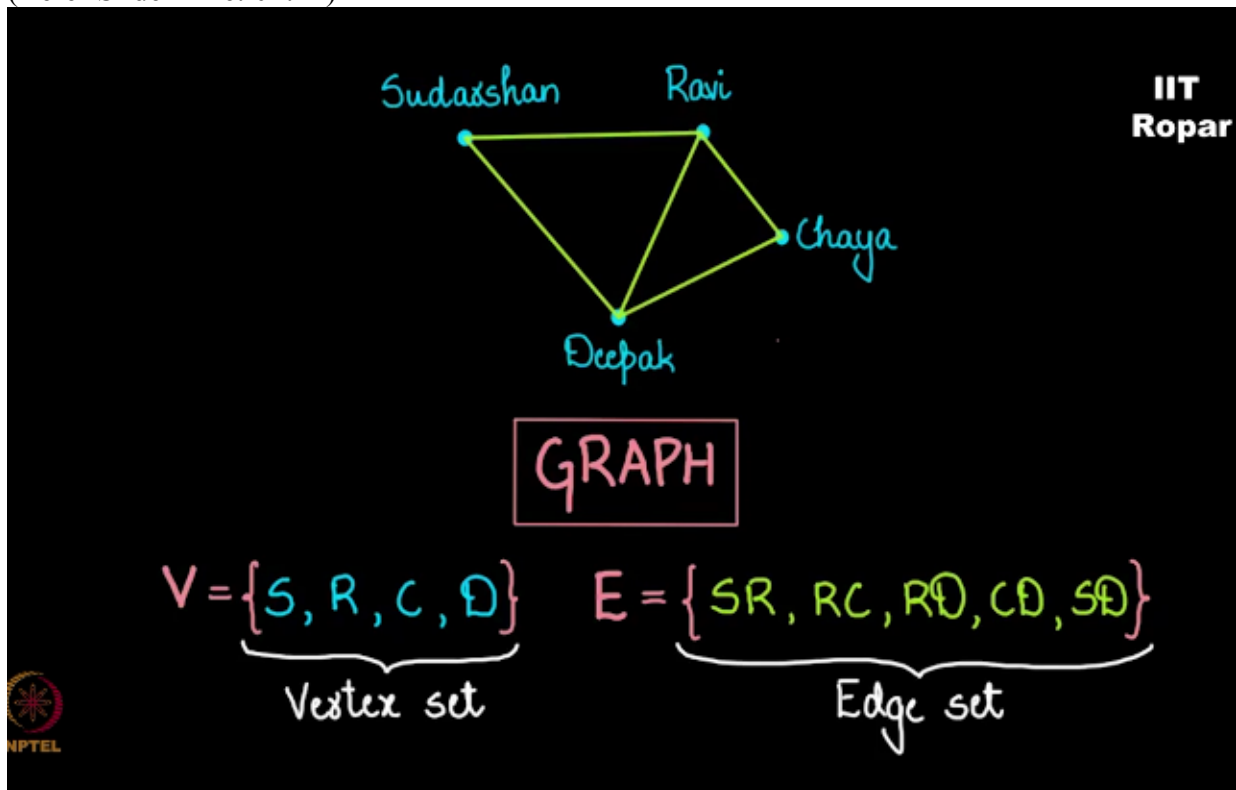(Refer Slide Time: 01:08)

and I will write another set E which is SR, you know, what I mean, RC, RD, CD, and SD,
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so these five things that I've written here represents 5 lines here, of course SR and RS are the same, because in friendship when S is friends with R, R by default is also friends with S, the first one is called a vertex set, and the second one the edge set,
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by a graph G we mean the vertex set and the edge sets, given the vertex set there can be any number of possible edge sets that you can think of,
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$$G = (V, E)$$

Given a vertex set, there can be any number of edge sets.

although finitely many it will actually be many possibilities, fine.

So now you know what's a graph if it sounds a little abstract don't worry the entire chapter for the next, let's say 4 to 5 hours we will be discussing only the structure called a graph, it will become very explicitly clear to you as we proceed.

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