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NPTEL ONLINE CERTIFICATION COURSE

Discrete Mathematics
Graph Theory - 2

Bipartite Graphs

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Vignesh, Arvind, John and Ali are four different people,
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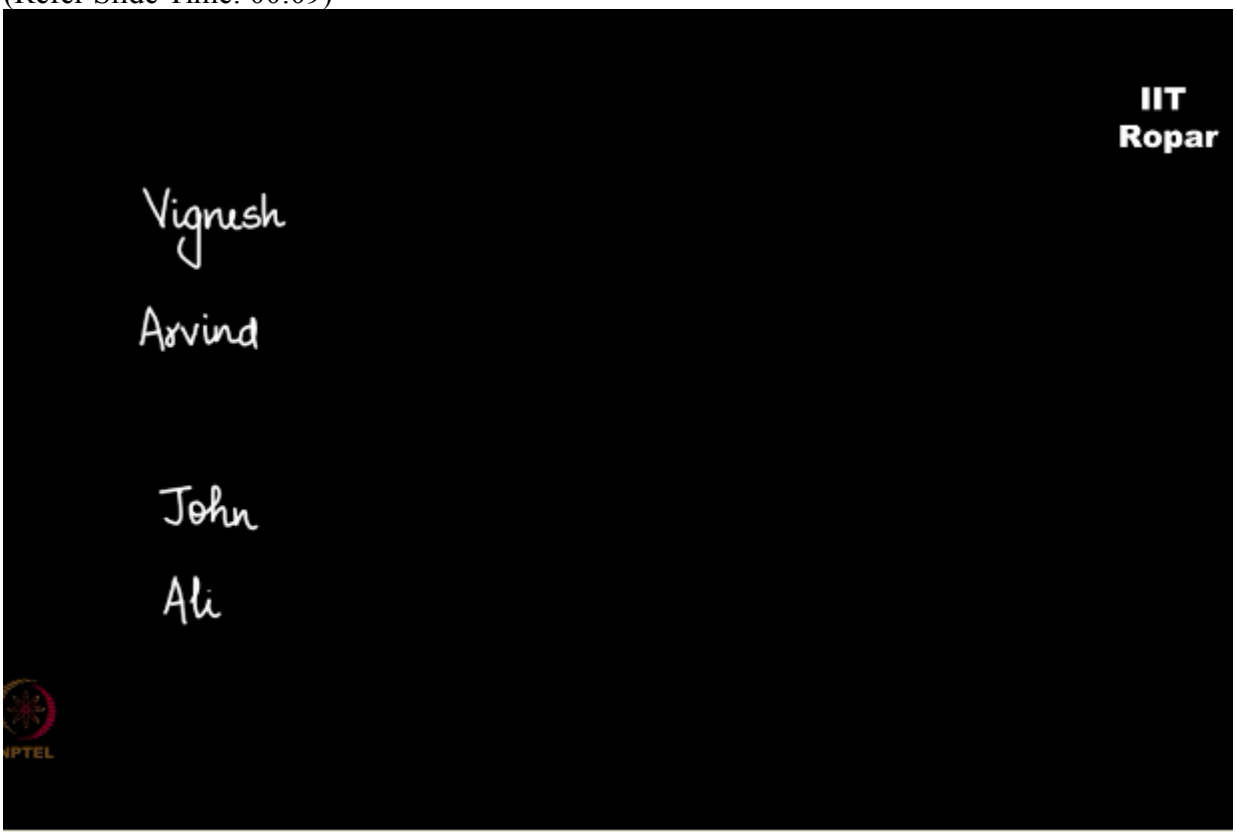

now let us look at what kind of movies they like, Vignesh likes Lord of the rings and The Jungle Book, Arvind likes Inception, Lord of the rings, The Jungle Book, and Spider-Man, John likes The Lord of the rings, and Ali likes Spider-man,
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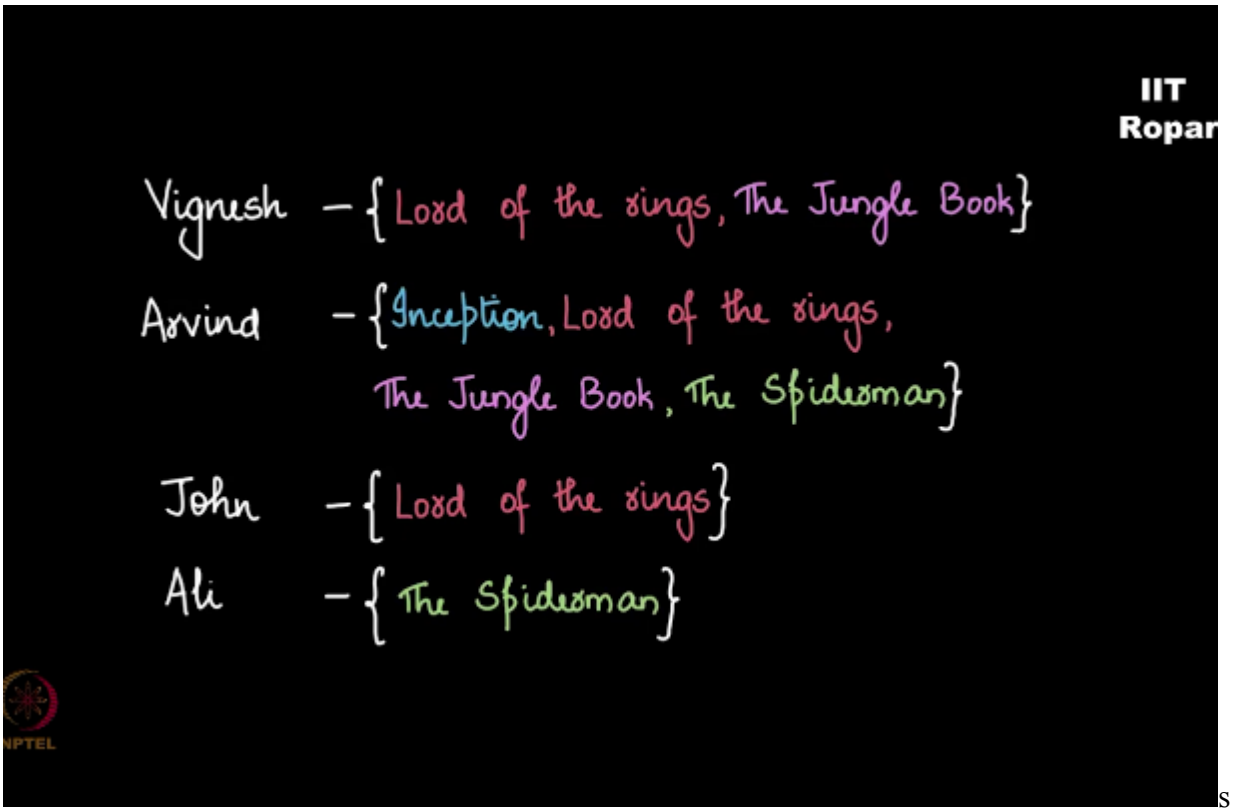

see these people are movie lovers and they have different taste, they like different types of movies, so if I were to capture this data I would write all the names of all the people on the left side, and then write the names of the movies in the right side and simply put lines between people and the movie,

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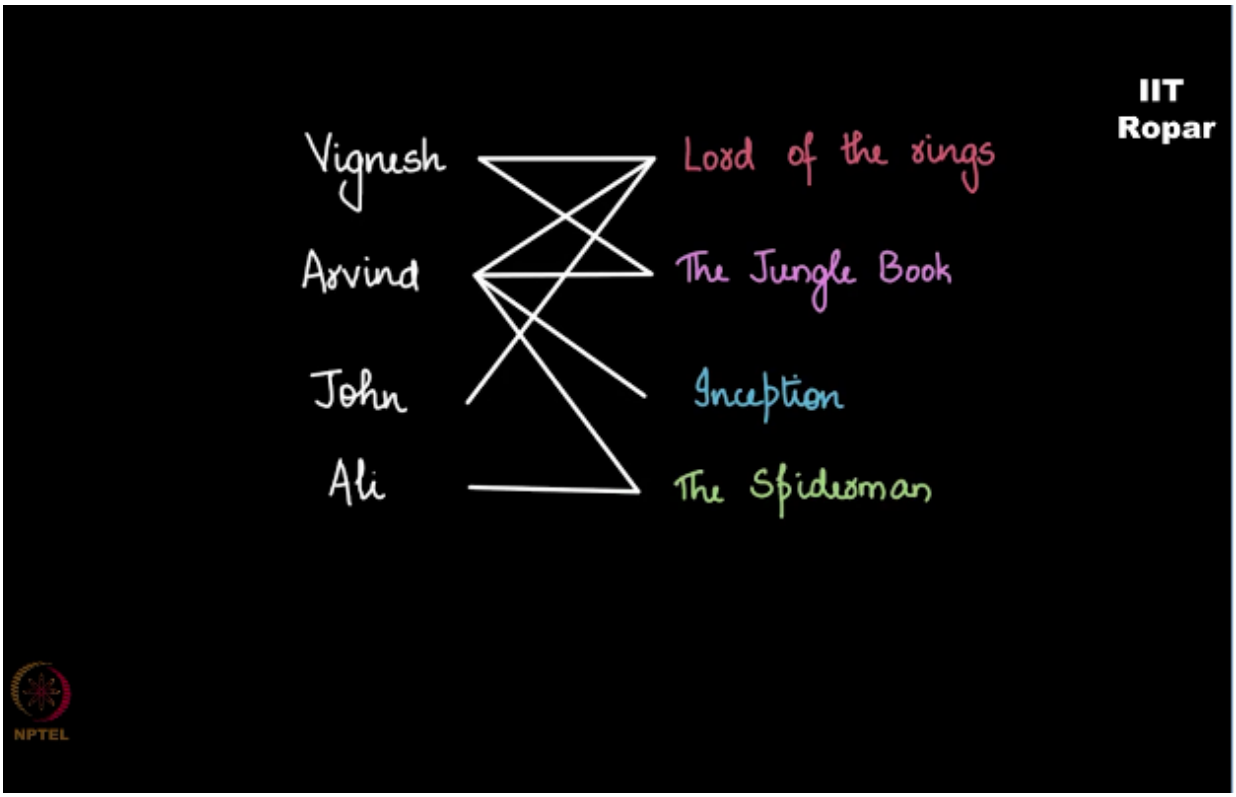

note that there is no reason why we should put an edge between people.

Similarly there is no reason why we should put edges between the movies as well, edges if any will be across people and the movie, such a graph is called a bipartite graph, the word bipartite means two partitions,
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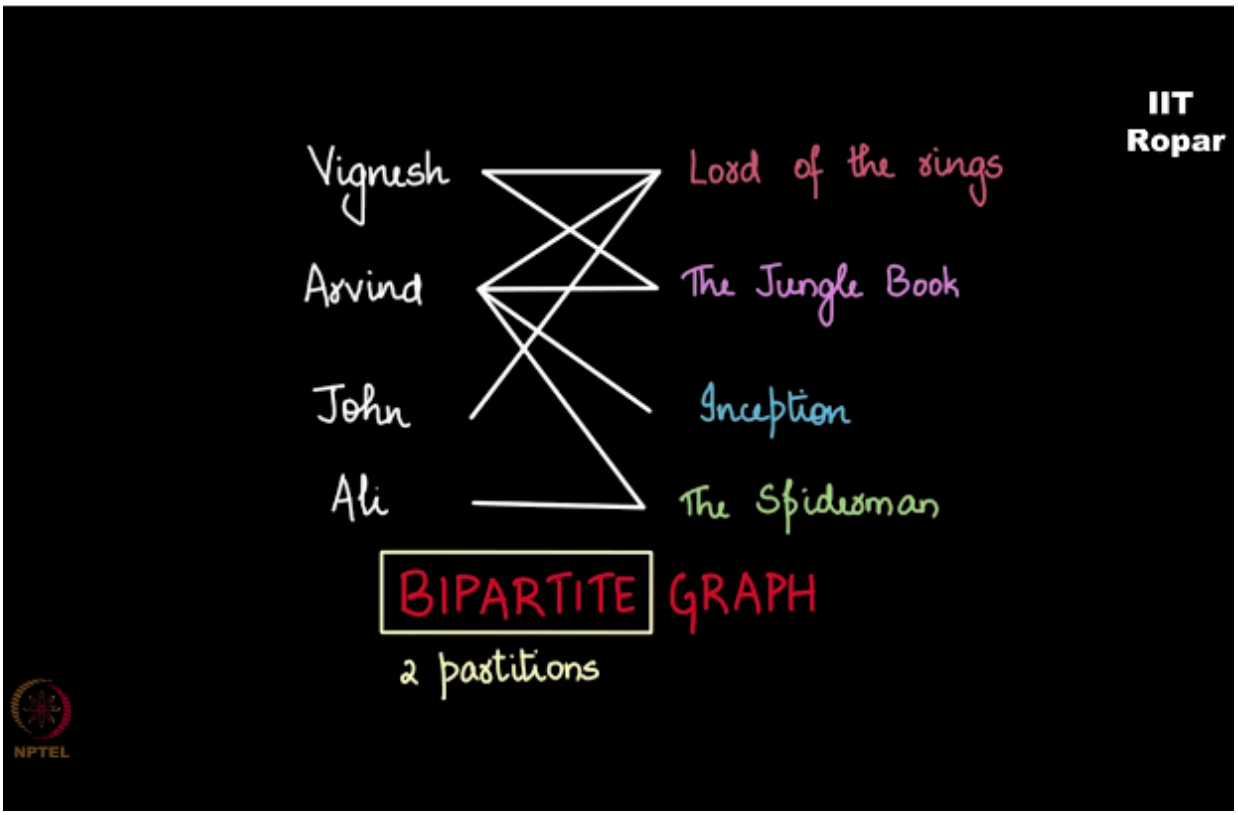

so in such a graph you will observe two partitions where edges will always be if any across, but never within these partitions, so any graph that can be written this way is called a bipartite graph, and it has a numerous applications and we will see them, we will see bipartite graphs visible to us in many walks of our life, there are several applications of this and in my personal experience one in three places that I see, I see a bipartite graph in real world.

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