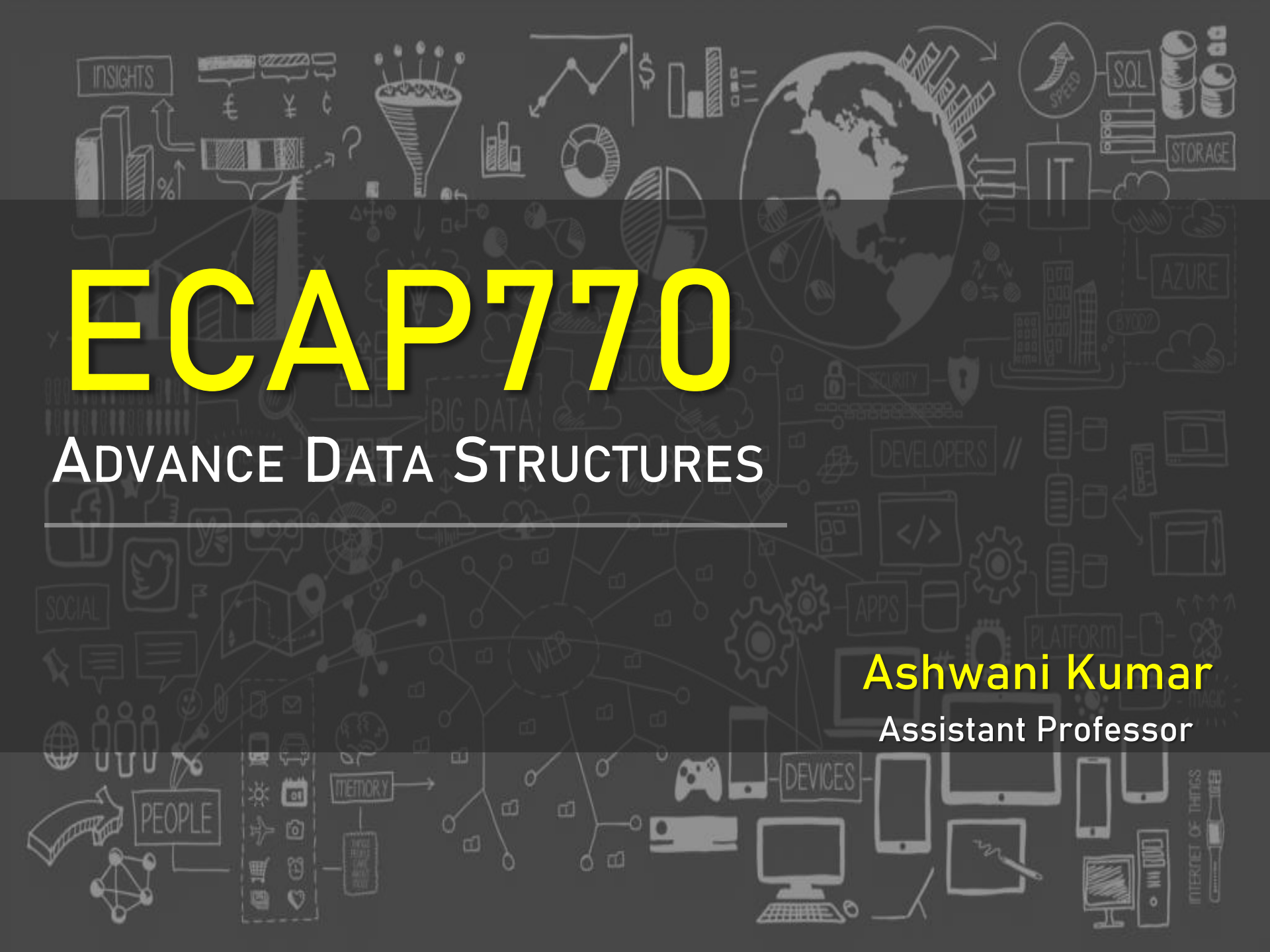

ECAP770

Advance Data Structures

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Assistant Professor

Learning Outcomes

After this lecture, you will be able to

- understand connected components

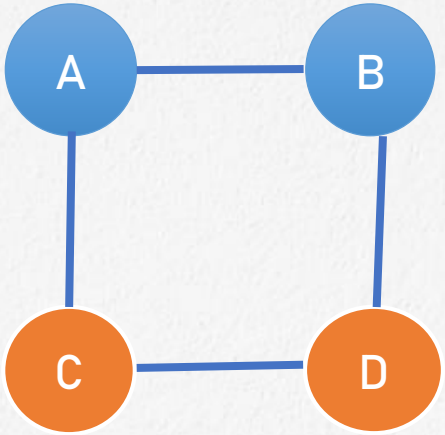
Connected Component

- Component of an undirected graph is a sub graph in which each pair of nodes is connected with each other via a path.
- Every vertex of the graph lies in a connected component that consists of all the vertices that can be reached from that vertex, together with all the edges that join those vertices.

Connected Component

- We can use traversal algorithm, depth-first or breadth-first, to find the connected components of an undirected graph.

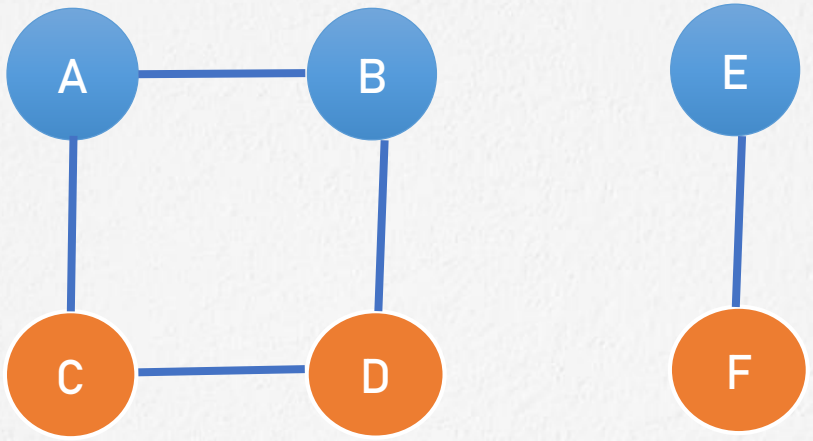
Connected Component



A is reachable to D via: A - B - D , A – C – D

B is reachable to C via: B – A – C , B – D - C

Connected Component



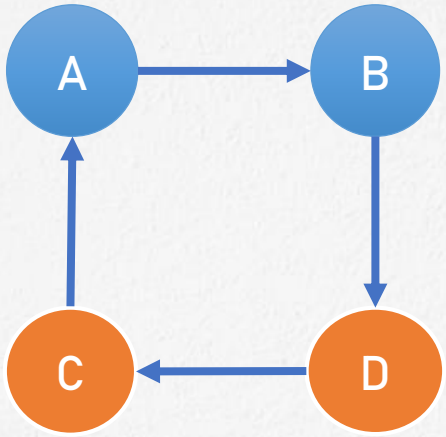
G1 G2

Two connected component G1 and G2

Strongly Connected Component

- For a directed graph, A strongly connected component has a directed path between any two nodes.

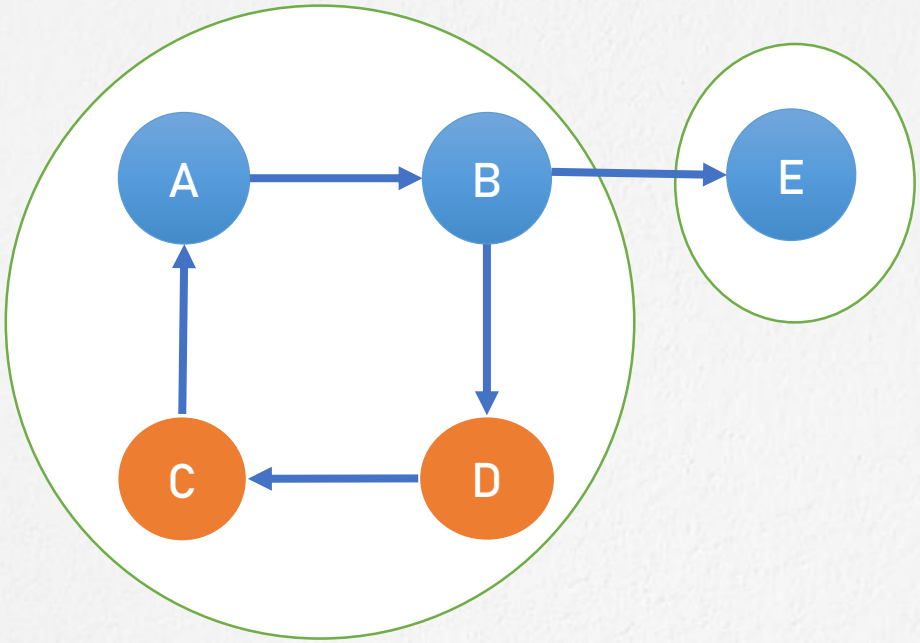
Strongly Connected Component



A is reachable to D via: A - B - D

B is reachable to C via: B – D - C

Strongly Connected Component



A is reachable to E via: A - B – E

Two strongly connected components

That's all for now...