



DATA STRUCTURES AND ITS APPLICATIONS

Graphs

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Representation of Network Topology

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Applications: Network Topology

Graph data structure is mainly in Computer Networks, Telecommunication, Electronic Circuits and Transport Networks.

Networking uses the Notation $G(N,L)$ instead of $G(V,E)$ for a graph where N is the set of nodes and L is the set of links.



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Applications: Network Topology

- Topology is the order in which nodes and edges are arranged in the network.
- How the computers are connected or related to one another in a computer.
- There are 2 types of Topology
 1. Physical
 2. Logical



DATA STRUCTURES AND ITS APPLICATIONS

Applications: Network Topology

- 1. Ring Topology
- 2. Star Topology
- 3. Mesh Topology
- 4. Bus Topology



DATA STRUCTURES AND ITS APPLICATIONS

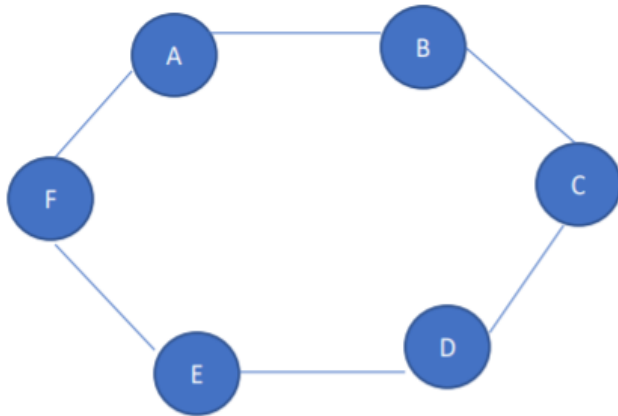
Representation of Graph

1.Adjacency Matrix

2.Adjacency List



1. Ring topology (cycle): A cycle graph is a simple graph which has two degrees of vertices.

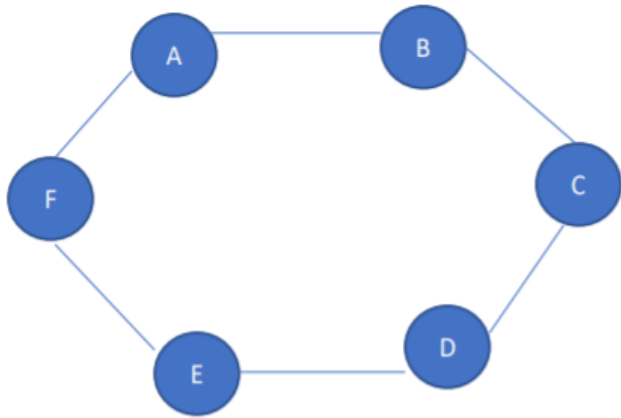


Ring topology

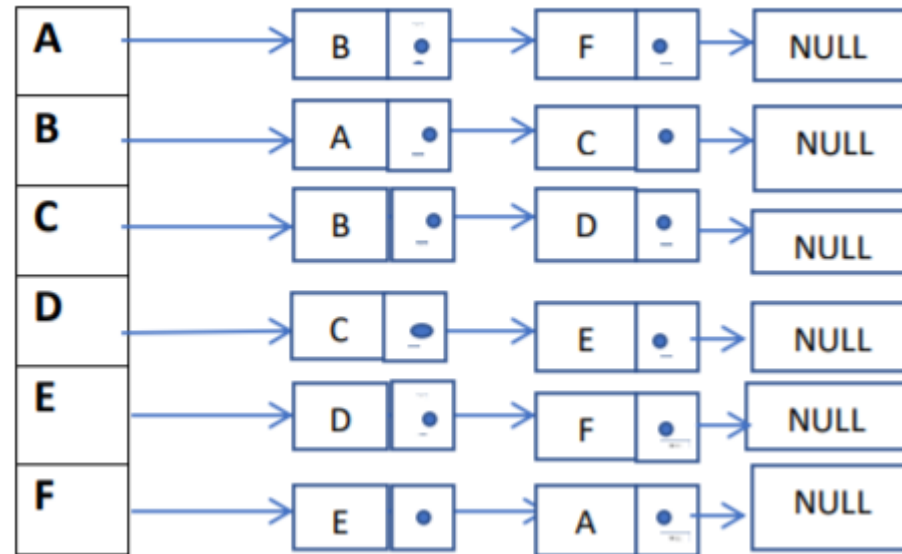
	A	B	C	D	E	F
A	0	1	0	0	0	1
B	1	0	1	0	0	0
C	0	1	0	1	0	0
D	0	0	1	0	1	0
E	0	0	0	1	0	1
F	1	0	0	0	1	0

DATA STRUCTURES AND ITS APPLICATIONS

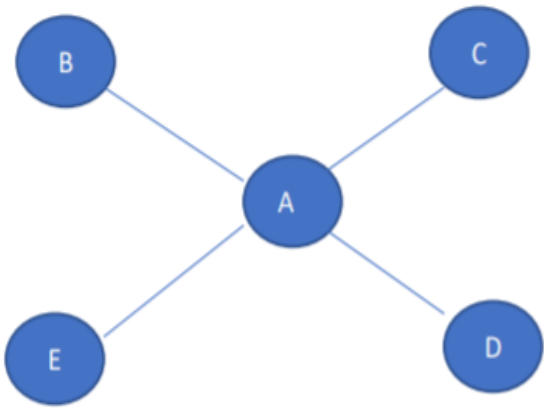
Applications: Network Topology



Ring topology

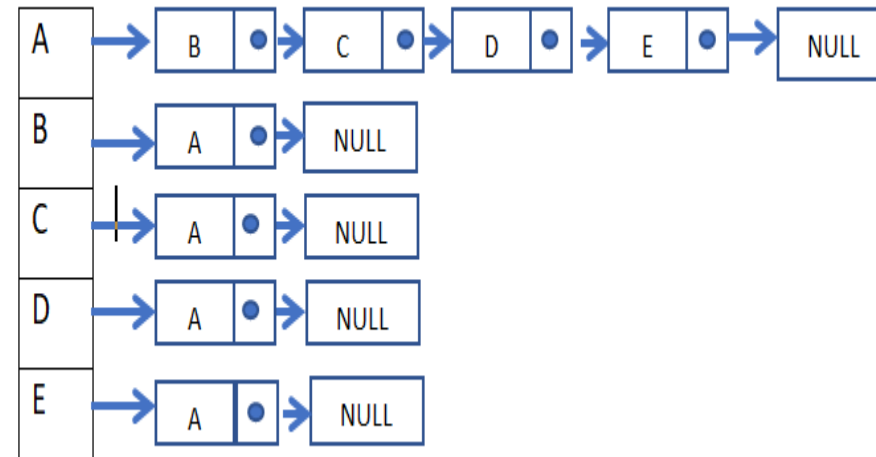


2. Star topology: Star topology is a network topology in the form of merging from the central vertex to each vertex .

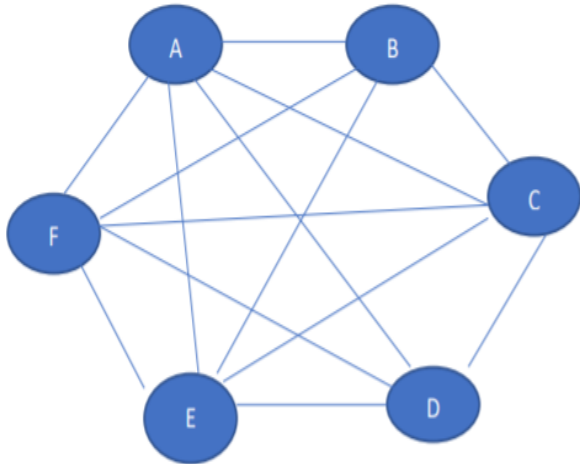


Star topology

	A	B	C	D	E
A	0	1	1	1	1
B	1	0	0	0	0
C	1	0	0	0	0
D	1	0	0	0	0
E	1	0	0	0	0



3.Mesh topology: Mesh Topology is a complete graph in which all the vertex is connected to all other vertices

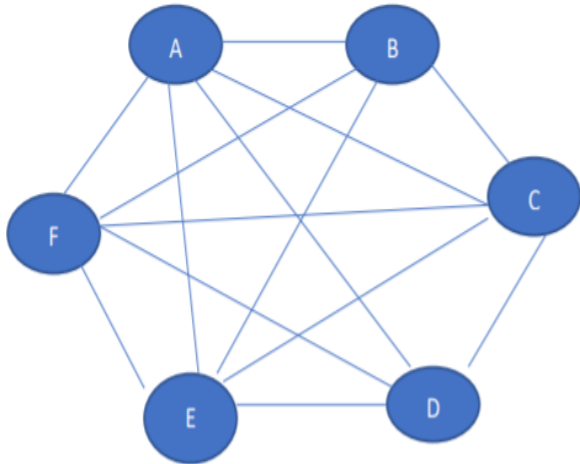


Mesh Topology

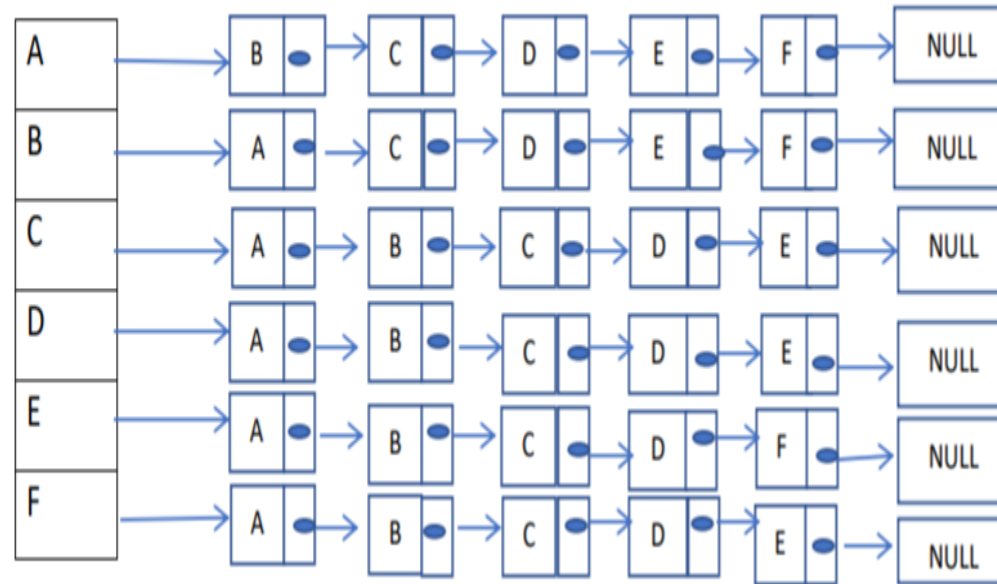
	A	B	C	D	E	F
A	0	1	1	1	1	1
B	1	0	1	1	1	1
C	1	1	0	1	1	1
D	1	1	1	0	1	1
E	1	1	1	1	0	1
F	1	1	1	1	1	0

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Applications: Network Topology

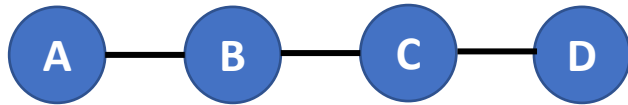


Mesh Topology



A Graph G with V vertices is said to represent a bus topology if

1. Every node except the starting and ending node has degree 2 and starting and ending node have degree 1.
2. Number of edges = Number of vertices - 1

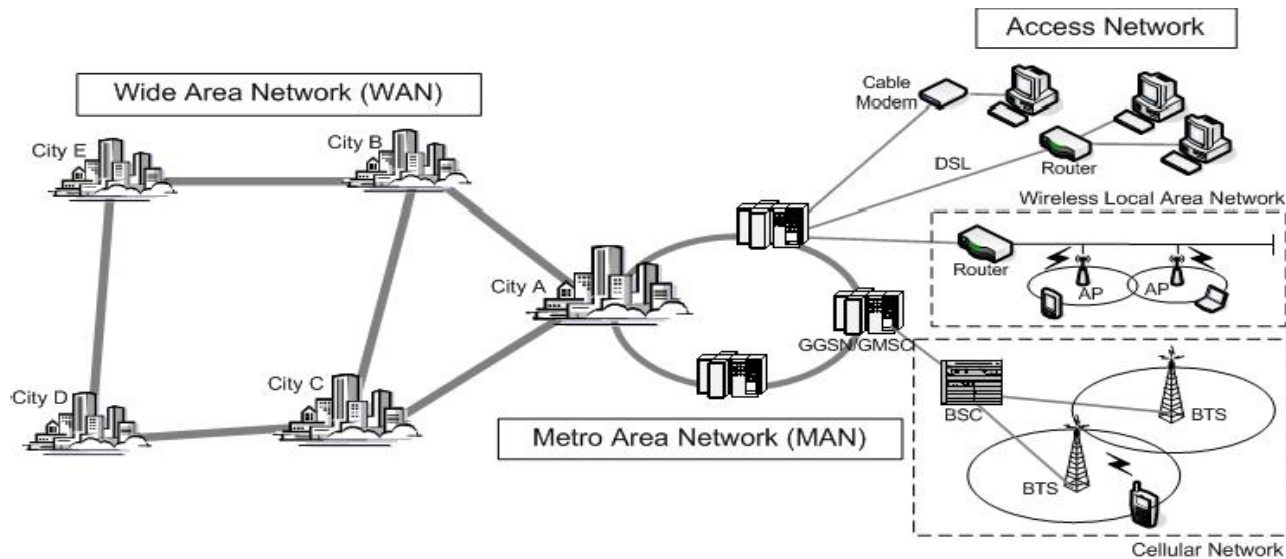


	A	B	C	D
A	0	1	0	0
B	1	0	1	0
C	0	1	0	1
D	0	0	1	0

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Applications: Network Topology

Most networks a mix of rings, mesh – depending on network type, cost/traffic/reliability





THANK YOU

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