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MSA, PMOC, PMP®, PMP®, PMP-REP®, CS, ITIL®, MCPD, MCD



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مهم جداً

هذا الملف للمراجعة السريعة واخذ الملاحظات عليه فقط ،لانه يحتوي على اقل من 20٪ مما يتم شرحه في الفيديوهات الاستعجال والاعتماد عليه فقط سوف يجعلك تخسر كميه معلومات وخبرات كثيره

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Algorithms & Problem Solving Level 6

What is Graph?

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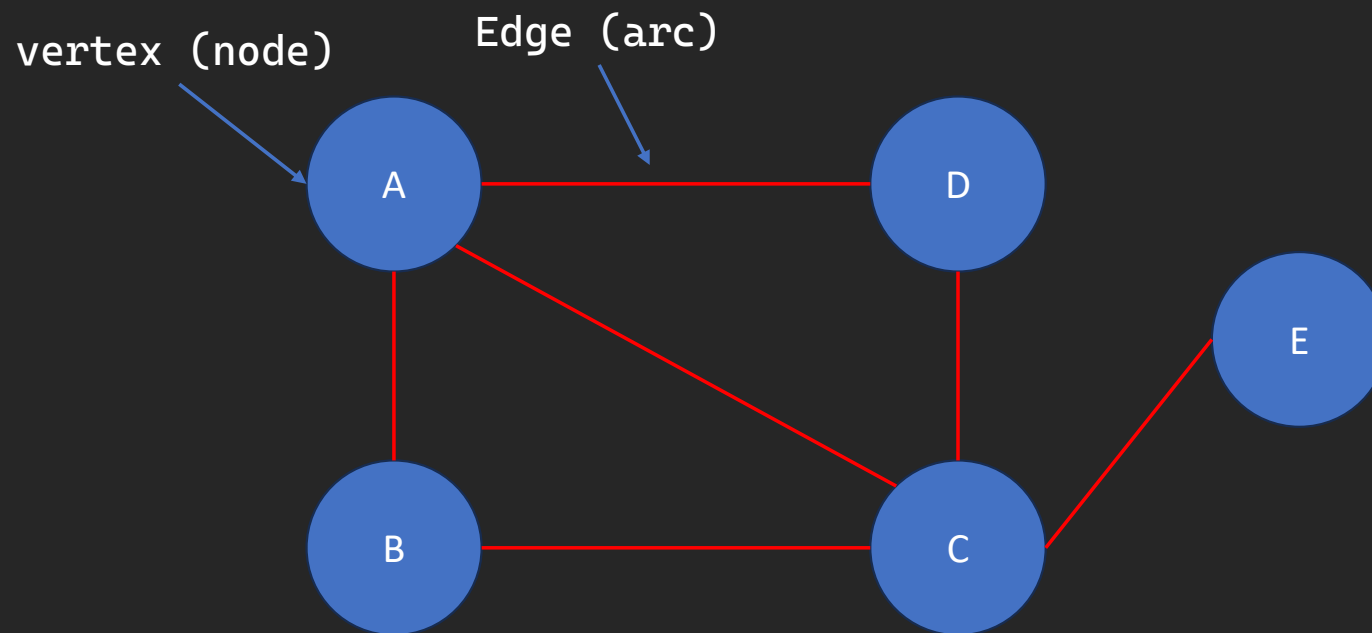
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What is Graph?

Is non-linear data structure that contains ...



Adjacency:

- A : B,D,C
- B : A,C
- C : A,B,D,E
- D : A,C
- E : C

Path from A to E:

- P1: A,D,C,E
- P2: A,B,C,E
- P3: A,C,E
- P4: A,D,C,A,D,C,E (Cycle)
- Others..

What is Graph?

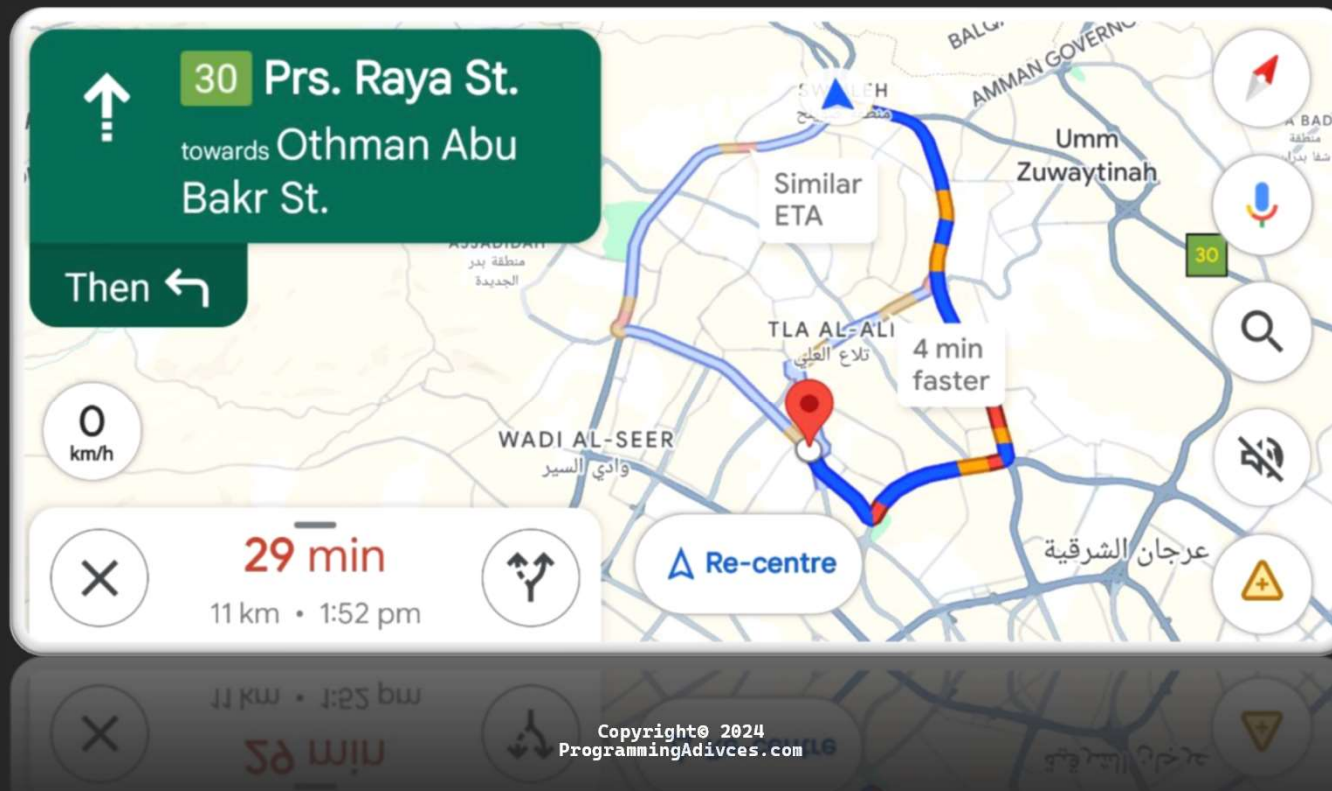
- A Graph is a non-linear data structure that consists of vertices (nodes) and edges.
- A graph is a data structure that models relationships between different objects.
- In a graph, objects are represented as nodes (or vertices), and the connections between these objects are called edges (or arcs).

Basic Terminology:

- Vertex (Node): A point in the graph where edges meet. Vertices are the fundamental units of the graph.
- Edge (Connection): A line connecting two vertices in the graph, indicating a relationship between them. An edge can have an optional weight that represents the cost, distance, or any measure of connection between two nodes.
- Adjacency: A vertex is said to be adjacent to another vertex if there is an edge connecting them.
- Path: A sequence of edges connecting a series of vertices.
- Cycle: A path that starts and ends at the same vertex, with all edges distinct.

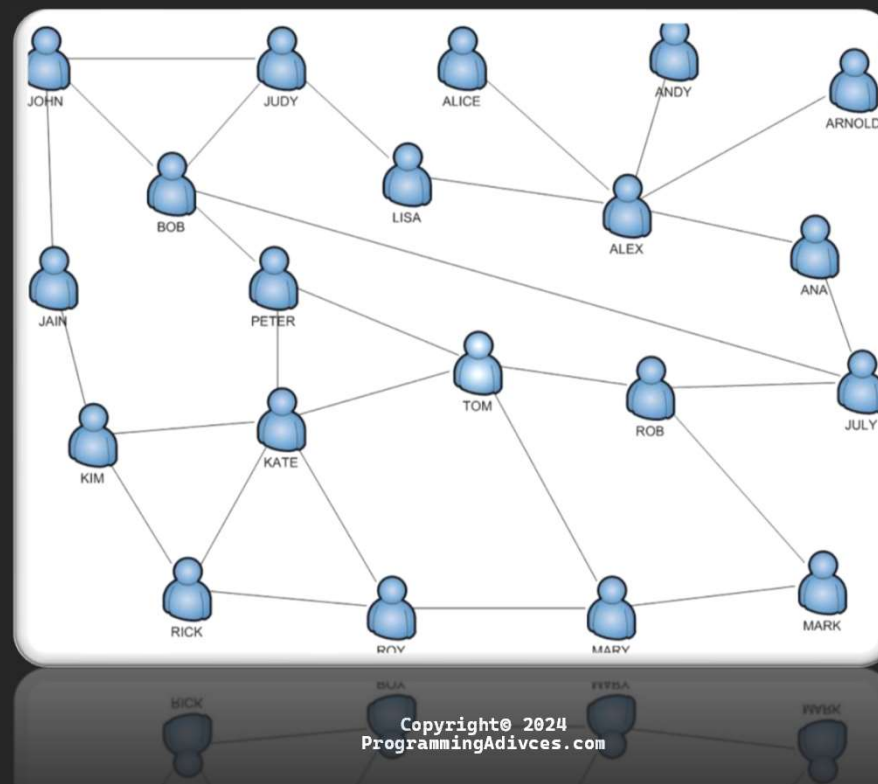
Applications of Graphs:

- Maps and Navigation: Locations (vertices) are connected by roads (edges) with distances or travel times (weights).



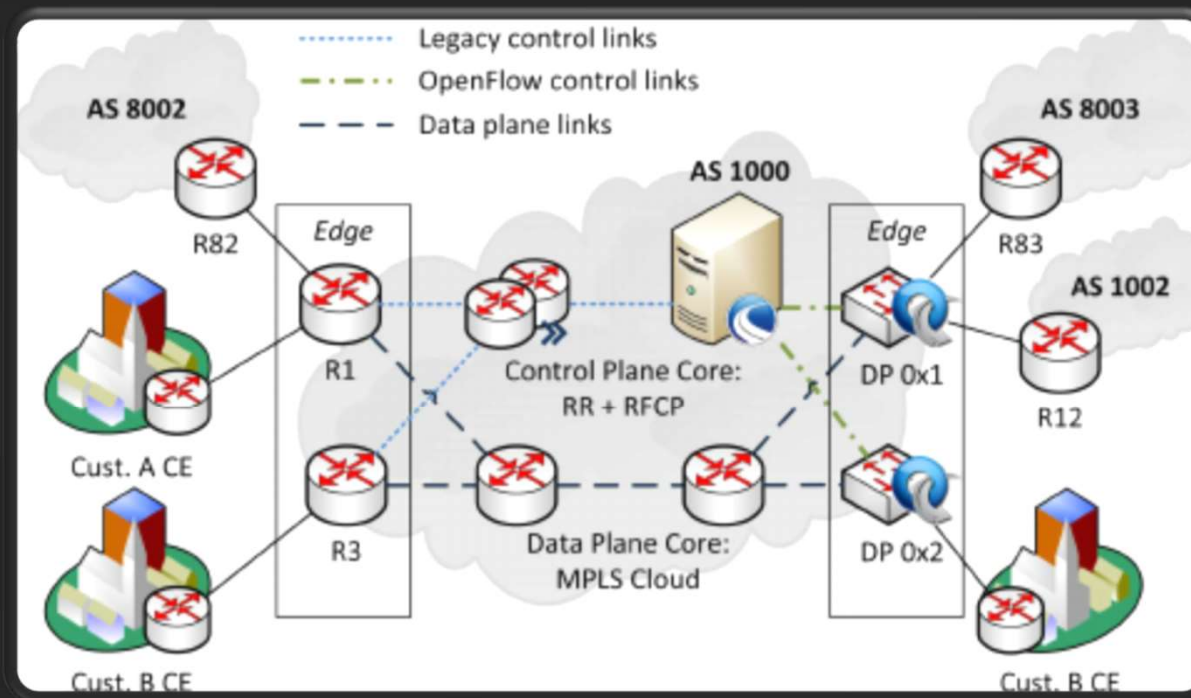
Applications of Graphs:

- Social Networks: Graphs can represent relationships between people. Users (vertices) are connected if they are friends (edges).



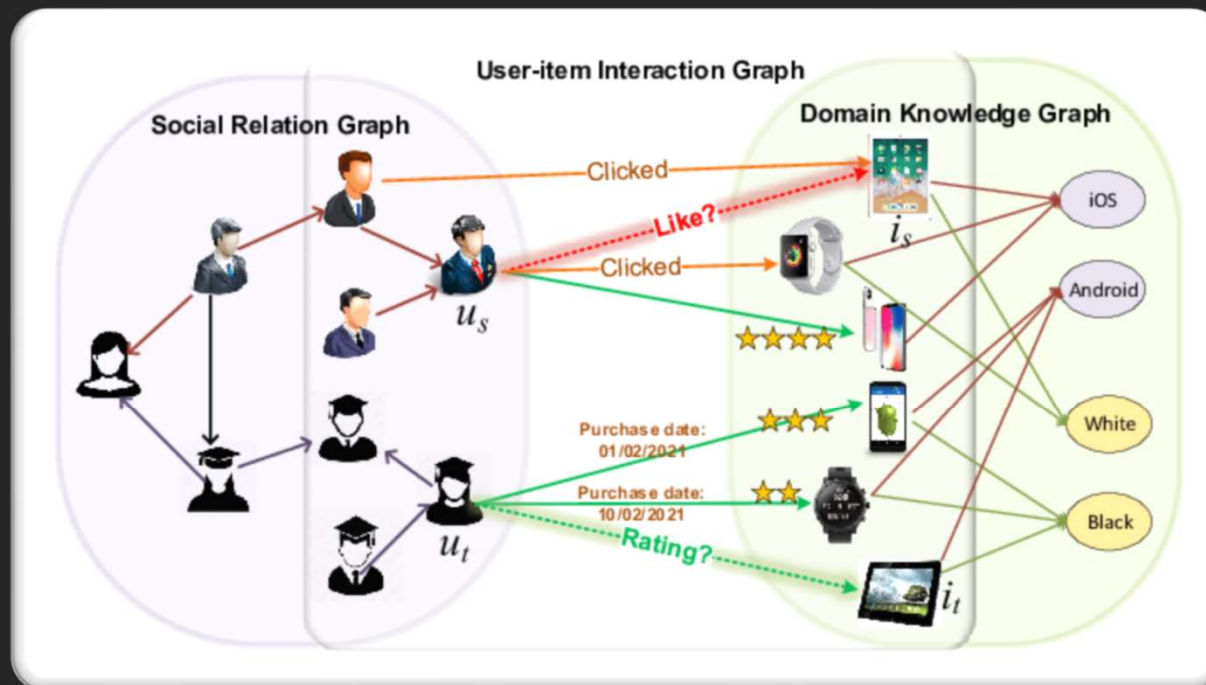
Applications of Graphs:

- Computer networks: Graphs can represent the connections between computers.



Applications of Graphs:

- Recommendation Systems: Items (vertices) connected to users (edges) based on interactions.



Applications of Graphs:

- **Real-World Applications of Graphs**
 - **Maps and Navigation:** Locations (vertices) are connected by roads (edges) with distances or travel times (weights).
 - **Social Networks:** Graphs can represent relationships between people. Users (vertices) are connected if they are friends (edges).
 - **Computer networks:** Graphs can represent the connections between computers.
 - **Internet Routing:** Routers (vertices) and the connections between them (edges) determine the best path for data to travel.
 - **Recommendation Systems:** Items (vertices) connected to users (edges) based on interactions.
 - **Transportation networks:** Graphs can represent roads, railways, and flight routes.



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Thank You

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