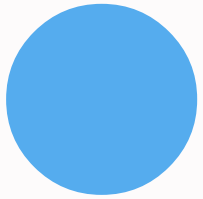
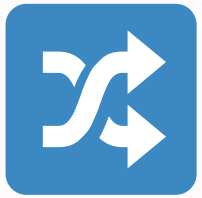
🌐 What is a Graph?

- A graph is a data structure used to represent relationships between different entities.
- It consists of nodes (called vertices) connected by links (called edges).
- Graphs are used to model real-world networks like roads, social connections, and computer networks.



Vertices & Edges

- Vertices (Nodes) represent entities or objects.
- Edges represent the connections or relationships between vertices.
- An edge can connect two different vertices or the same vertex to itself (loop).



Directed vs Undirected Graph

- Directed Graph: Edges have a direction (one-way connection).
- Example: Instagram follow system.
- Undirected Graph: Edges have no direction (two-way connection).
- Example: Facebook friendship.

⚖️ Weighted vs Unweighted Graph

- **Weighted Graph:** Each edge has a value (weight), such as cost, distance, or time.
- **Example:** Road maps with distances.
- **Unweighted Graph:** All edges are treated equally with no weight.
- **Example:** Simple social connections.

🌍 Real Life Examples of Graphs

- **Maps:** Cities are vertices, roads are edges, distance is weight.
- **Social Media:** Users are vertices, friendships/followers are edges.
- **Computer Networks:** Devices are vertices, data connections are edges.