

# Title

## Subtitle

Institute Name  
Institute Address

February 4, 2024

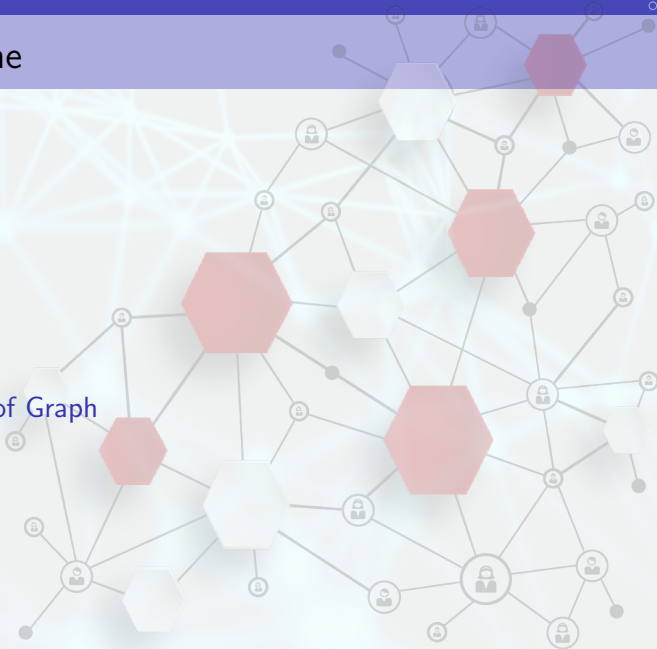
**Submitted By :**  
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**Submitted To :**  
Submitted To

# Outline

① Intro

② Types of Graph



## Introduction to Graphs (1/2)

- A Graph is a non-linear data structure consisting of vertices and edges.
- The **Vertices** are sometimes also referred to as nodes and the **Edges** are lines or arcs that connect any two nodes in the graph.

### More formally

A Graph is composed of a set of vertices  $V$  and a set of edges  $E$ .

The graph is denoted by  $G(V,E)$ .

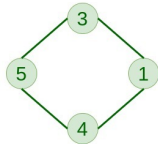
## Introduction to Graphs (2/2)

- Graph data structures are a powerful tool for representing and analyzing complex relationships between objects or entities.
- They are particularly useful in fields such as social network analysis, recommendation systems, and computer networks.
- In the field of sports data science, graph data structures can be used to analyze and understand the dynamics of team performance and player interactions on the field.

# Types of Graph (1/2)

## Undirected Graph

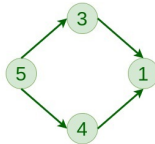
A graph in which edges do not have any direction.



Undirected Graph

## Directed Graph

A graph in which edge has direction.



Directed Graph



## Types of Graph (2/2)

### Complete Graph

A graph in which every pair of distinct nodes is connected by an edge

### Forest

A collection of trees or disjoint tree-like structures within a graph

### Tree

A special case of an acyclic graph in which there is a single root node, and every other node is connected by exactly one edge.