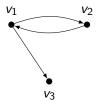
Graph Theory-Class 4

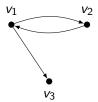
ightharpoonup a finite nonempty set V of points together with,

- ightharpoonup a finite nonempty set V of points together with,
- ▶ a prescribed collection *E* of ordered pairs of distinct points.

- ightharpoonup a finite nonempty set V of points together with,
- ▶ a prescribed collection *E* of ordered pairs of distinct points.

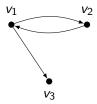


- ▶ a finite nonempty set *V* of points together with,
- ▶ a prescribed collection *E* of ordered pairs of distinct points.



The elements of *E* are **directed lines** or **arcs**.

- \triangleright a finite nonempty set V of points together with,
- ▶ a prescribed collection *E* of ordered pairs of distinct points.

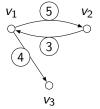


The elements of *E* are **directed lines** or **arcs**.

In above graph $E = \{(v_1, v_2), (v_2, v_1), (v_1, v_3)\}.$

A **weighted graph** is a graph where each edge is assigned a numerical value, called a weight.

A **weighted graph** is a graph where each edge is assigned a numerical value, called a weight.



Let G be a directed graph (digraph) with p vertices.

Let G be a directed graph (digraph) with p vertices. The **distance matrix** $D = (d_{ij})$ associated with G is defined as follows:

Let G be a directed graph (digraph) with p vertices. The **distance matrix** $D = (d_{ij})$ associated with G is defined as follows:

 $ightharpoonup d_{ij} = 0$, if i = j

Let G be a directed graph (digraph) with p vertices. The **distance matrix** $D = (d_{ij})$ associated with G is defined as follows:

- $ightharpoonup d_{ij} = 0$, if i = j
- ▶ $d_{ij} = \infty$, if there is no edge from v_i to v_j

Let G be a directed graph (digraph) with p vertices. The **distance matrix** $D = (d_{ij})$ associated with G is defined as follows:

- $ightharpoonup d_{ij} = 0$, if i = j
- ▶ $d_{ij} = \infty$, if there is no edge from v_i to v_j
- ▶ d_{ij} = weight/distance of the edge from v_i to v_j , if such an edge exists.

PLEASE REFER TO GRAPH THEORY NOTES FOR THE Dijkstra's algorithm.