**Bipartite Graph:**

A bipartite graph, also called a bigraph, is a set of graph vertices decomposed into two disjoint sets such that no two graph vertices within the same set are adjacent. A bipartite graph is a special case of a k-partite graph with .

**Special Note:**

A bipartite graph cannot have a cycle of odd length.

A bipartite graph can be colored using only two color.

**Hamiltonian Path, Hamiltonian Cycle, Hamiltonian Graph:**

A Hamiltonian path or traceable path is a path that visits each vertex of the graph exactly once.

Hamiltonian cycle is a cycle in an undirected graph is a path that visits each vertex exactly once. A Hamiltonian cycle (or Hamiltonian circuit) is a Hamiltonian Path such that there is an edge (in graph) from the last vertex to the first vertex of the Hamiltonian Path.

If A graph contains a hamiltonian cycle, that graph can be called as Hamiltonian path.

**Eularian Path And Eularian Graph:**

In graph theory, an Eulerian trail (or Eulerian path) is a trail in a finite graph which visits every edge exactly once. Similarly, an Eulerian circuit or Eulerian cycle is an Eulerian trail which starts and ends on the same vertex.

**What is the difference between Eularian Path and Eularian Graph:**

An Euler path is a path that crosses every edge exactly once without repeating, if it ends at the initial vertex then it is a Euler cycle. A Hamiltonian path passes through each vertex (note not each edge), exactly once, if it ends at the initial vertex then it is a Hamiltonian cycle

**Complete Graph:**

A complete graph is a graph in which each pair of graph vertices is connected by an edge. The complete graph with graph vertices is denoted and has (the triangular numbers) undirected edges, where is a binomial coefficient. In older literature, complete graphs are sometimes called universal graphs.

**What is the difference between Complete Graph and Connected Graph:**

A complete graph has edge between any two vertices. A connected graph has path between any two vertices.

**K Regular Graph:**

In graph theory, a regular graph is a graph where each vertex has the same number of neighbors; i.e. every vertex has the same degree or valency. A regular directed graph **must also satisfy the stronger condition that the indegree and outdegree of each vertex are equal to each other.**