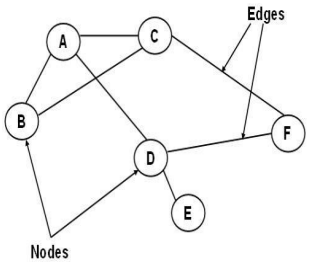
VI) Graphs

A graph is also a non-linear data structure. In a tree data structure, all data elements are stored in definite hierarchical structure. In other words, each node has only one parent node. While in graphs, each data element is called a vertex and is connected to many other vertexes through connections called edges.

Thus, a graph is considered as a mathematical structure, which is composed of a set of vertexes and a set of edges. Figure shows a graph with six nodes A, B, C, D, E, F and seven edges [A, B], [A, C], [A, D], [B, C], [C, F], [D, F] and [D, E].



Advantage: Best models real-world situations
Disadvantage: Some algorithms are slow and very complex

Applications:

- Representing networks and routes in communication, transportation and travel applications
- Routes in GPS
- Interconnections in social networks and other network-based applications
- Mapping applications
- Ecommerce applications to present user preferences
- Utility networks to identify the problems posed to municipal or local corporations
- Resource utilization and availability in an organization
- Document link map of a website to display connectivity between pages through hyperlinks
- Robotic motion and neural networks