

A Simple Introduction to Graph Theory

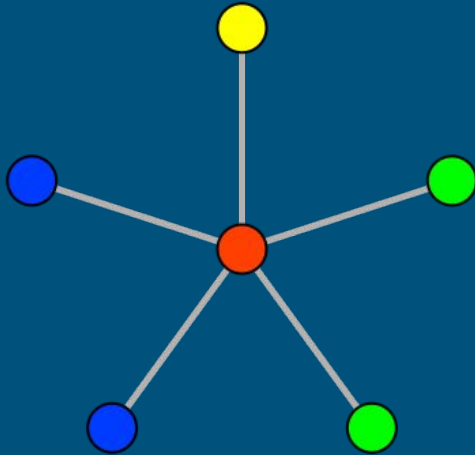
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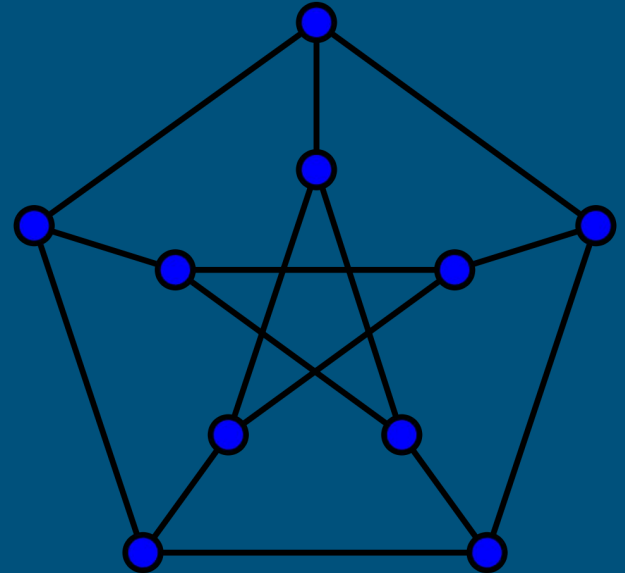
Key terms

A **Vertex** is a labeled point placed on a graph

{Vertices plural }



An **Edge** is a line segment



Set : is a notation identifying specific objects

Graph

A graph is a set of points (vertices) where you draw lines (edges) between it.

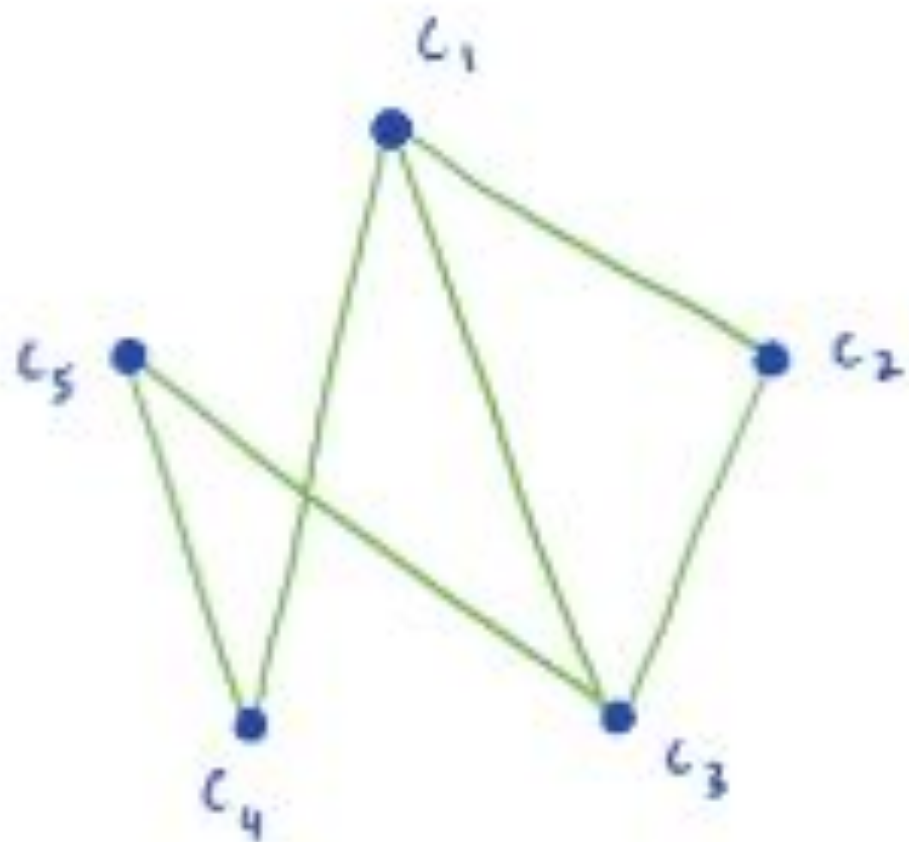
An application of graph theory

A publishing company is trying to set a schedule with its editors. They want there 10 editors to meet into 5 committees. There a few pairs of the committees that aren't able to meet during the same time because 1 or 2 of their editors are on both committees. The editors decided on the five committees:

5 committees : vertices

10 editors : number of people

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- C1. {1,2,3,4}
 - C2. {3,4,5}
 - C3. {3,6,7,8,9}
 - C4. {1,2,10}
 - C5. {7,8,9,10}



Introduction to common graphs

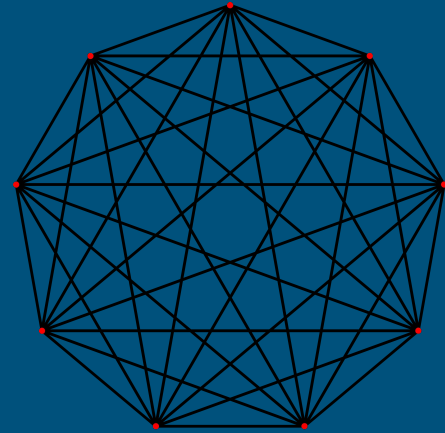
- Complete
- Cycle
- Path

Complete Graph

A graph where every vertex forms an edge with every other vertices.

Symbol: K

Formula for # of edges : $n(n-1)/2$

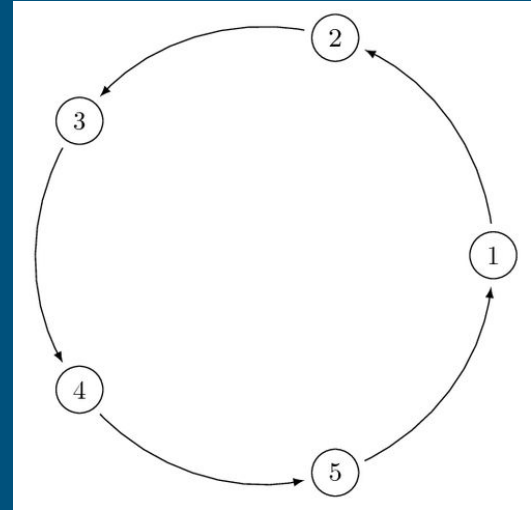


Cycle Graph

A graph that starts and ends at the same vertex and can easily be stretched out.

Symbol: C

Formula for # of edges $\{N\}$

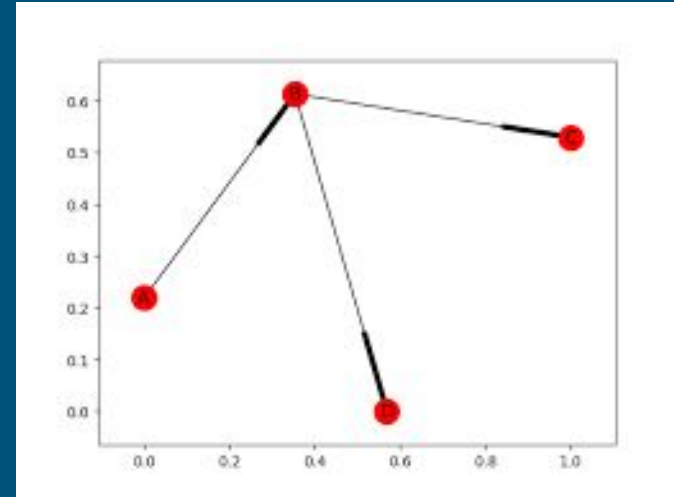


Path graph

A physical representation of a route of vertices. Simply it's a straight line or shape that isn't closed.

Symbol : P

Formula for # of edges { n-1 }



Sources

A first course in Graph theory by Gary Chartrand & Ping Zhang



Thank You