Eulerian Cycles and Paths

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Eulerian Cycles and Paths

An Eulerian Cycle is a path through a graph that visits every edge exactly once, before returning to the first vertex.

For a graph to contain an Eulerian Cycle, each vertex must have an even degree.

(Alternative names: Eulerian tour or trail)

Eulerian Cycles and Paths

Eulerian Cycle

Eulerian Cycles and Paths

An Eulerian Path is a path through a graph that visits every edge exactly once, but it is not necessary to return to the first vertex.

For a graph to contain an Eulerian Path, there must be exactly zero or two odd degree vertices.

Eulerian Cycles and Paths

For a Eulerian path that is not also an Eulerian cycle, there must be exactly two odd degree vertices.

One of these vertices must the starting point of the path.

The other vertex must be the finishing point of the path

Eulerian Cycles and Paths

Eulerian Path

Eulerian Cycles and Paths

Eulerian Path