## Abstract

A Java program to find an Euler tour in a given graph. The program reads a graph from console or file and finds if the graph contains an Euler tour or not. If yes, it returns the Euler path.

## Problem Statement

Given a graph G, find an Eulerian Tour if it exists. An Eulerian Tour is a path in a graph where each edge is traversed exactly once.

## Methodology

Used Hierholzer's Algorithm to get the Euler Path in a Graph.

Algorithm is as follows

Keep Two Stacks – One for tracing the route and the other to keep the Euler tour.

1. When the Graph contains
   1. Zero or Two “Odd-Degree” vertices, we have an Euler Tour
   2. Else, the graph is not Eulerian
2. Take any Vertex V
   1. If V has no neighbors(no outgoing edges), then add it to the Stack of Euler Tour vertices and remove the last element from Tracing Route Stack and make it the current vertex V.
   2. If V has neighbors, pick any edge leaving V and make the otherEnd of that edge as the current vertex V.
3. Repeat Step 2 until the Tracing Route stack is empty.

## Development Platform

Mac OS X running 10.11 with 8GB RAM and 128GB SSD

## Conclusion

The program only implements the FindEulerTour part.

## References

http://www.graph-magics.com/articles/euler.php