Eulerizing and Semi-Eulerizing Graphs

Lecture 28
Section 5.4

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1. Definitions

2. The Security Guard Problem Solved

3. Assignment
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Definitions

**Definition (Eulerization)**

To **eulerize** a graph is to add *exactly* enough edges so that every vertex is even.

**Definition (Semi-Eulerization)**

To **semi-eulerize** a graph is to add *exactly* enough edges so that all but two vertices are even.
1. Definitions

2. The Security Guard Problem Solved

3. Assignment
The Security Guard Problem

The neighborhood.
The Security Guard Problem

The neighborhood as a graph.
There are 14 odd vertices.
At least 7 edges must be added. Why 7?
This “solution” is theoretically possible, but not practical. Why?
This solution uses 11 new edges. Is it optimal?
The Security Guard Problem

What if there were a city park?
Now there are 18 odd vertices.
Eulerize this!
Eulerize this!
Now semi-eulerize it, starting at $M$ and ending at $N$
Outline

1 Definitions

2 The Security Guard Problem Solved

3 Assignment
Assignment

- Chapter 5: Exercises 43, 44, 45, 47, 53, 54, 55.