

Math 140: Thursday Aug 29, Day 4 Notes

Agenda for Thursday, Aug 29, 2024

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Reminders

- ! Turn in **Written HW 1** by end of today (upload in Canvas or bring to class)
- **Online Homework 1 - Euler Circuits and Paths** due by next Thursday
- Office Hour **today 1-2:15pm** in C162
- **First Group Quiz** today in class (you can use your handwritten notes)
- ◀ **Student Resource Fair** today from 11:30 a.m.-1:30 p.m. & 4:30-6 p.m. Student Commons/Student Street

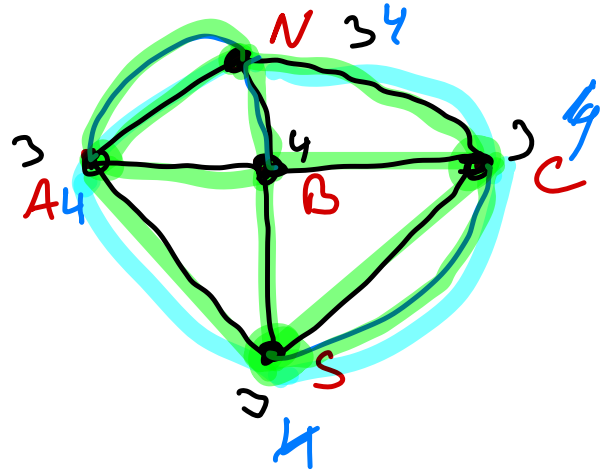
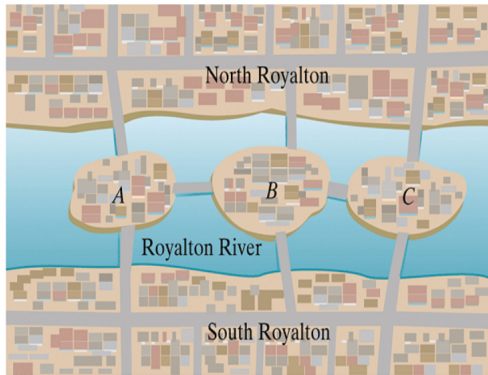
Eulerization and Semi-Eulerization

Recall:

What do you do if a graph doesn't have an Euler Circuit or an Euler Path but you still need to travel all the edges?

Applications of Eulerization and Semi-Eulerization

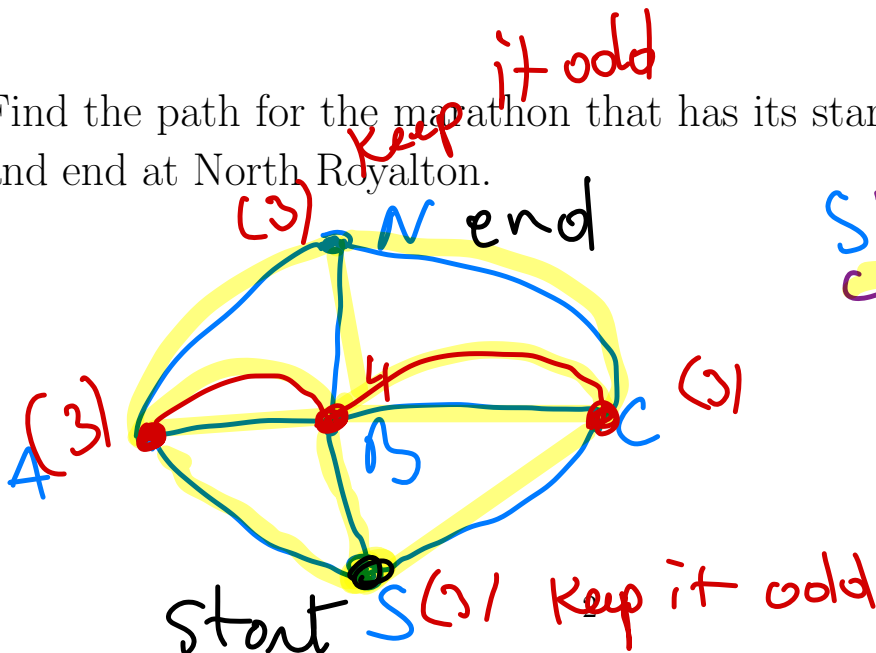
Example 1. Here is a map of downtown Royalton, showing the Royalton River running through the downtown area and the three islands (A, B, and C) connected to each other and both banks by eight bridges. The Downtown Athletic Club wants to design the route for a marathon through the downtown area.



- a) Find the circuit for the marathon that has its start and finish at South Royalton.

SCNASCBNAB S

- b) Find the path for the marathon that has its start at South Royalton and end at North Royalton.



SBC N

try on your own

Section 1.3 Hamiltonian Circuits and Paths

HP

Hamiltonian Path - A path that visits each vertex exactly once.

HC

Hamiltonian circuit - A circuit in a graph is a path that starts and ends at the same vertex and passes through all other vertices exactly once.

Question: What is the difference between a Hamilton Path and an Euler Path? EP

HP: visits each vertex exactly once.
Some edges may not be used.

EP: travels each edge exactly once. Some vertices may be visited more than once.

Notes:

1. A graph can't have both an Euler circuit and an Euler path.
2. A graph that has a Hamilton Circuit has a Hamilton Path.