

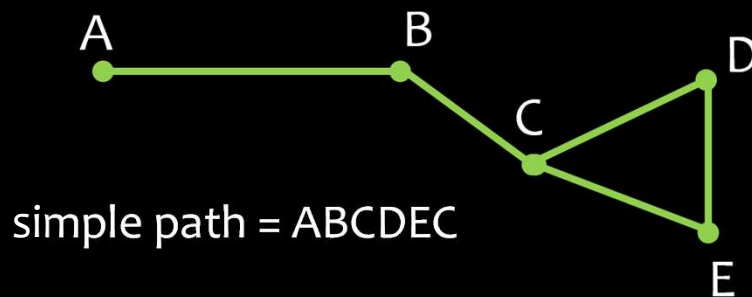
Chapter 3-Graph Theory

Paths (also known as Chains)

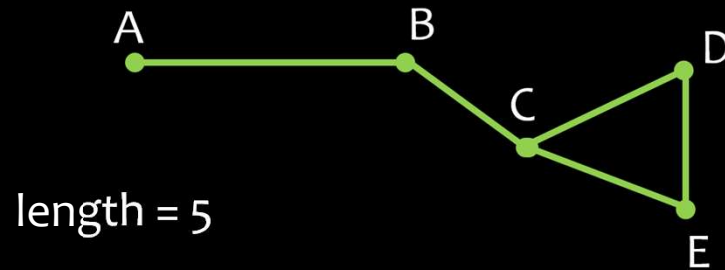
25. Paths (also known as Chains)

path: “walking” on an edge

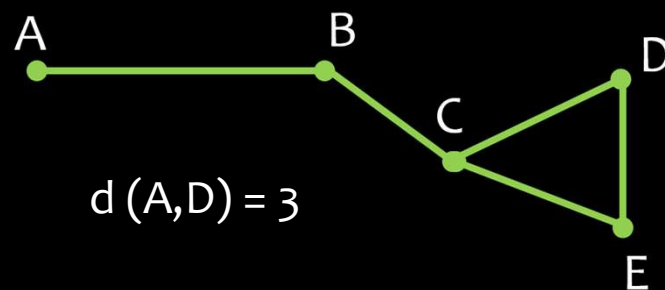
simple path: each edge is only “walked” once



length: of a path is the number of edges contained in the path



distance: length between two vertices, A and D, is the length of the shortest path joining the two vertices



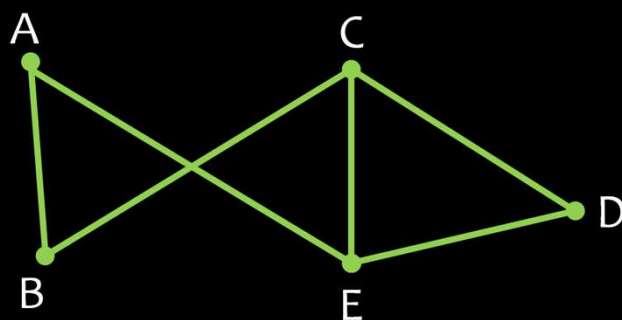
Euler–Edges

Euler path: travels over each edge once and only once in a connected graph

TRICKS:

- look for a graph that contains exactly two vertices whose degrees are odd numbers
- start at a vertex having an odd-numbered degree and end at the other vertex with an odd-numbered degree

Find a Euler path.



There are many options:

CBAEDCE
CEABCDE
CDECBAE

CDEABCE
EABCDEC
ECDEABC...

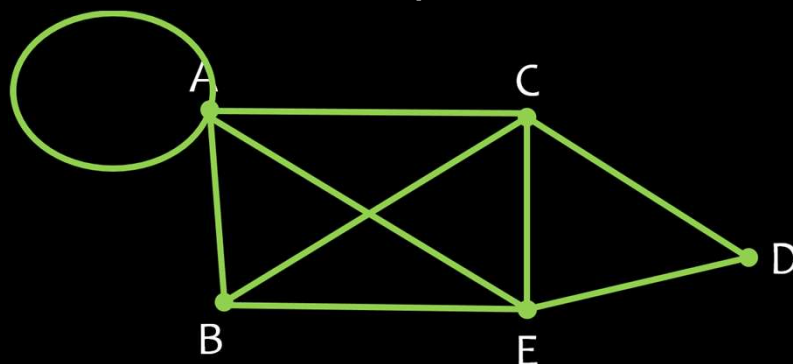
Hamiltonian—Vertices

Hamiltonian path: a path that passes through every vertex once and only once in a connected graph.

TRICKS:

- NONE—use trial and error

Find a Hamiltonian path.



There are many options:

ABEDC
BEDCA
CBAED

BEACD
DEBAC
EDCAB...

Classwork/Homework

- MHS Worksheet “Chapter 3—Paths (also known as Chains)” # 1-10
- Online assignment “Chapter 3—Paths (also known as Chains)”