

# **Graph Theory**

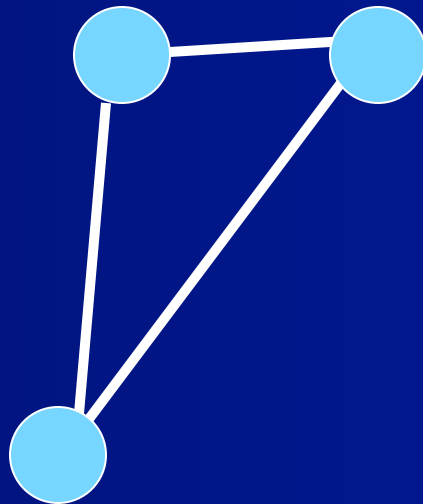
By Anne Bone

# Outline

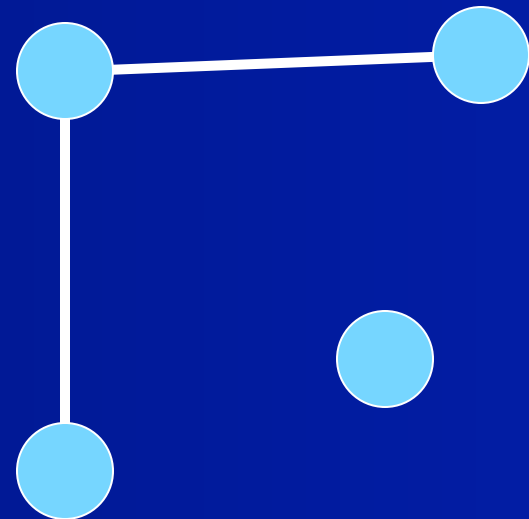
- What is a graph?
- Seven Bridges of Königsberg
- Graph Coloring
- Applications of Graph Theory

# What is a graph?

- Graphs are made up of edges and vertices

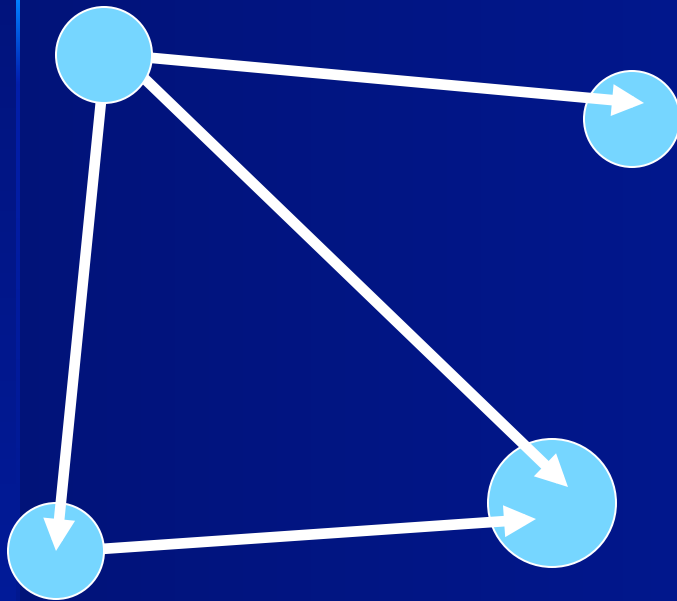


connected graph



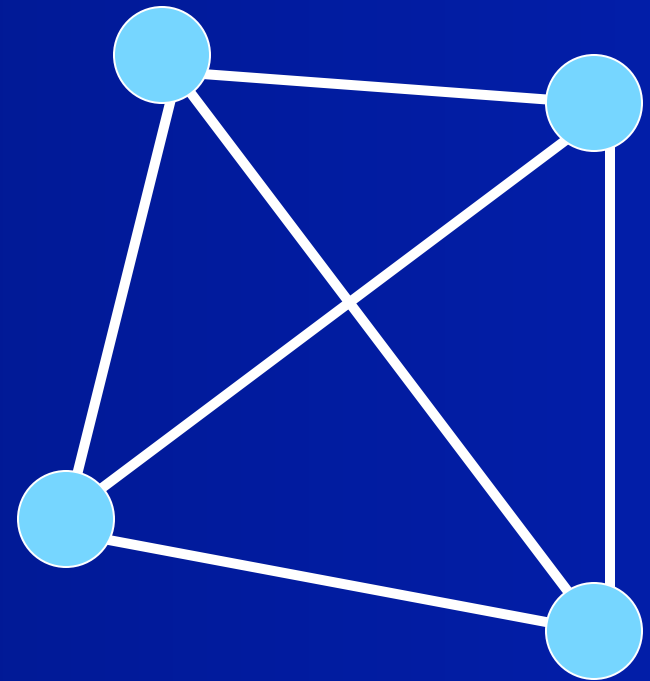
unconnected graph

# What is a graph? Cont.



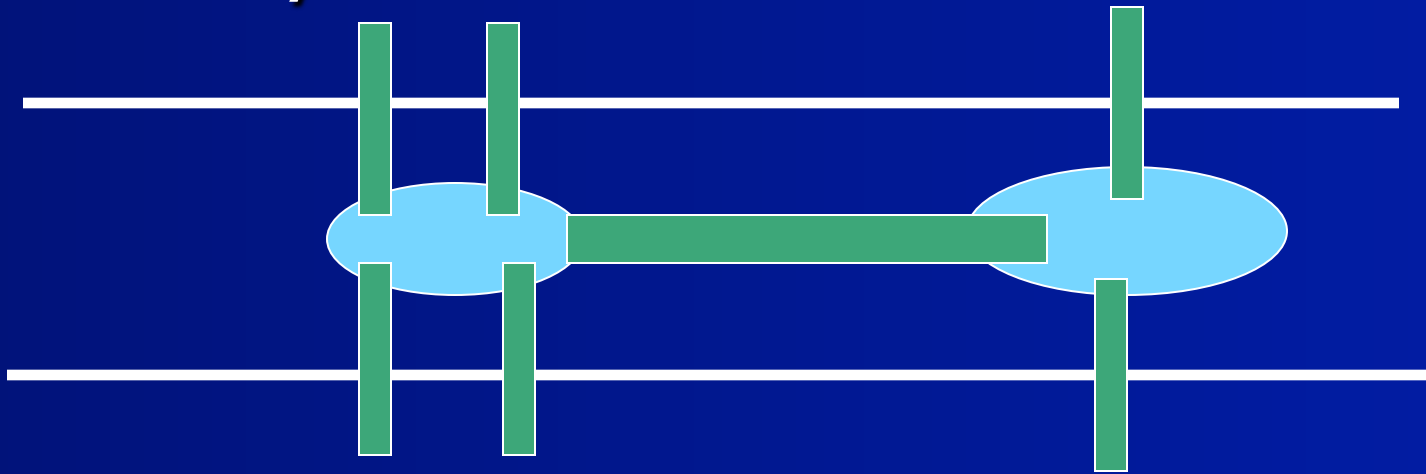
directed graph

Complete graph

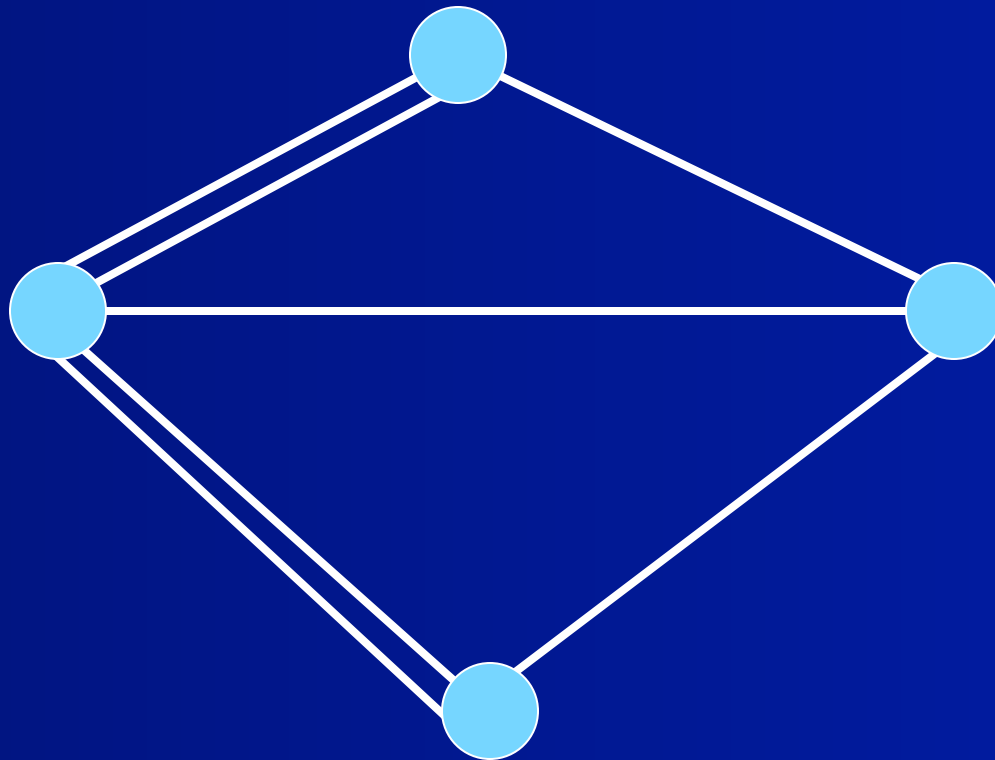


# Seven Bridges of Königsberg

- Euler's contemplation of this problem in 1736 laid the groundwork of graph theory

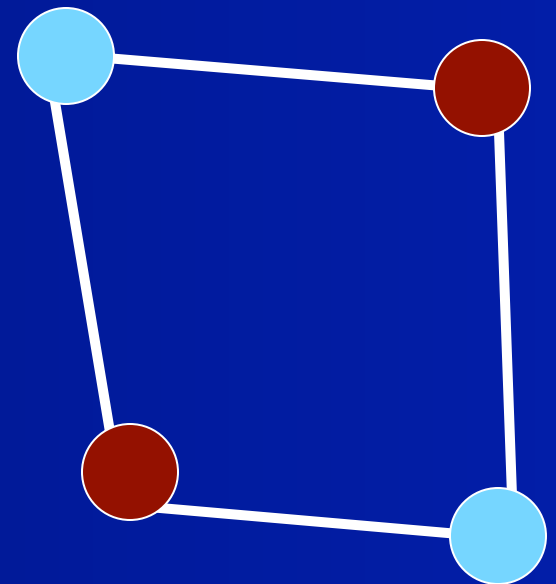
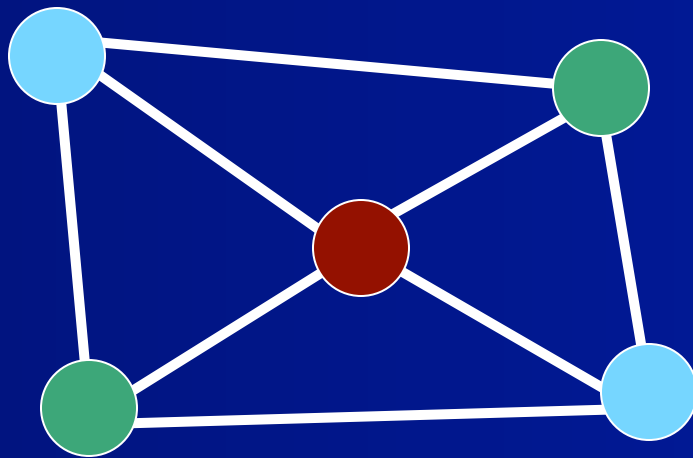


# Seven Bridges of Königsberg Cont.



# Graph Coloring

- The four-color theorem states that the vertices of any graph can be colored with at most four colors



# Other Applications

- Computer Science
- Chemistry
- Biology
- Math



# Review

- What is a graph?
- Seven Bridges of Königsberg
- Graph Coloring
- Applications of Graph Theory

# References

- Wikipedia,  
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Graph\\_theory](http://en.wikipedia.org/wiki/Graph_theory)
- Caudwell, Chris, Graph Theory  
Tutorials, 1995 [http://www.utm.edu/  
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