GRAPH INTRODUCTION

Computer Science II

CS 030

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EXAMPLE GRAPHS

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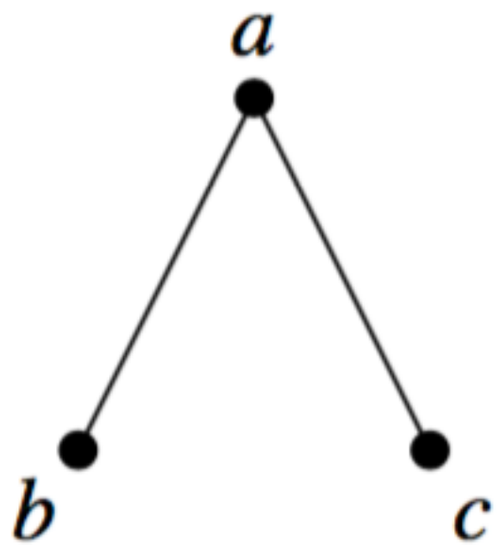

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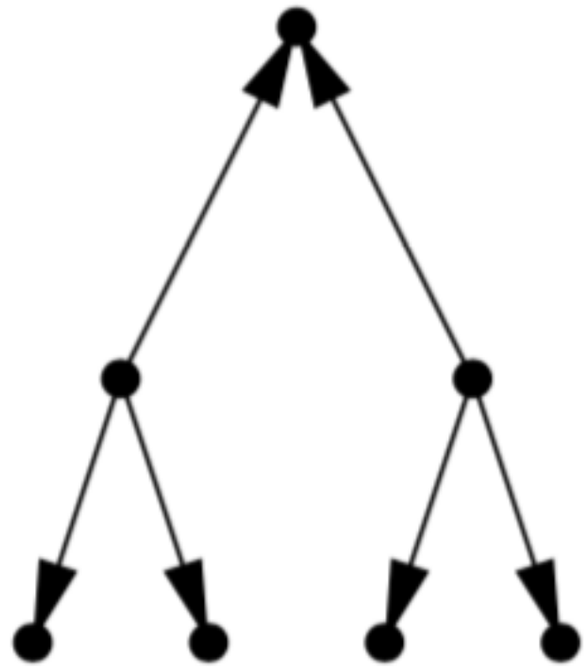

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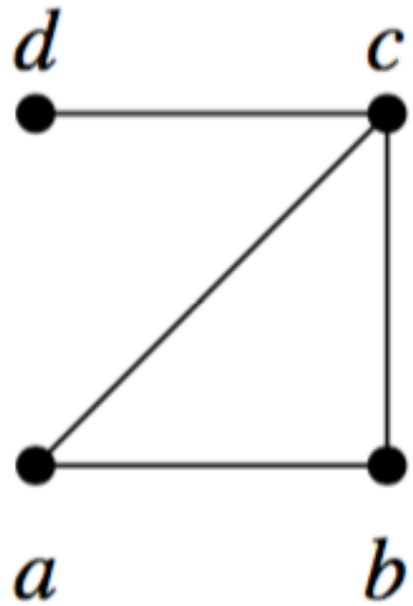

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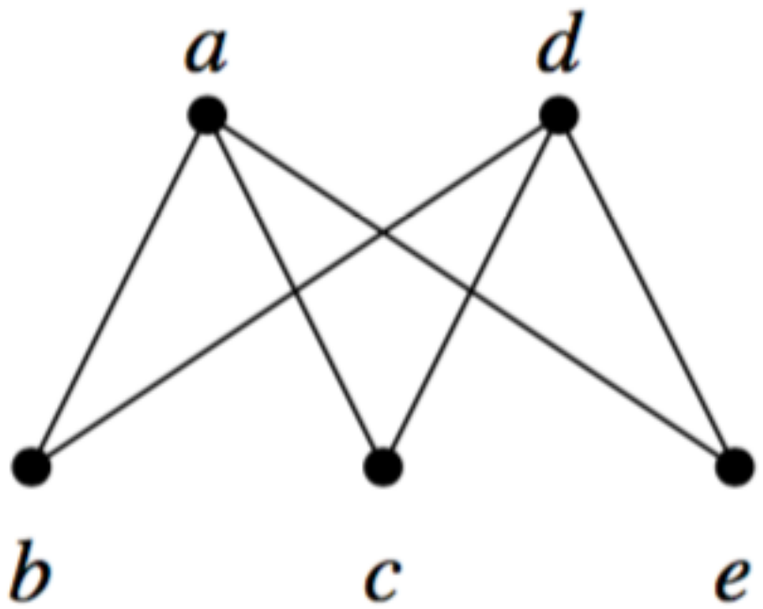

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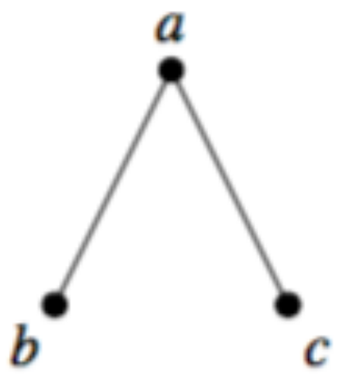
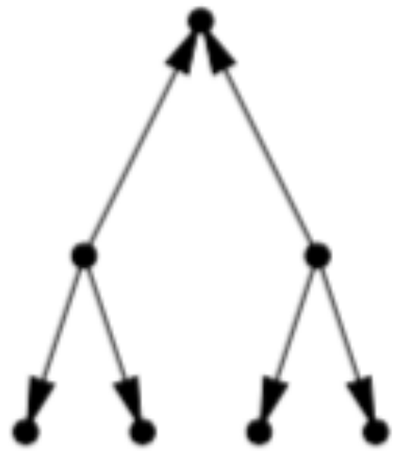
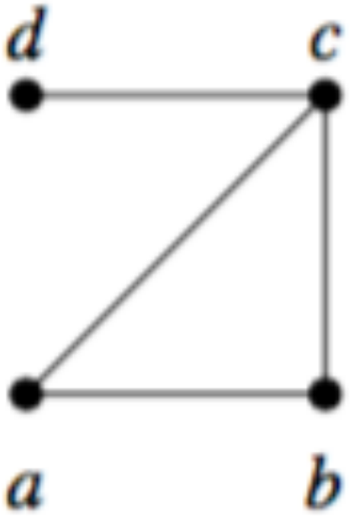
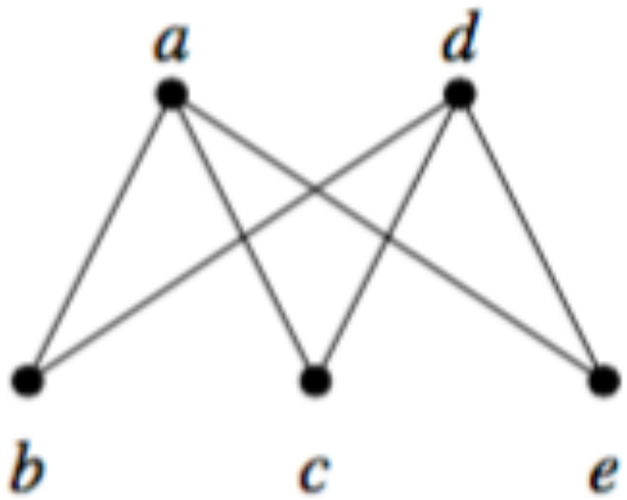


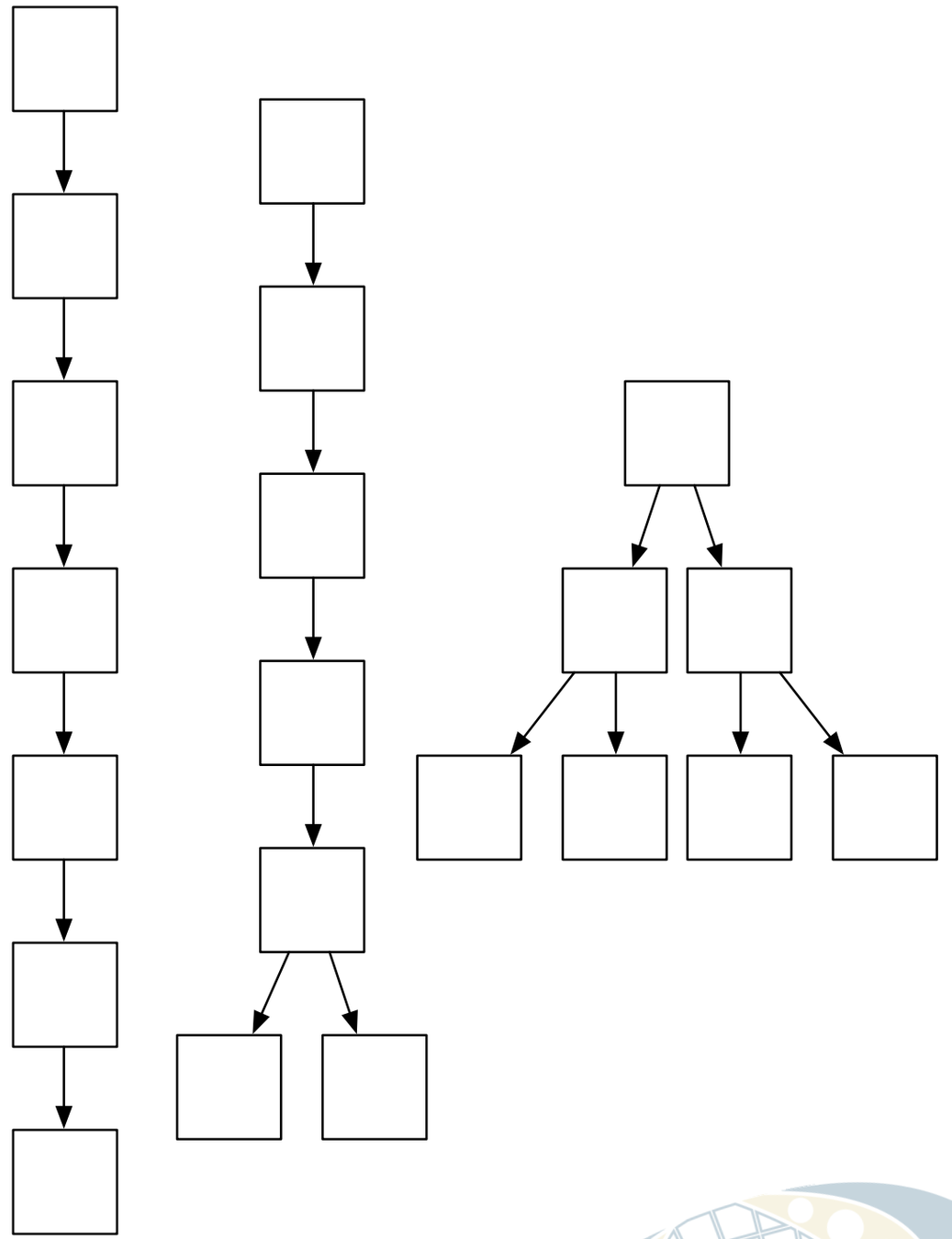






DEFINITIONS

- Vertices
- Edges
  - edges of incident to vertices
- Undirected
- Directed
  - Source and Destination
- Subgraph
- Special cases of graphs include
  - List, Tree



DEFINITIONS

- In an undirected graph
  - vertices have degrees
- In a directed graph
  - vertices have in-degrees and out-degrees
  - sources are special cases of vertices in a directed graph
  - sinks are special cases of vertices in a directed graph

DEFINITIONS

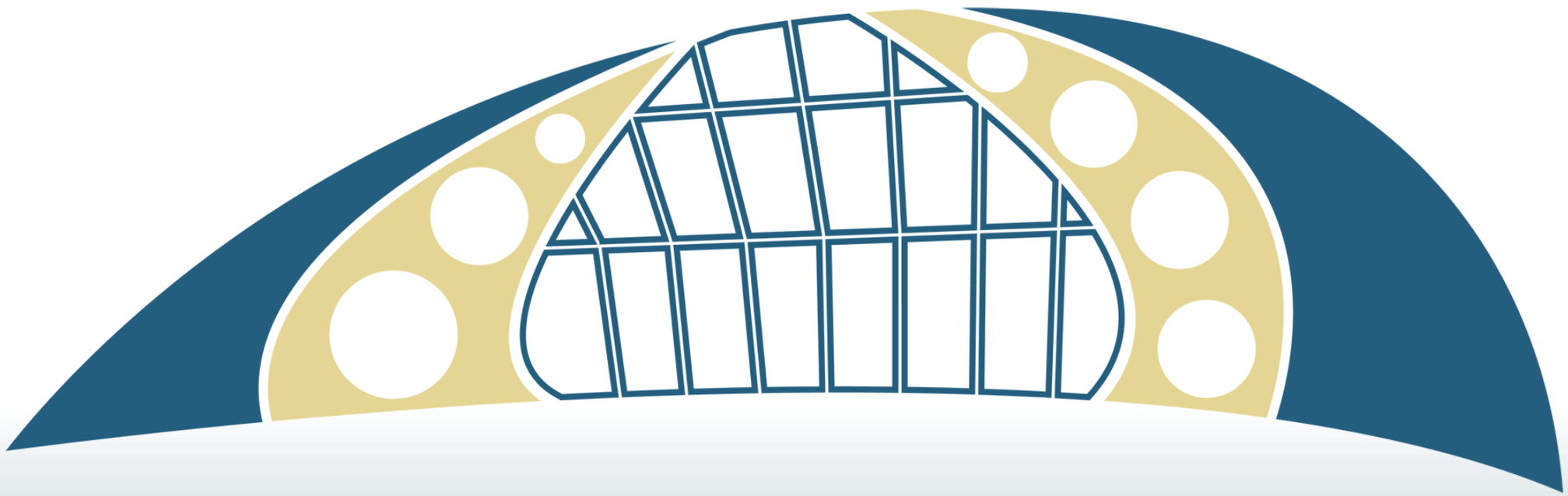
- edges can be adjacent if they share a common vertex
- a path is a sequence of adjacent edges
- two vertices are connected if a path connects them

LABELLING AND DATA

- Usually you want to store data
  - At a vertex
    - Maybe a place name?
  - On an edge
    - Maybe a distance

IMPLEMENTATIONS

- Adjacency Matrix
  - Directed vs undirected
- Adjacency List
- Implement reachability with a distance metric



WESTMONT INSPIRED

COMPUTING LAB