

# Graphs

Note Title

11/13/2007

Set (accessed  
by final currency)

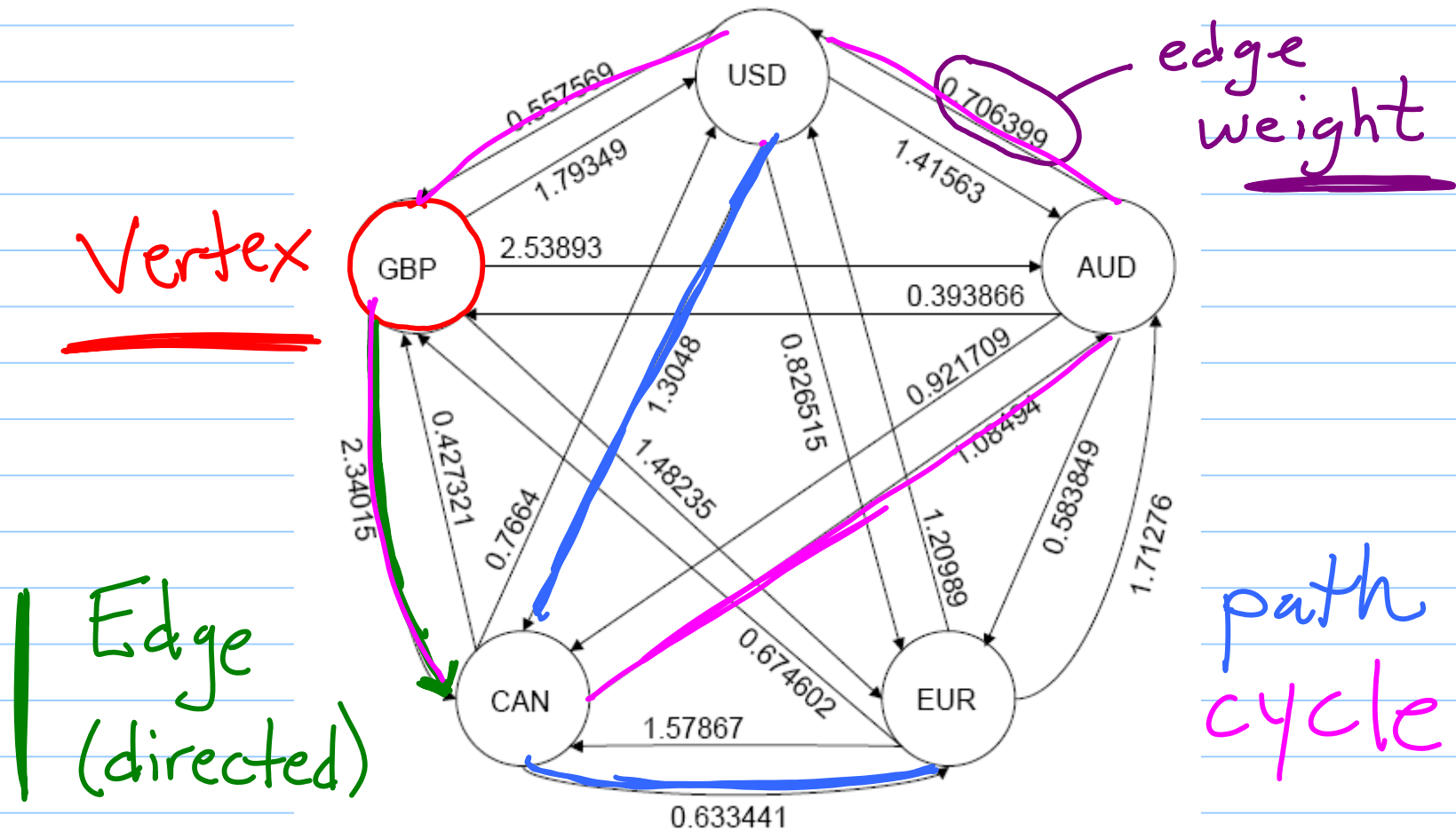
	USD	GBP	CAD	EUR	AUD
USD	1	0.557569	1.3048	0.826515	1.41563
GBP	1.79349	1	2.34015	1.48235	2.53893
CAD	0.7764	0.427321	1	0.633441	1.08494
EUR	1.20989	0.674602	1.57867	1	1.71276
AUD	0.706399	0.393866	0.921709	0.583849	1

exchange  
rates in  
August 2004

What data structure is best if you just want to look up an exchange rate?

What if you want to determine if an arbitrage scheme exists?

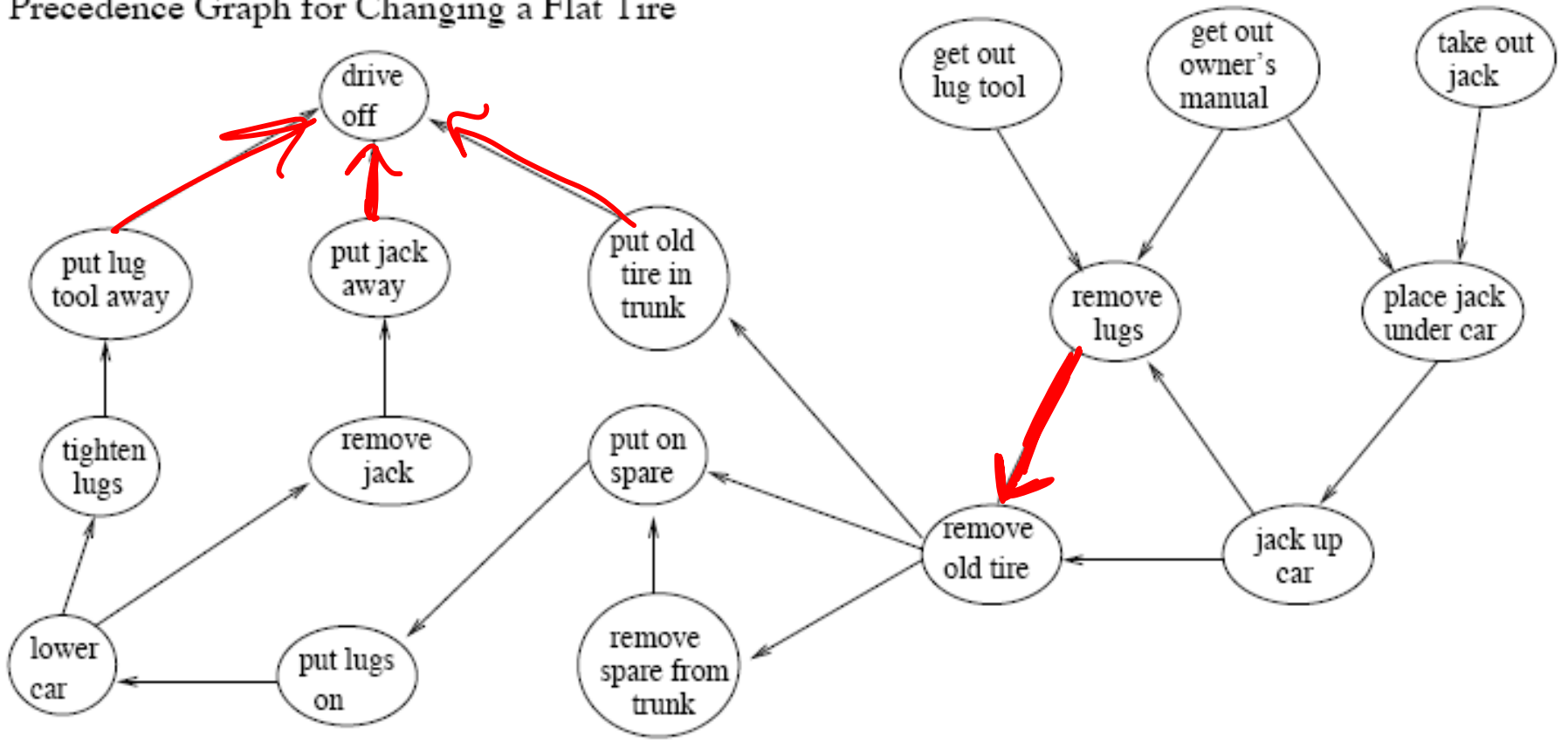
# Graph Representing Exchange Rates



# Task Scheduling

$a \rightarrow b$   
a must precede b

Precedence Graph for Changing a Flat Tire

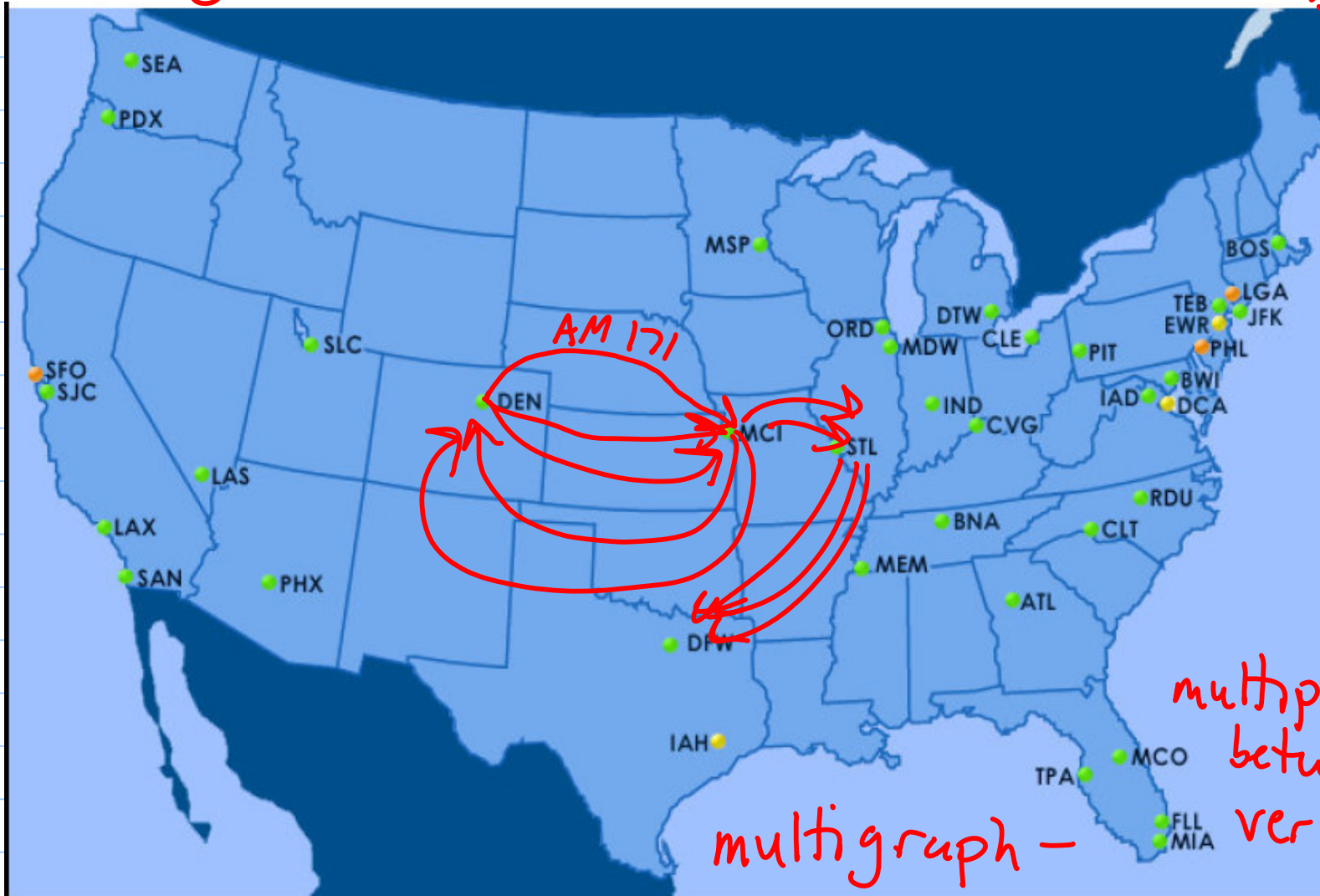


# Finding Shortest Travel Routes

#edges  
=#flights

each  
airport  
is  
a  
vertex

sample  
edges  
(flight)



AM 171

multiple edges  
between  
vertices  
multigraph -

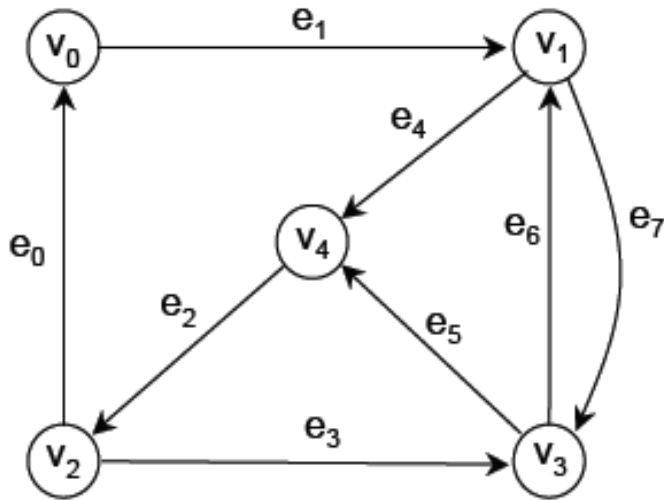
and many more

- image segmentation
  - minimizing infrastructure cost (e.g. laying optical fiber) to allow travel/communication between a set of locations
  - executing a makefile
  - 
  -
- A lot of problems can be formulated as graph problems

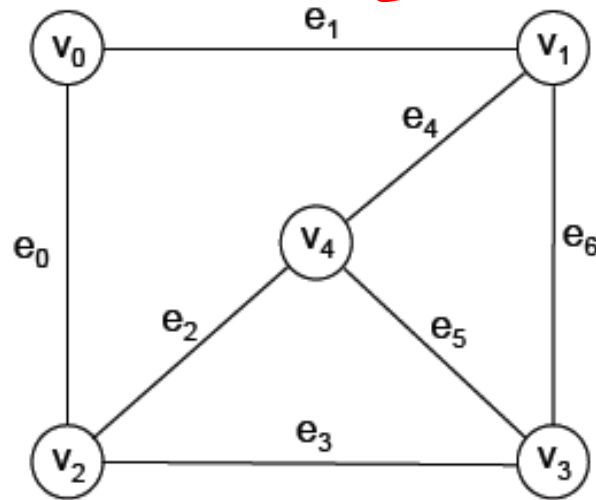
# Types of graphs

unweighted

name of edge  $e$



directed



undirected

# Weighted directed multigraph

