STOR 305
Decision-making using spreadsheet models
Dr. 305

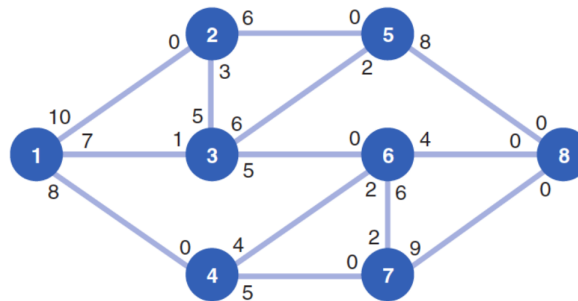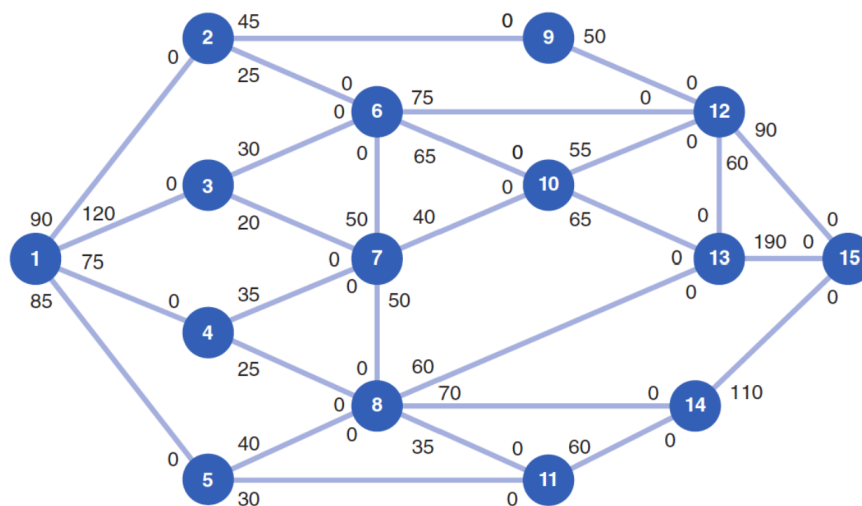Homework #7
March 9, 2021
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# Homework #7 – *due Friday, March 19th, 2021*

1. A new stadium complex is being planned for Denver, and Denver traffic engineers are attempting to determine whether the city streets between the stadium complex and the interstate highway can accommodate the expected flow of 21,000 cars after each game. The various traffic arteries between the stadium (node 1) and the interstate (node 8) are shown in the following
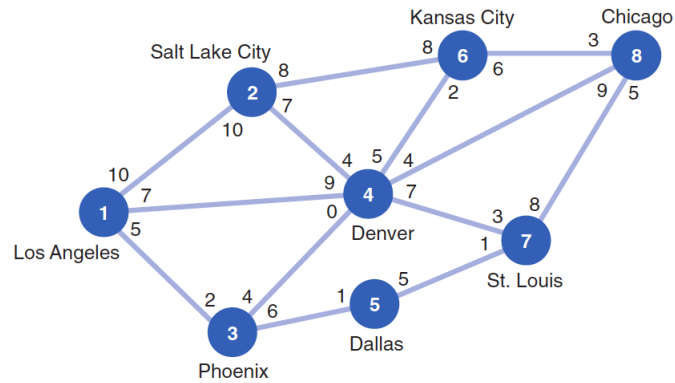


The flow capacities on each street are determined by the number of available lanes, the use of traffic police and lights, and whether any lanes can be opened or closed in either direction. The flow capacities are given in thousands of cars. Use the Ford-Fulkerson algorithm to determine the maximum traffic flow the streets can accommodate and the amount of traffic along each street. Will the streets be able to handle the expected flow after a game?

2. A manufacturing company produces different variations of a product at different work centers in its plant on a daily basis. Following is a network showing the various work centers in the plant, the daily capacities at each work center, and the flow of the partially completed products between work centers:



Node 1 represents the point where raw materials enter the process, and node 15 is the packaging and distribution center. Use Excel to determine the maximum number of units that can be completed each day and the number of units processed at each work center.

3. The FAA has granted a license to a new airline, Omniair, and awarded it several routes between Los Angeles and Chicago. The flights per day for each route are shown in the following network:



Use the Ford-Fulkerson algorithm or Excel to determine the maximum number of flights the airline can schedule per day from Chicago to Los Angeles and indicate the number of flights along each route.