

Name: Tu Luong

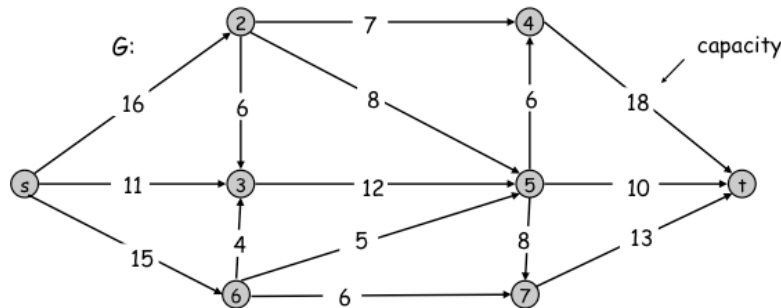
## Learning Activity

Last 3-Digit ID:

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**Homework #5. Network Flow Practices. Submit in MyCourse. Due April 12, Wed. 2017.**

1. Implement Ford-Fulkerson Algorithm in your chosen programming language. You may use existing online code but you must cite the sources.
  - a. Describe the implementation using pseudo code, including the following details: how to find argument path and how to update residual graph.
  - b. Based on the pseudo code, analyze the time complexity of this implementation.
  - c. Apply your algorithm to the network below and report the result: flow found and the value of the flow.



2. Read Section 7.11, solve the example problem below.

Project	Prerequisites	Profit
P1		-10
P2	P1	15
P3	P1, P2	-5
P4	P2	10
P5	P3	20

3. Read Solved Exercise 2 (doctor holiday assignment) on Page 412.
  - a. Describe how to model this problem and how to solve it.
  - b. Create a problem instance with 4 doctors and 3 holiday periods, fill out other required input details as you like,
  - c. Convert this problem into a network flow problem, use the implementation in Question 1 to solve it and show the output result for the problem instance you created.
4. Chapter 7 Exercise 16 (advertisement problem), Page 422.
  - a. Model this problem and describe how to solve it.
  - b. Create a problem instance with  $k=4$ ,  $n=15$ ,  $m=5$ , and fill other details as you like.
  - c. Convert this problem into a network flow problem, use the implementation in Question 1 to solve it and show the output result for the problem instance you created.

Must **type** your solution (handwritten texts are **not** acceptable)

- All solutions in one file, including the program output for each problem. (word or PDF), with your Full Name in filename.
- Source code in a separate file as the original readable text file.

Exercise Type: Preparation

In Class

Practice

P26

Grade Type: Just for fun

Boolean

Numeric

Submission time: \_\_\_\_\_

Graded By: \_\_\_\_\_

Grade: \_\_\_\_\_