

Last name _____

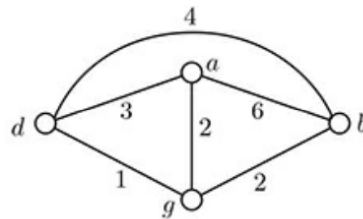
First name _____

LARSON—OPER 731—CLASSROOM WORKSHEET 03
Modeling

Concepts

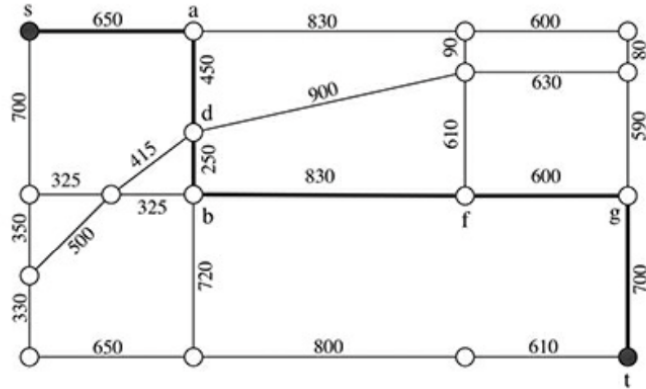
- (Sec. 1.1) *formulation, feasible solution.*
- (Sec 1.2) *linear function, linear constraint, linear program.*
- (Sec. 1.3) *integer program, mixed integer program.*
- (Sec. 1.4) *st-path, matching, perfect matching.*

Minimum Cost Perfect Matching



1. What is a *matching* in a graph?
2. What is a *perfect matching* in a graph?
3. What is a *minimum cost* perfect matching?
4. What is $\delta(v)$ for a vertex v in a graph $G = (V, E)$?
5. How can we model the problem of finding a minimum cost perfect matching in a graph $G = (V, E)$ with edge-costs (or weights) $(c_e : e \in E)$?

Shortest Path Problem



6. What is a an st -path?

7. What is the *length* $c(P)$ of an st -path P with edge-lengths $(c_e : e \in P)$?

8. What is a minimum st -path?

9. For a graph $G = (V, E)$, and vertices $U \subseteq V$, what is $\delta(U)$?

10. What is an st -cut?

11. How can st -cuts be used to model the minimum path problem as an integer program?