

Computational Optimization Term Project Report

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Problem 1

1. Problem Statement: Sarah is an Operation Management Student of Takshashila University (TU). In her last semester she will need to take some courses. Some courses are compulsory as some courses have choices. For choosing the courses Sarah need to fulfill some conditions. They are stated as bellow:

1. She has to take 5 courses in total.
2. She has to take Business Strategy (MGT 490) and International Finance (FIN 358).
3. She has interest in service-learning course and found Intergenerational Computing (CIS 102T) and Web Design for Nonprofit Organizations (CIS 102W) interesting. She will take one of the two courses between these.
4. Between four potential finance elective courses (Data Analysis in Finance (FIN 325), Risk Management (FIN 352), Options, Futures, and Swaps (FIN 356) and Fixed Instruments and Markets (FIN 359)) she will take two courses.

Sarah rated each section of the available courses based on content of the course, reputation of the instructor and timing of the course. Now it's my job to find an appropriate schedule for Sarah which will meet all the above mentioned conditions and also will give highest total rating. I will solve the problem using two strategies. First one is Greedy

Heuristic and the second one is LP model. Using Greedy Heuristic I will find a solution which may not be optimal but good enough and using LP model I will find optimal solution.

2. Input Data: The input data for the problem is rearranged as follows:

Meeting Time(s)	MGT 490	FIN 358	CIS 102T	CIS 102W	FIN 325	FIN 352	FIN 356	FIN 359
M 6-8:45 p.m.	4.3	0	0	0	0	0	0	0
T 6-8:45 p.m.	0	0	0	0	0	0	0	0
W 6-8:45 p.m.	0	0	0	0	0	0	0	0
F 6-8:45 p.m.	0	0	0	0	0	0	0	0
M 1:25-2:20 p.m.								
W 1:25-3:15 p.m.	0	0	0	0	0	0	0	0
T 1:25-3:15 p.m.								
Th 1:25-2:20 p.m.	0	0	0	0	0	0	0	0
W 2:30-5:15 p.m.	0	0	0	0	0	0	0	0
Th 2:30-5:15 p.m.	0	0	0	0	0	0	0	0
Th 6-8:45 p.m.	0	0	0	0	0	0	0	0
M 1:25-3:15 p.m.								
W 1:25-2:20 p.m.	0	0	0	0	0	0	0	0

Table 1: Caption1