Lecture 17

CSE 331

Oct 6, 2023

Quiz 1– 11:02-11:12am

Lecture starts at 11:17am

Quiz 1 timelines

Solutions: posted by today evening

Grading: finished by next week

Please do fill in the feedback

My office hour today

note @292 ⊕ ★ 🔓 ▾

stop following   **1 view**

Actions ▾

My office hour tomorrow (Friday 1pm)

I'll either have to skip (or be >= 30 mins late for) my office hour tomorrow at 1pm so that I can scan the quizzes for Autolab. Sorry about that!

Dylan will be there in Baldy 127.

office_hours

Edit   good note | 0   Updated 31 seconds ago by Atri Rudra

Project released

Broadband access

https://assets.bwbx.io/images/users/iqjWHBFdfxIU/iZSjibxE1KJs/v1/800x-1.jpg

Lawsuit against Spectrum

SUPREME COURT OF THE STATE OF NEW YORK
COUNTY OF NEW YORK

--X

THE PEOPLE OF THE STATE OF NEW YORK,
by **ERIC T. SCHNEIDERMAN**, Attorney General of the
State of New York,

                               Plaintiff,

          -against-

CHARTER COMMUNICATIONS, INC. and SPECTRUM
MANAGEMENT HOLDING COMPANY, LLC
(f/k/a TIME WARNER CABLE, INC.),

SUMMONS

Index No.: 450318/2017

Plaintiff designates New York County as the Place of Trial

Five coding problems

Coding Problems for Project

Problems 1 and 2 (*Coding*) due at **11:59pm, Friday, November 3, 2023**.

Problem 3 (*Coding*) due at **11:59pm, Friday, December 1, 2023**.

Problems 4 and 5 (*Coding*) due at **11:59pm, Friday, December 8, 2023**.

All submissions should be done via Autolab.

⓪ Acknowledgment
The development of the project was supported by a Mozilla Responsible Computer Science award ↗. The support is gratefully acknowledged.

Some Suggestions and Warnings

While this coding part of the project is somewhat similar to Question 3s on the homework, there are some crucial differences and we wanted to highlight few things for y'all upfront:

Form groups of size EXACTLY 3

This is a group project (unlike Q3s on the HWs that had to be done individually) and you can work in groups of size **exactly 3**. The submissions will be on Autolab and *everyone in the group will get the same grade.*

Each like a HW Q3

Java   Python   C++

Directory Structure

You can get full credit
with code length
along the lines of Q3
submissions!

More work to
UNDERSTAND the
problem

You are given ten coding files. Out of these, you can safely ignore `Enums.py` and `LinkedList.py`. The ... ... ound. For example, `Enums.py` is used in conjunction with the file I/O code. `LinkedList.py` is an implemen...

`Driver.py` takes the input file, parses it using `Utility.py` and calls your `Solution.py` class' o... ... output by you (along with, depending on the question, the updated bandwidths and packet priorities) are pass... ...ecesses them and determines the routing delay faced by each client. Finally, these delays are passed into the revenue ca... ...evenue you gathered based on your routing decisions. You only need to update the `Solution.py` file. You may write your own hel... ...t.

The `Solution` class contains four data structures.

- `problem`, which simply contains the problem number of the current template as a member variable on the Solution class. You DO NOT need to worry about this variable.
- `isp` which is the ID of the ISP node. Note that this is the same as content provider or i as mentioned in the problem description.
- `graph` which is the input graph G in the adjacency list representation that you are familiar with. The key is a node ID (not client, there are nodes that may not be clients) and

Five reflection problems

Reflection Problems for Project

Problems 1 and 2 (`Reflection`) due at **11:59pm, Monday, November 6, 2023**.

Problem 3 (`Reflection`) due at **11:59pm, Monday, December 4, 2023**.

Problems 4 and 5 (`Reflection`) due at **11:59pm, Tuesday, December 12, 2023**.

All submissions should be done via Autolab.

There is no "right" or "wrong" answer

Perhaps the biggest difference from other CSE 331 questions (both programming and proof based questions) is that pretty no much no answer is "right" or "wrong" in any absolute sense. Y'all will notice that for some of the questions, the answer might depend on some of the assumptions you make -- and in many cases the answer would really depend on *who* is answering the question. While ambiguity might feel a bit disquieting, the **ambiguity is inherent** for these kinds of questions: so embrace the ambiguity!

More specifically, do not waste your time trying to figure out what *I* am expecting from an answer-- because I do not have any set answer that I'm looking for! What I am interested is in hearing your group's thoughts on the questions. In particular, **even if I disagree with your justification, that does NOT mean you will get penalized**. Again there is no "right" or "wrong" answer!

While this coding part of the project is somewhat similar to Question 3s on the homework, there are some crucial differences and we wanted to highlight few things for y'all upfront:

Form groups of size EXACTLY 3

This is a group project (unlike Q3s on the HWs that had to be done individually) and you can work in groups of size **exactly 3**. The submissions will be on Autolab and *everyone in the group will get the same grade.*

Reflect on your design choices

Algorithm Idea (2 points)

In one paragraph, state the algorithm idea behind the code that you submitted for the second coding problem. This would be similar to a usual algorithm idea submission in a homework.

Whom does your algorithm work best for? (2 points)

What clients does your algorithm try to make their pen_0 value to be 0? I.e. for which clients c does your algorithm try to make sure to try get the pmt_c revenue from them? Show how your answer follows from the algorithm idea above.

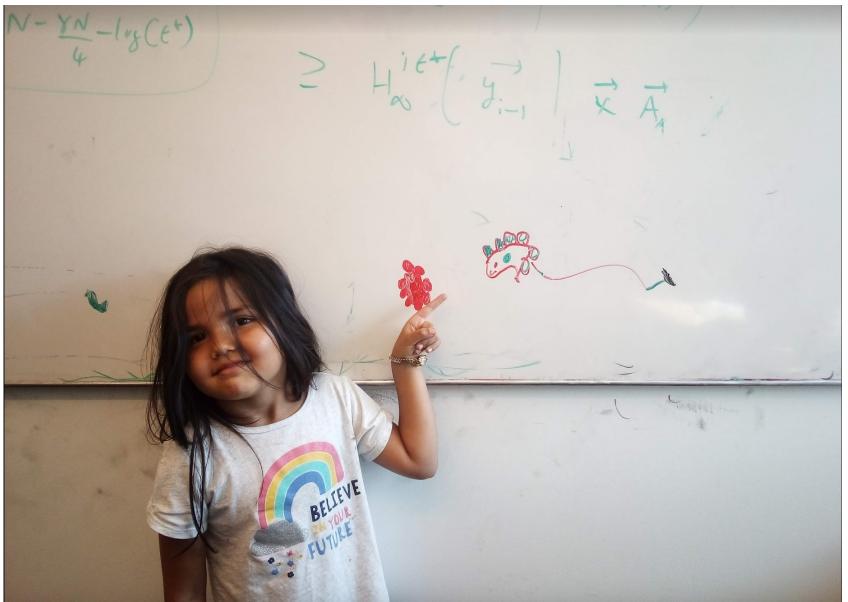## Whom doesn't your algorithm work well for? (2 points)

What clients does your algorithm *not* try (actively) to make their pen_0 value to be 0? I.e. for which clients c does your algorithm not mind to get a revenue of c from them? Show how your answer follows from the algorithm idea above.

How fair is your algorithm? (4 points)

How fair was the decision that your group made in the algorithm design to favor one group of customers (those identified in the second question above) over another (those identified in the third question above? **Justify** your answer.

If some of your customers are not as well served as others, are there ways for you to address this unfairness that might result in a more ethical distribution of services?

Questions/Comments?

Interval Scheduling Problem

Input: n intervals $[s(i), f(i))$ for $1 \leq i \leq n$

Output: A *schedule* S of the n intervals

No two intervals in S conflict

|S| is maximized

Analyzing the algorithm
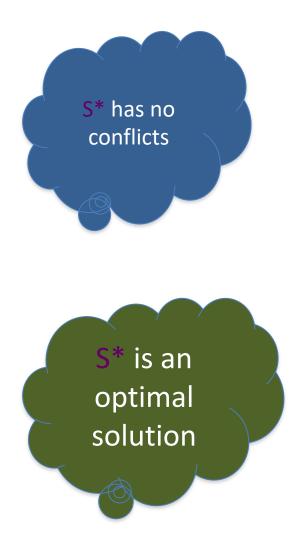
R: set of requests

Set S to be the empty set

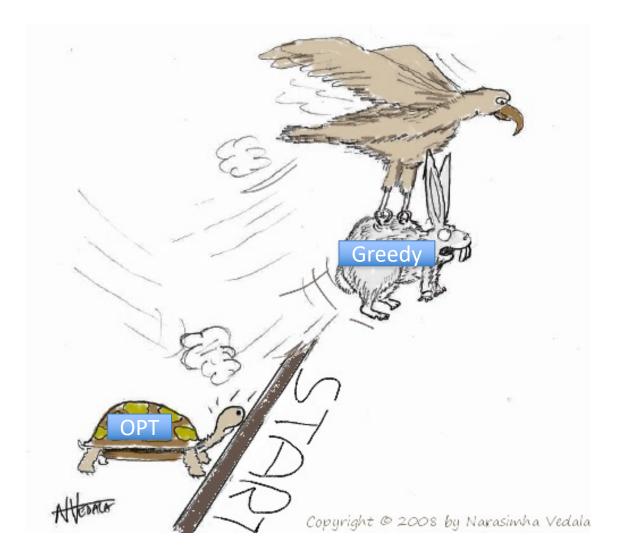While R is not empty

    Choose i in R with the earliest finish time

    Add i to S

    Remove all requests that conflict with i from R

Return S* = S

S* has no conflicts

S* is an optimal solution

Greedy "stays ahead"

Today's agenda

Prove the correctness

(If we have time) Analyze run-time of the greedy algorithm

Argue correctness on the board…