

Lecture 21

CSE 331

Oct 13, 2014

Quiz starts at 1pm
and ends at 1:10pm

Time left

< 10 mins

Time left

< 5 mins

Time left

< 1 mins

Lecture starts
at 1:15pm

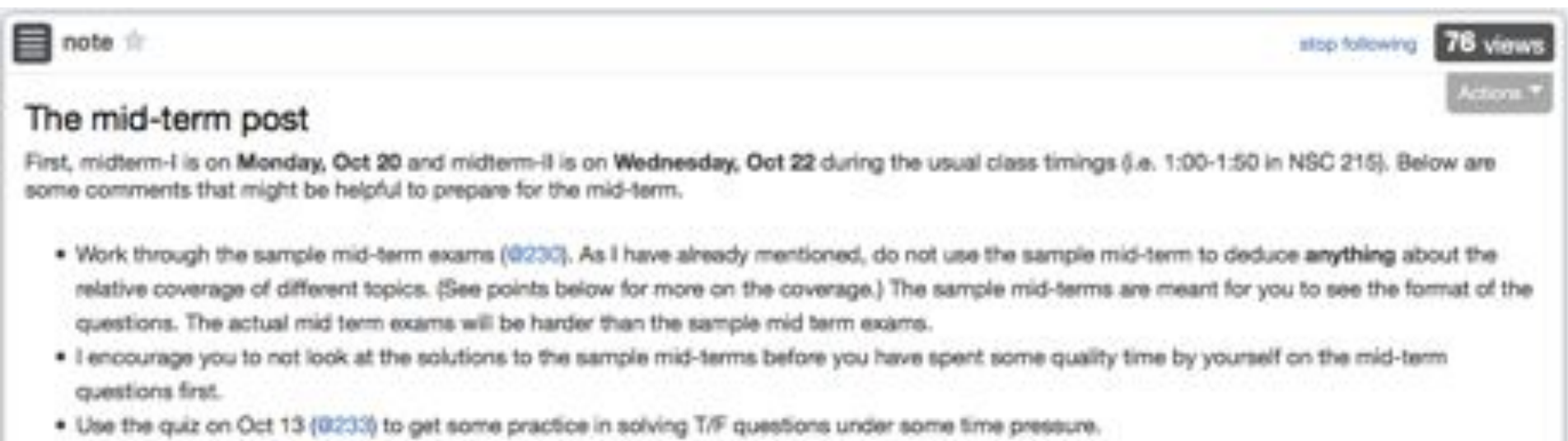
Mid-terms

Mid-term-I: Mon, Oct 20

Mid-term-II: Wed, Oct 22

Frank's recitations will cover sample mid-terms/review material if needed

Extra office hours this Thursday



The screenshot shows a social media post interface. At the top left, there is a menu icon and the text 'note' with a star icon. At the top right, there is a 'stop following' link and a '76 views' badge. Below this is a button labeled 'Actions'. The main title of the post is 'The mid-term post'. The body of the post contains a paragraph of text and a bulleted list of instructions.

note ☆

stop following 76 views

Actions ▾

The mid-term post

First, midterm-I is on **Monday, Oct 20** and midterm-II is on **Wednesday, Oct 22** during the usual class timings (i.e. 1:00-1:50 in NSC 215). Below are some comments that might be helpful to prepare for the mid-term.

- Work through the sample mid-term exams ([@233](#)). As I have already mentioned, do not use the sample mid-term to deduce **anything** about the relative coverage of different topics. (See points below for more on the coverage.) The sample mid-terms are meant for you to see the format of the questions. The actual mid term exams will be harder than the sample mid term exams.
- I encourage you to not look at the solutions to the sample mid-terms before you have spent some quality time by yourself on the mid-term questions first.
- Use the quiz on Oct 13 ([@233](#)) to get some practice in solving T/F questions under some time pressure.

My office hours next Mon canceled

note 0 views

Office Hours on Monday, Oct 20 canceled

I will be out of town on Monday, October 20 and Tuesday, 21. (The first mid-term will of course will be held as planned from 1-1:50pm on Oct 20: I will get some extra proctoring help for Frank and Zulkar-- more on this later in the week.)

So my office hours on Oct 20 are canceled. In particular, if you want to chat with me in person before the exams, please stop by during my office hours this week. (I will be checking piazza somewhat regularly when I am out of town, so should be able to field questions on piazza.)

[office_hours](#)

[edit](#) good note 0 Just now by Abi Rudra

Scheduling to minimize lateness

n jobs: i th job (t_i, d_i)

start time: s

Schedule the n jobs: i th job gets interval $[s(i), f(i)=s(i)+t_i-1]$

At most one job at any time

Not the sum

Algo picks $s(i)$

GOAL: Minimize MAXIMUM lateness

Lateness of job i , $l_i = \max(0, f(i) - d_i)$

The Greedy Algorithm

(Assume jobs sorted by deadline: $d_1 \leq d_2 \leq \dots \leq d_n$)

$f = s$

For every i in $1..n$ do

Schedule job i from $s(i) = f$ to $f(i) = f + t_i - 1$

$f = f + t_i$

Solving end of Semester blues



Term paper

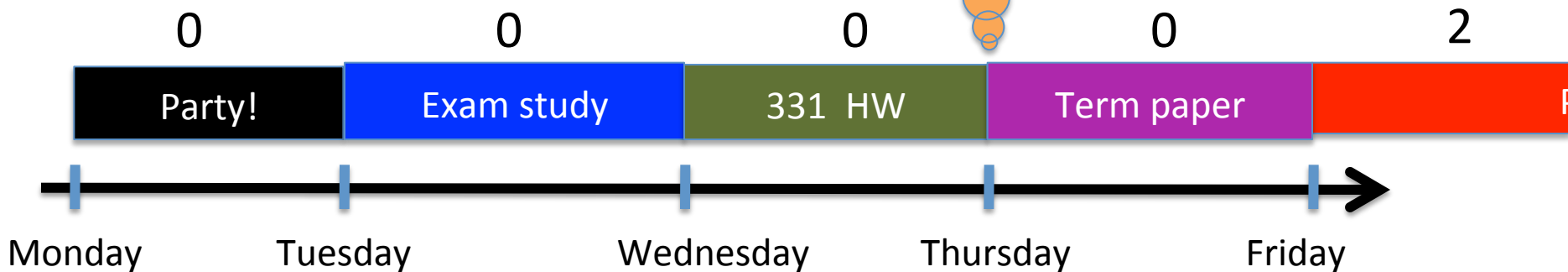
Exam study

Party!

331 HW

Project

Max lateness = 2



Two definitions for schedules

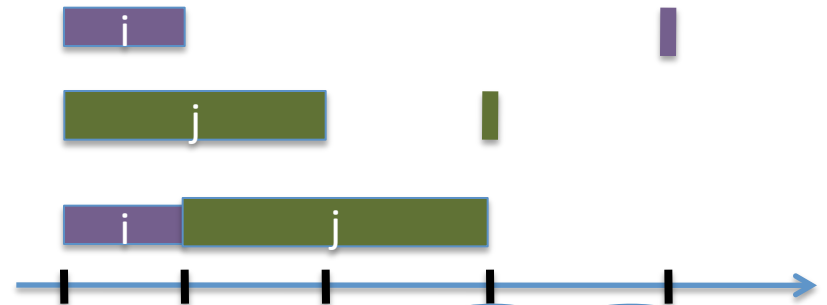
Idle time

Max “gap” between two consecutively scheduled tasks



Inversion

(i,j) is an inversion if i is scheduled before j but $d_i > d_j$



$f=1$

For every i in $1..n$ do

Schedule job i from $s_i=f$ to $f_i=f+t_i$

$f=f+t_i$

0 idle time and 0
inversions for greedy
schedule

We stated last lecture

Any two schedules with 0 idle time and 0 inversions have the same max lateness

Proving greedy is optimal

Any two schedules with 0 idle time and 0 inversions have the same max lateness

Greedy schedule has 0 idle time and 0 inversions

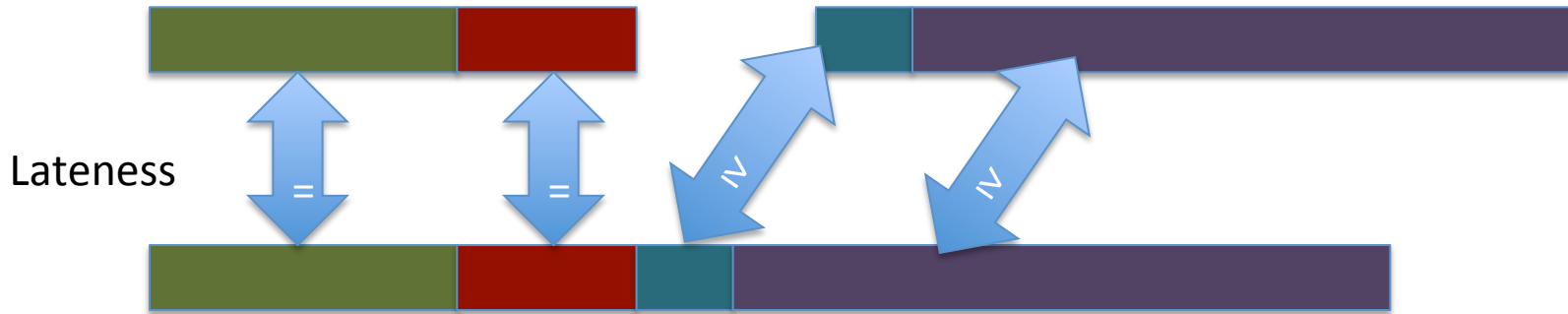
To prove

Any two schedules with 0 idle time and 0 inversions have the same max lateness

Greedy schedule has 0 idle time and 0 inversions

There is an optimal schedule with 0 idle time and 0 inversions

Optimal schedule with 0 idle time



“Only” need to convert a 0
idle optimal ordering to one
with 0 inversions (and 0 idle
time)



Today's agenda

Prove any schedules with 0 idle time and 0 inversions have the same **L**

“Exchange” argument to convert an optimal solution into a 0 inversion one