Lecture 20

CSE 331

Oct 14, 2016

Mid-term-I Monday

In class

1:00pm-1:50pm sharp

Eight True/False with justification Qs

Graded Quiz 1

On Autolab by tonight

Graded HW4

Hopefully by tonight

Last warning on sources

note

stop following 41 views

Actions

How not to get an F in CSE 331

(You have been only using sources among the list of the approved five sources then you can ignore this.)

I thought I had laid out clearly in @363 that you cannot use sources outside of the five that are allowed. Among others this clearly rules out textbooks other than the Kleinberg-Tardos book as well as youtube videos and webpages (unless they are on the CSE 331 webpage or linked from it or linked from piazza).

Unfortunately, there are at least couple of you who have used unapproved sources even in HW4.

I am now getting a bit miffed about this. However, I want to give you guys one last chance.

YOU HAVE TILL 5PM ON SATURDAY (OCT 15) TO WITHDRAW ANY HW SUBMISSION THAT USES AN UNAPPROVED SOURCE. AFTER THAT YOU WILL GET AN F IN THE COURSE.

While it does not give me any pleasure for giving F in the course, at this point I am at the end of my patience on this manner. So if you used an unapproved source, then email me to withdraw your HW submission (you will get a 0 on that question but you will not fail the course).

Note that from HW 5 onwards using unapproved source will result in an **immediate F**.
#pin

Scheduling to minimize lateness

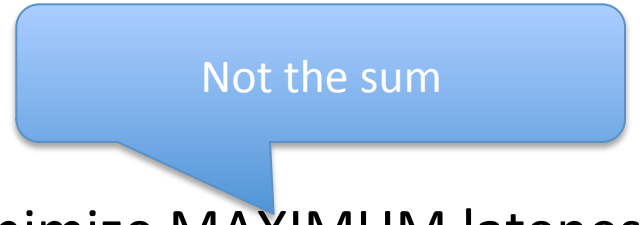
n jobs: ith job (t_i,d_i)

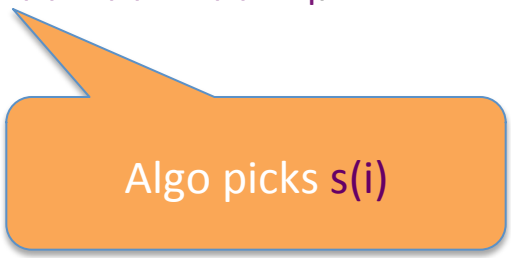
start time: s

Schedule the n jobs: ith job gets interval [s(i),f(i)=s(i)+t_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: $d_1 \leq d_2 \leq \ldots\ldots \leq d_n$)

f=s

For every i in 1..n do

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

f=f+t_i

Solving end of Semester blues

Term paper

Exam study

Party!

331 HW

Project

Max lateness
= 2

0 0 0 0 2

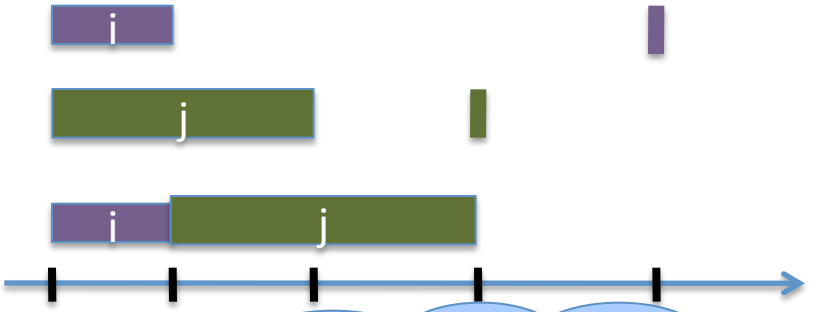
Party! | Exam study | 331 HW | Term paper | P

Monday Tuesday Wednesday Thursday Friday

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 will prove

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

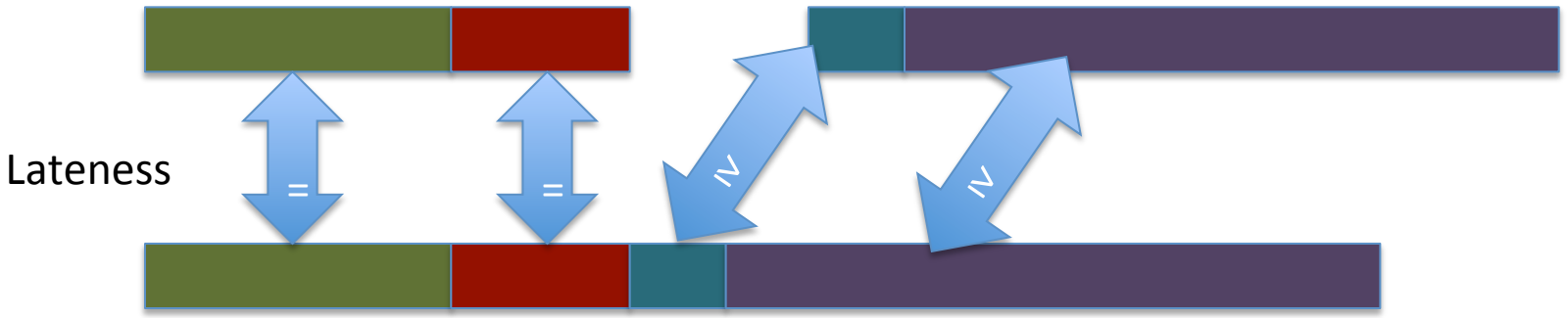
To prove

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