Lecture 17

CSE 331

Oct 4, 2019

HW 5 is out

Homework 5

Due by **11:00am, Friday, October 11, 2019**.

Make sure you follow all the homework policies.

All submissions should be done via Autolab.

The care package on minimizing the maximum lateness problem would be useful for Q3 and *might* be useful for Q2(b) as well.

Question 1 (High Speed Internet) [50 points]

The Problem

We come back to the issue of many USA regions not having high speed internet. In this question, you will consider an algorithmic problem that you would need to solve to help out a (fictional) place get high speed Internet.

You are the algorithms whiz in the effort to bring high speed Internet to `SomePlaceInUSA`. After lots of rounds of discussions and public feedback, it was decided that the most cost-effective way to bring high speed internet to `SomePlaceInUSA` was to install high speed cell towers to connect all houses in `SomePlaceInUSA` to high speed internet. There are two things in your favor:

1. It just so happens that all of the n houses in `SomePlaceInUSA` are on the side of a straight road that runs through the town.
2. The above implies that you only need cell towers that only need to broadcast their signal in a narrow range, which means one cell tower can provide high speed internet access to all houses within 100 miles *ahead* (rather than the usual 45 mile range) on the road from its location (we are assuming that these cell towers will be on the

HW 4 Solutions

At the end of the lecture

Graded HW 3

Perhaps by tonight?

Quiz on Monday

note

stop following 160 views

Quiz 1 on Monday, Oct 7

The first quiz will be from **1-1:10pm in class** on **Monday, October 7**. We will have a 5 mins break after the quiz and the lecture will start at 1:15pm.

We will hand out the quiz paper at 12:55pm but you will **NOT** be allowed to open the quiz to see the actual questions till 1pm. However, you can use those 5 minutes to go over the instructions and get yourself in the zone.

There will be two T/F with justification questions (like those in the sample mid term 1: @641.) Also quiz 1 will cover all topics we cover in class till Friday, Oct 4.

Also like the mid-term y'all can bring in one letter sized cheat-sheet (you can use both sides).

#pin

quiz1

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Updated 2 days ago by Atri Rudra

Update on coding project tonight

Coding Mini Project

Problem 1 due at **11am, Friday, October 25, 2019**.

Problems 2 and 3 due at **11am, Friday, November 22, 2019**.

Problems 4 and 5 due at **11am, Friday, December 6, 2019**.

All submissions should be done via Autolab.

Acknowledgment

The development of the coding component of the mini-project was supported by a Mozilla Responsible Computer Science award. The support is gratefully acknowledged.

Some Suggestions and Warnings

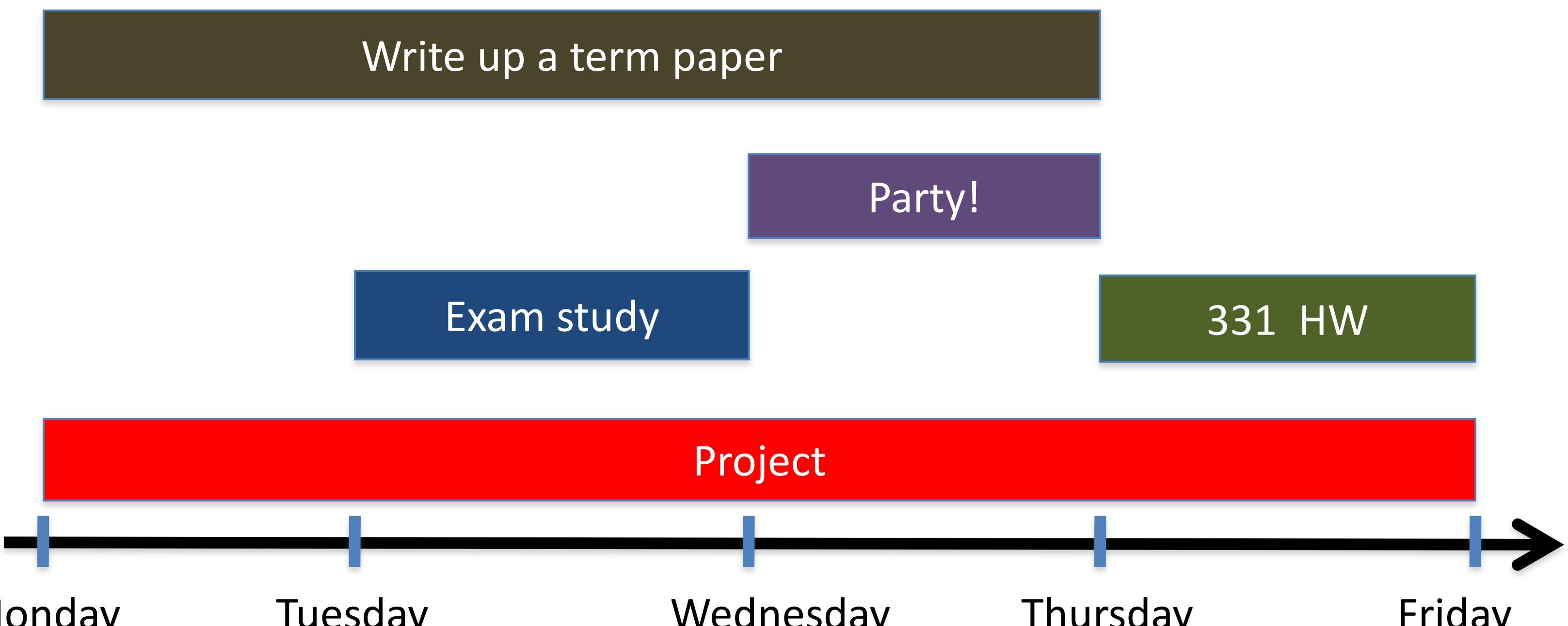
While this coding mini-project is somewhat similar to Question 3s on the homework, there are some crucial differences and we wanted to highlight few things for y'all upfront:

Form groups of size ≤ 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 **at most 3**. The submissions will be on Autolab and *everyone in the group will get the same grade.* The project will be challenging so **we highly recommend that you form a group of size at least 2 to make the workload reasonable**.

The “real” end of Semester blues

There are deadlines and durations of tasks



The "real" end of Semester blues

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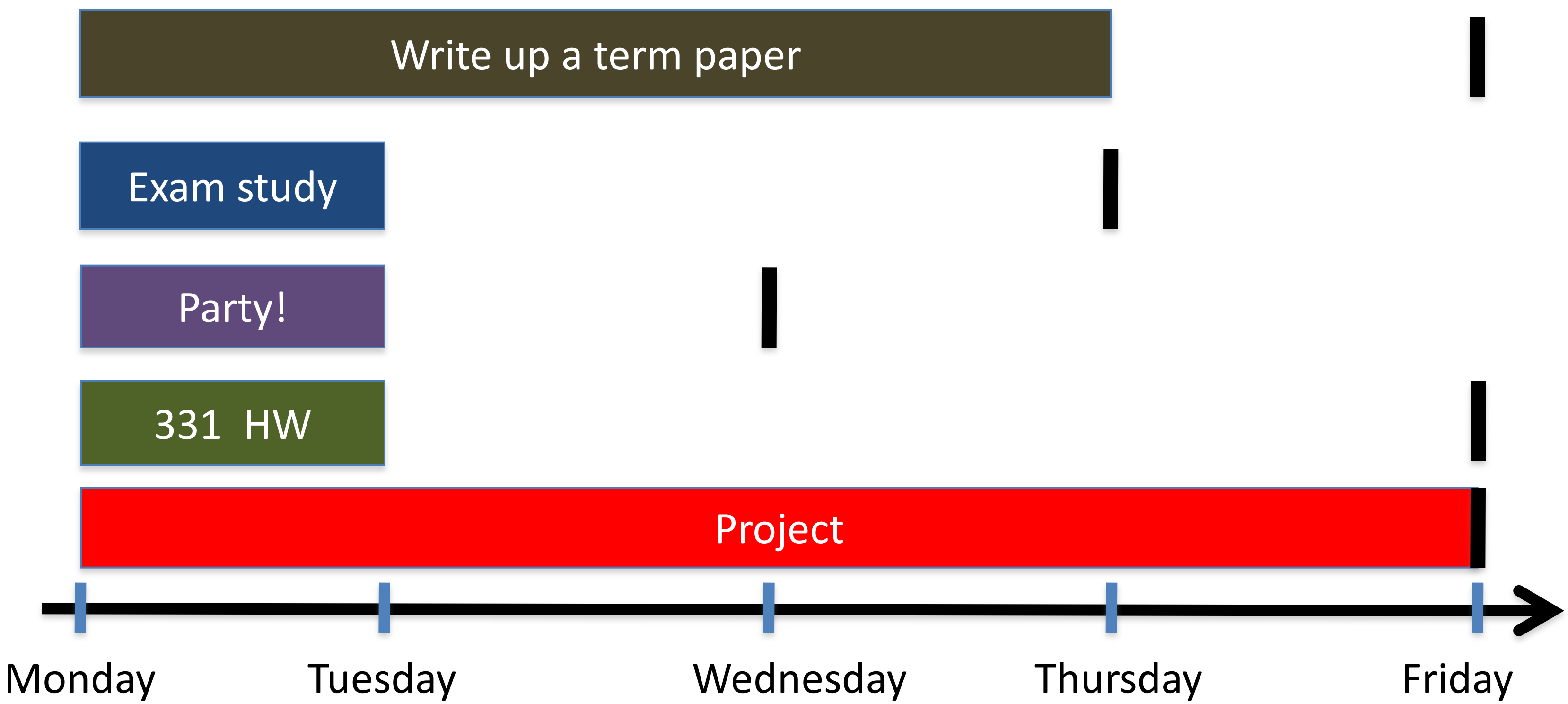
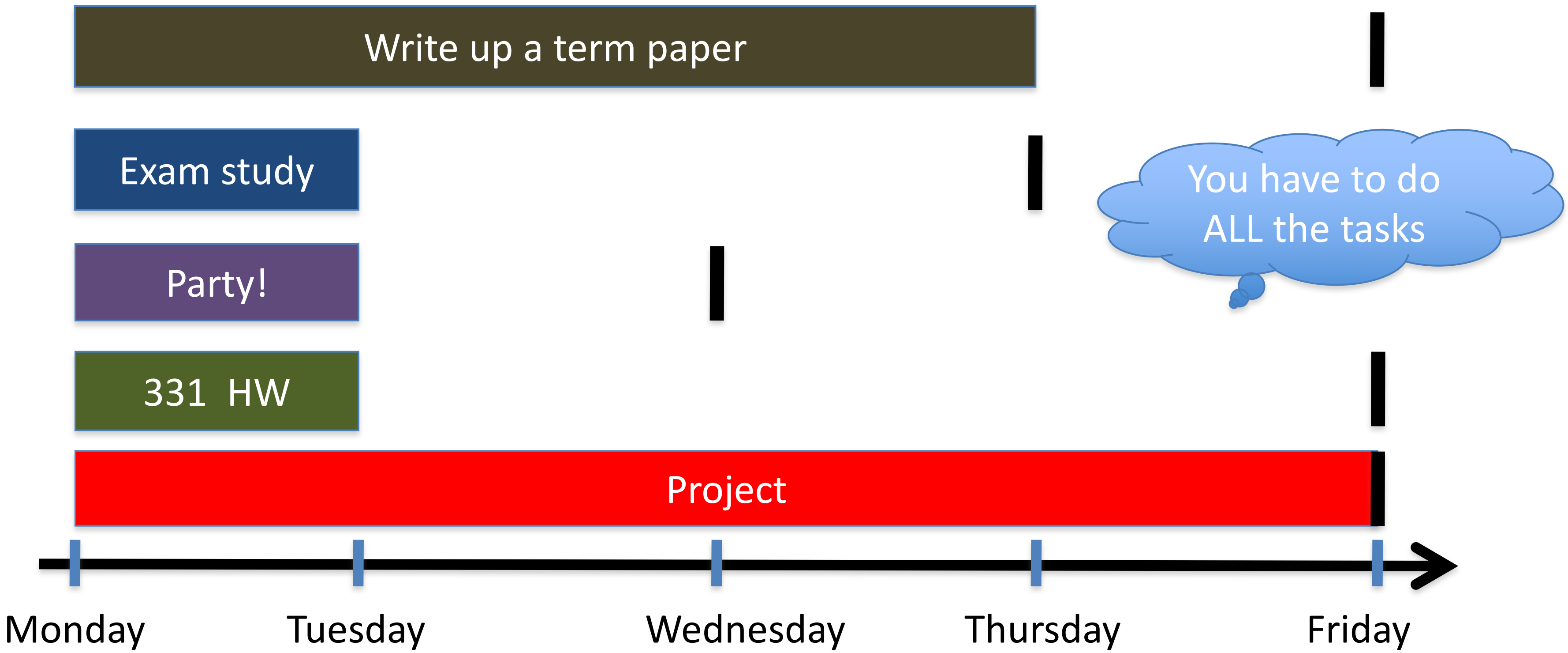


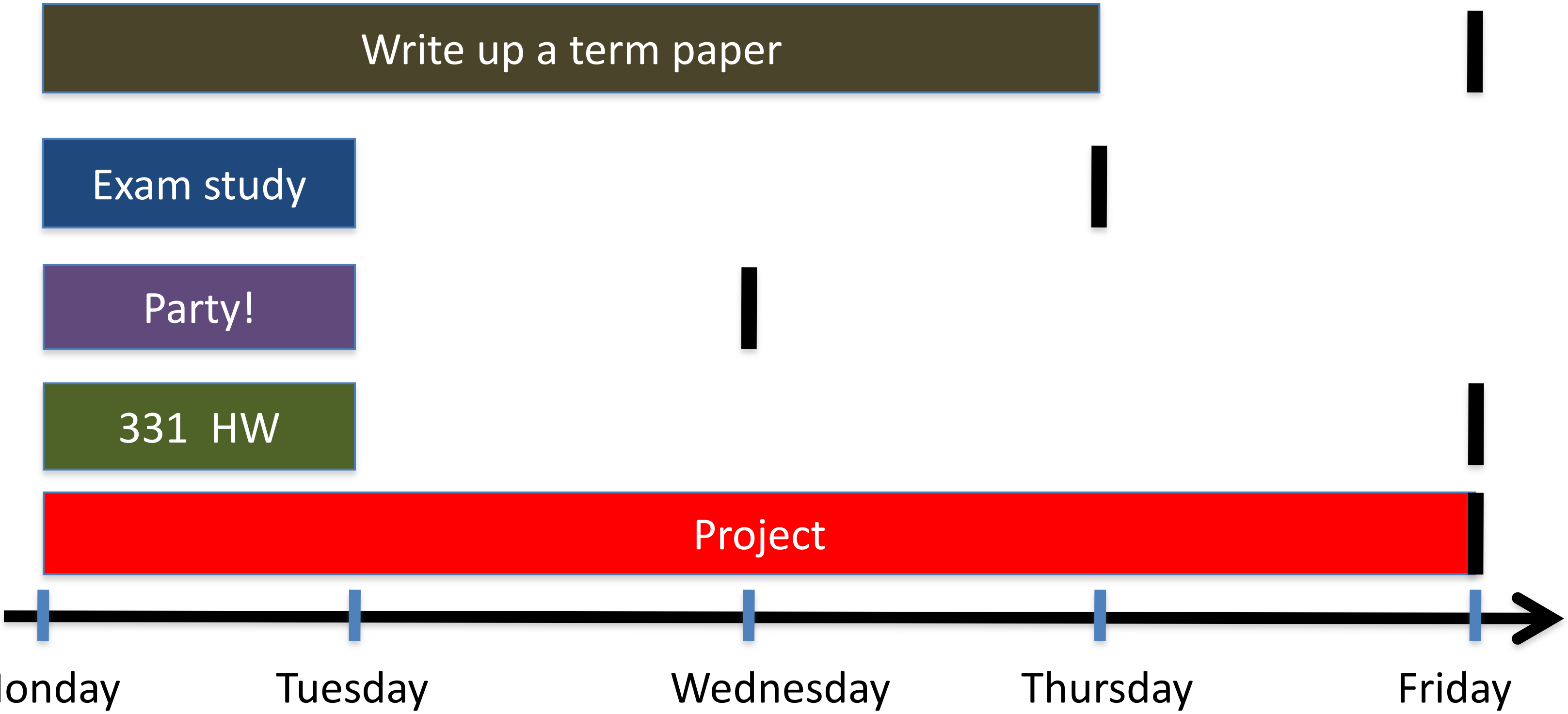
The algorithmic task

YOU decide when to start each task



Scheduling to minimize lateness

All the tasks have to be scheduled
GOAL: minimize maximum lateness



One possible schedule

All the tasks have to be scheduled
GOAL: minimize maximum lateness

Lateness = 0

Lateness = 2

331 HW

Party!

Exam study

Write up a term pa

Monday

Tuesday

Wednesday

Thursday

Friday

Minimizing Max Lateness

Minimizing Maximum Lateness

This page collects material from previous incarnations of CSE 331 on scheduling to minimize maximum lateness.

Where does the textbook talk about this?

`Section 4.2` in the textbook has the lowdown on the problem of scheduling to minimize maximum lateness.

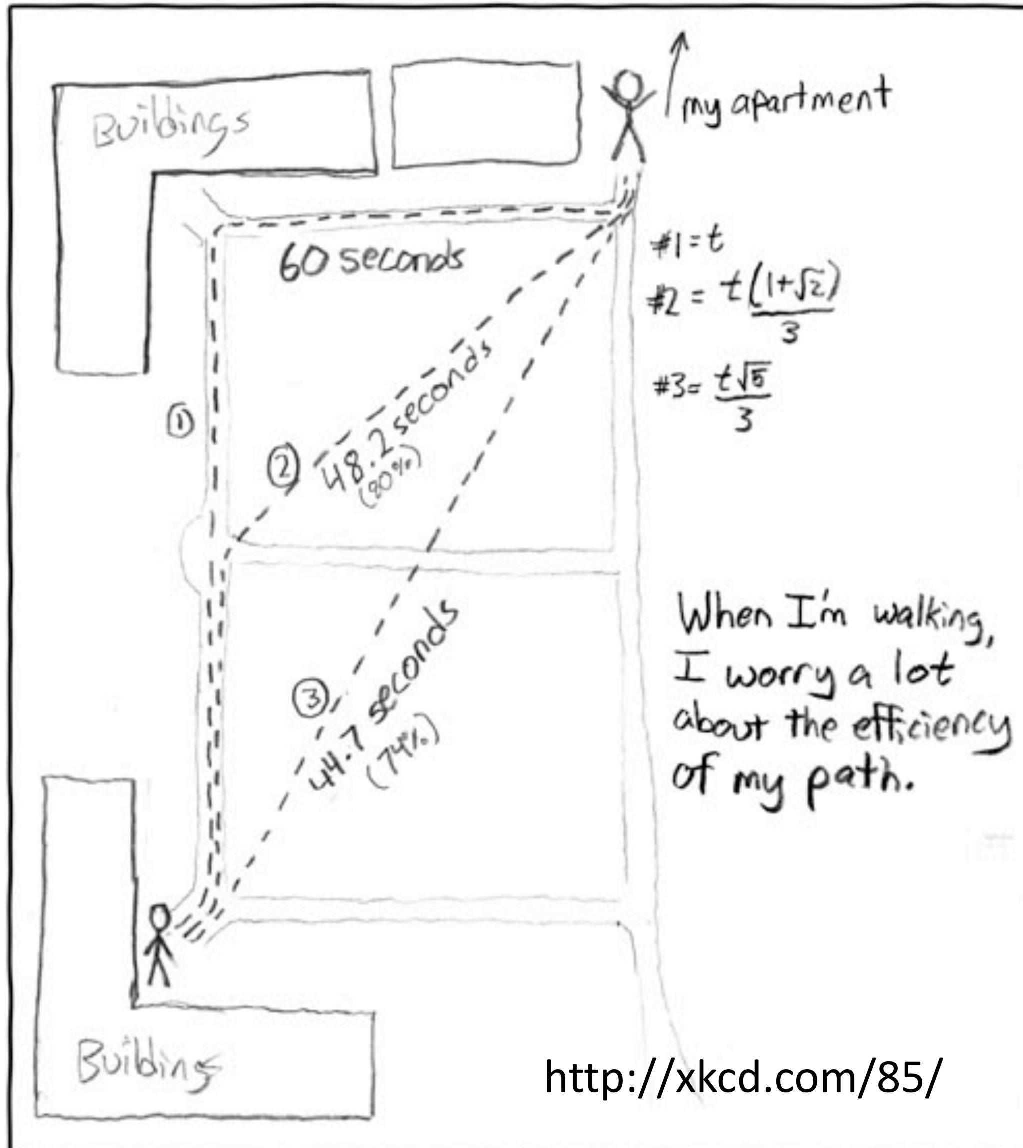
Fall 2018 material

First lecture

Here is the lecture video:

Today

Shortest Path Problem

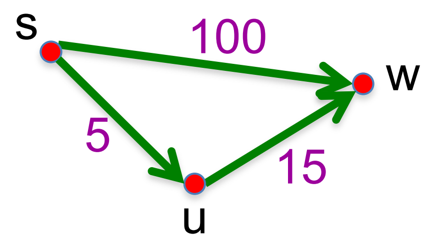


http://xkcd.com/85/

Reading Assignment

Sec 2.5 of [KT]

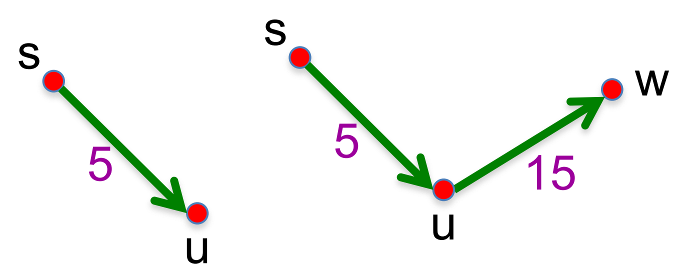
Shortest Path problem



Input: *Directed* graph $G=(V,E)$

Edge lengths, l_e for e in E

"start" vertex s in V



Output: All shortest paths from s to all nodes in V

Naïve Algorithm

$\Omega(n!)$ time

Dijkstra’s shortest path algorithm