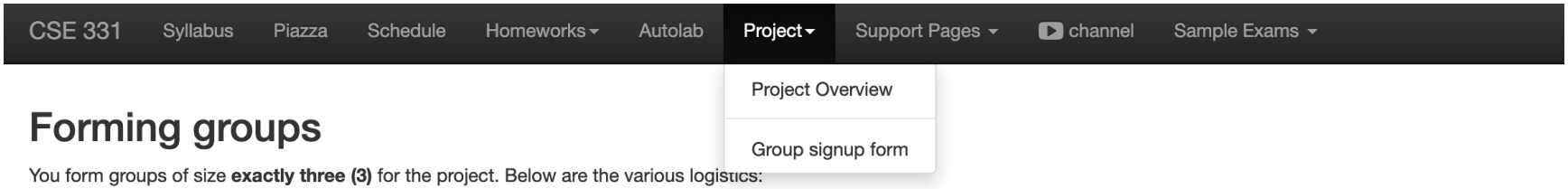
Lecture 10

CSE 331

Sep 18, 2024

Register your project groups

Deadline: Friday, Sep 20, 11:59pm



Forming groups

You form groups of size **exactly three (3)** for the project. Below are the various logistics:

- You have two choices in forming your group:
  1. You can form your group on your own: i.e. you can submit the list of EXACTLY three (3) group members in your group.

> **</> Note**
>
> Note that if you pick th… …nnot submit as a group of size two. If …
>
> Also, if you form a gro…

If you miss this deadline then you will get a ZERO on the ENTIRE project

  2. You can submit *just your name*, and you will be assigned a random group *among all students who take this second option.* However, **note that if you pick this option, you could end up in a group of size** 2. There will be at most two groups of size 2.

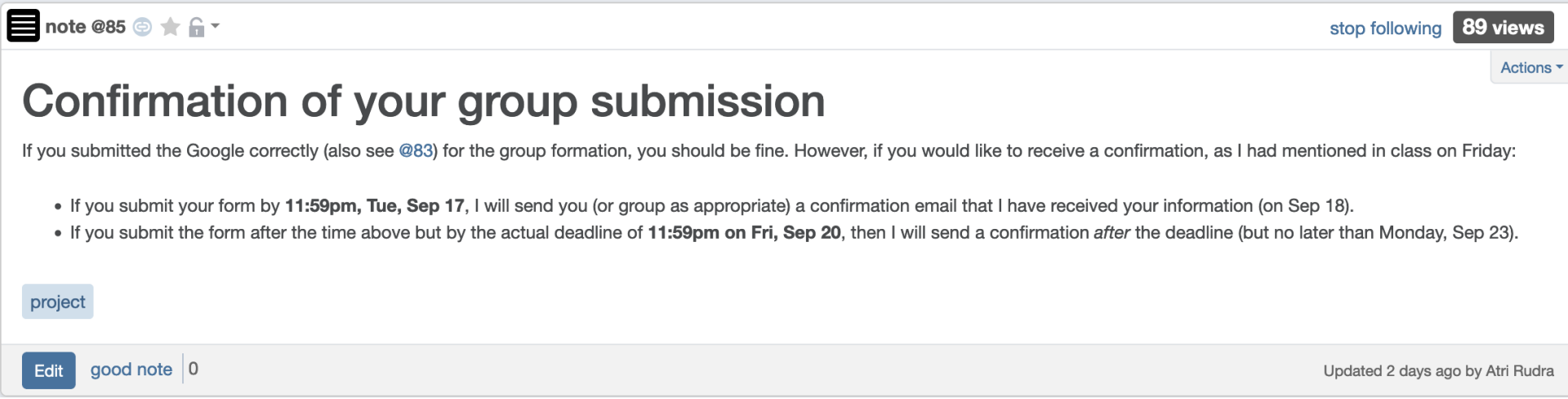
> **</> Potential risk**
>
> Note that if you pick the option of being assigned a random group, you take on the risk that a assigned group might not "pull their weight." We unfortunately cannot help with such aspects of group dynamics. (Of course if a group member is being abusive, please do let Atri know.) Please note that a group member who does not do much work will get penalized on the individual component of the project grade.

- **Submitting your group composition**

  Use this Google form to submit your group composition (the form will allow you to pick one of the two options above).

- You need to fill in the form for group composition by **11:59pm on Friday, September 20**.

Confirmation of form submission



Expect a confirmation by midnight tonight

If you need it, ask for help

Piazza response policy

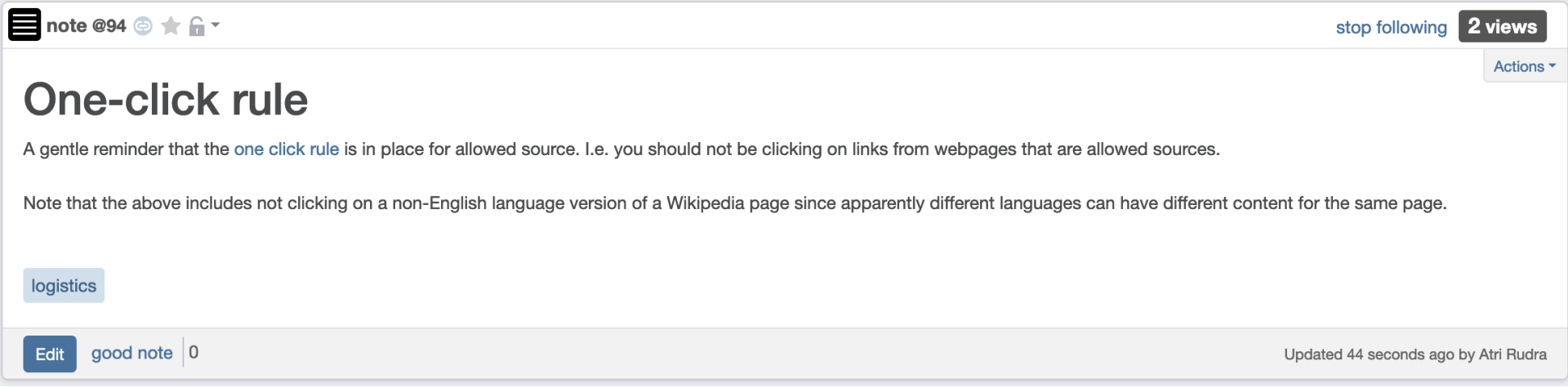
Piazza Response policy

Please note the following rules regarding response time to student questions on Piazza:

1. Any question posted between Friday 5pm and Monday 9am might not get an answer from CSE 331 staff before Monday 9am.
2. On weekdays, we will aim to respond to student question within four hours unless the question is posted between 7pm and 9am, in which case we might only be able to respond after 9am.

Please note that the above does *not* means that we will never answer questions posted in the evening/night times as mentioned above-- it's just that we might not always be able to respond within four hours. Based on previous years, I do expect there to be reasonable response time in the evening times as well-- it's just that OUR response times might be more variable.

“One click” rule



If you did an AI violation on HW 1

You can still withdraw it with no penalty by 11:59pm tonight

Withdrawing a submission for academic integrity violation

Sometime mistakes can happen so you have the **option of withdrawing any of your Homework submission with 24 HOURS of the assignment deadline**. You can do this by sending Atri an email, e.g. by using the following template (thanks to Oliver Kennedy for providing us the template):

> ### Email template for withdrawing submission
> Dear Dr. Rudra/Atri,
>
> I wish to inform you that I have violated CSE 331 policies on my submission for Question X on Homeworks/Assignment N. I wish to withdraw my submission to preserve academic integrity.
>
> J.Q. Student
> Person #12345678
> UBIT: jqstuden
>
> Sincerely, J

On receiving the above email, I will assign J a 0 on Question X on Homeworks/Assignment N but disregard any Academic Integrity issues with the problematic submission. Note that J is not required to present any details on how they violated academic integrity.

Homework 2 out!

Homework 2

Due by **11:30pm, Tuesday, September 24, 2024**.

Make sure you follow all the homework policies.

All submissions should be done via Autolab.

Sample Problem

The Problem

This problem is just to get you thinking about asymptotic analysis and input sizes.

An integer $n \geq 2$ is a prime, if the only divisors it has is 1 and n. Consider the following algorithm to check if the given number n is prime or not:

For every integer $2 \leq i \leq \sqrt{n}$, check if i divides n. If so declare n to be *not* a prime. If no such i exists, declare n to be a prime.

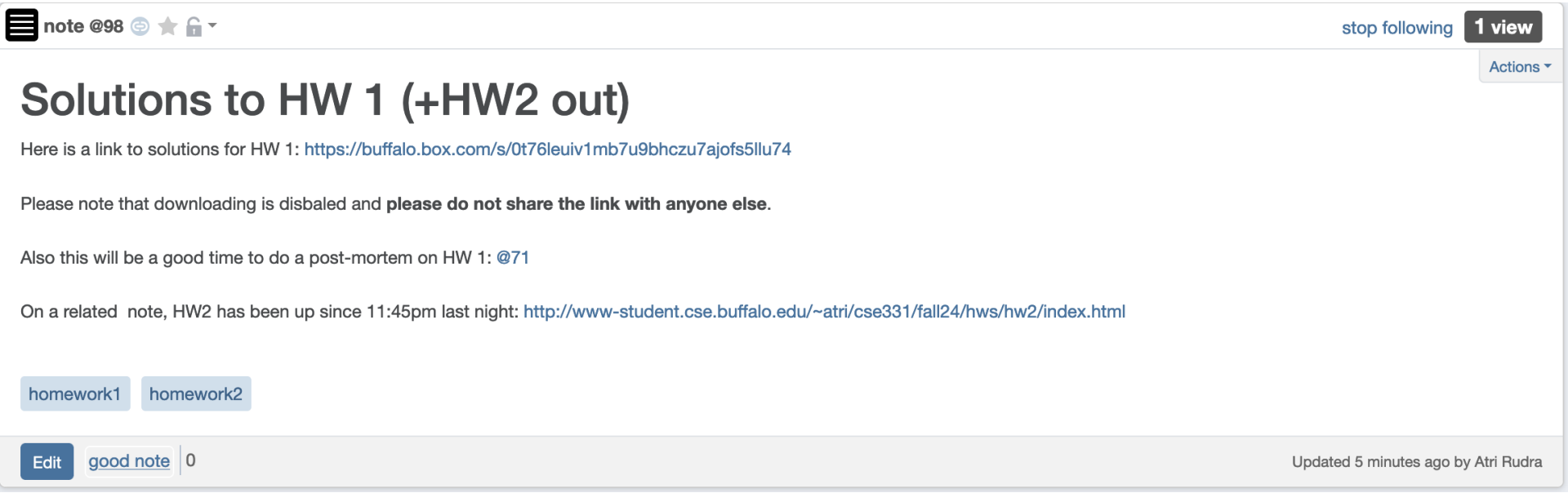
What is the function $f(n)$ such that the algorithm above has running time $\Theta(f(n))$? Is this a polynomial running time -- justify your answer. (A tangential question: Why is the algorithm correct?)

Click here for the Solution

Submission

You will **NOT** submit this question. This is for you to get into thinking more about asymptotic analysis.

HW 1 solutions out



Implementation Steps

(0) How to represent the input?

2D arrays: WomanPref, ManPref

(1) How do we find a free woman w?

(2) How would w pick her best unproposed man m?

(3) How do we know who m is engaged to?

(4) How do we decide if m prefers w' to w?

O(n) init
O(1) query/update

Overall running time

Init(1-4)

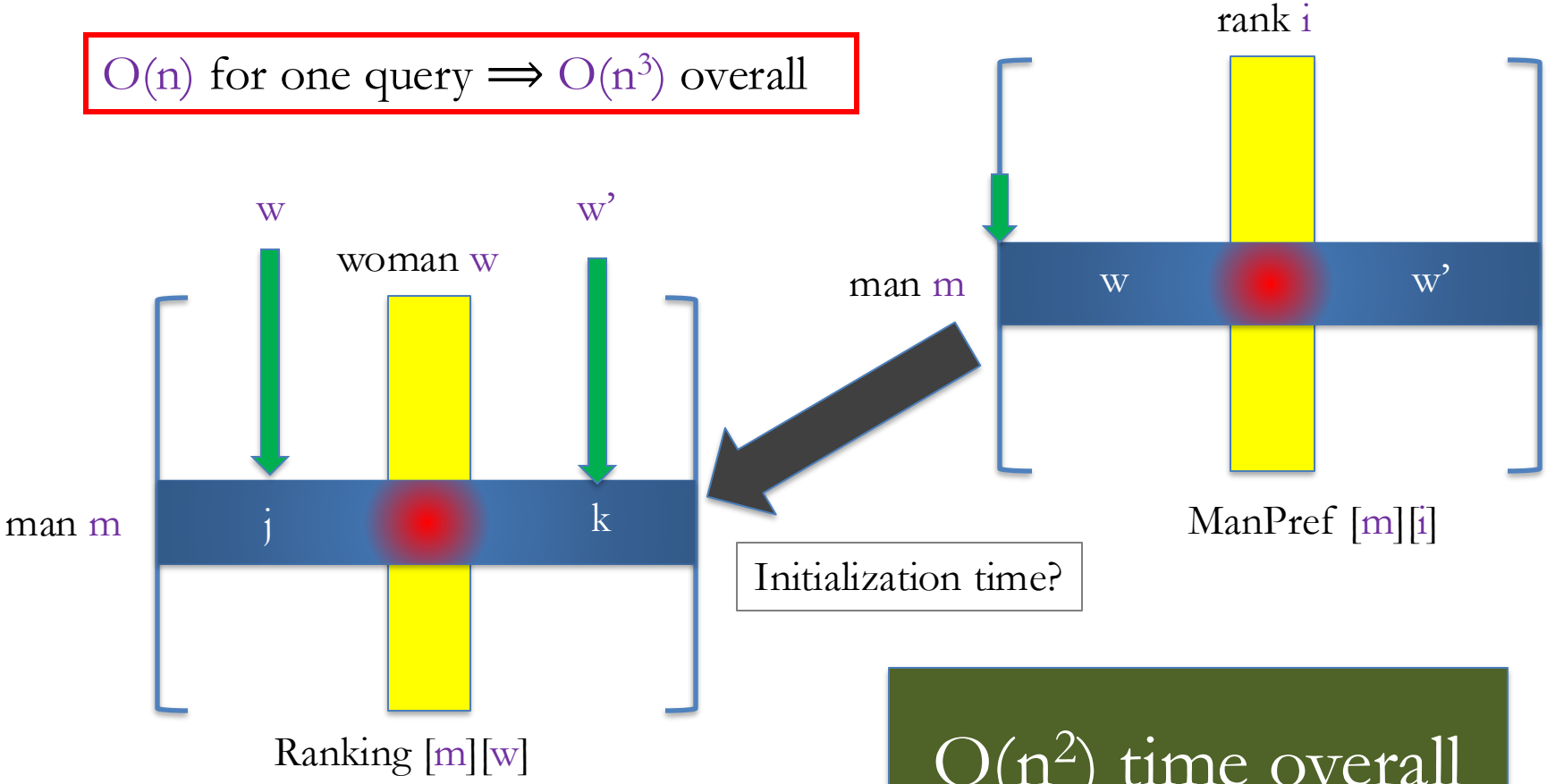
n^2 X (Query/Update(1-4))

Questions?

Rest on the board…

Answering Q4

O(n) for one query ⟹ $O(n^3)$ overall



$O(n^2)$ time overall

O(1) query time

(4) How do we decide if m prefers w' to w?

Puzzle

Prove that **any** algorithm for the SMP takes $\Omega(n^2)$ time