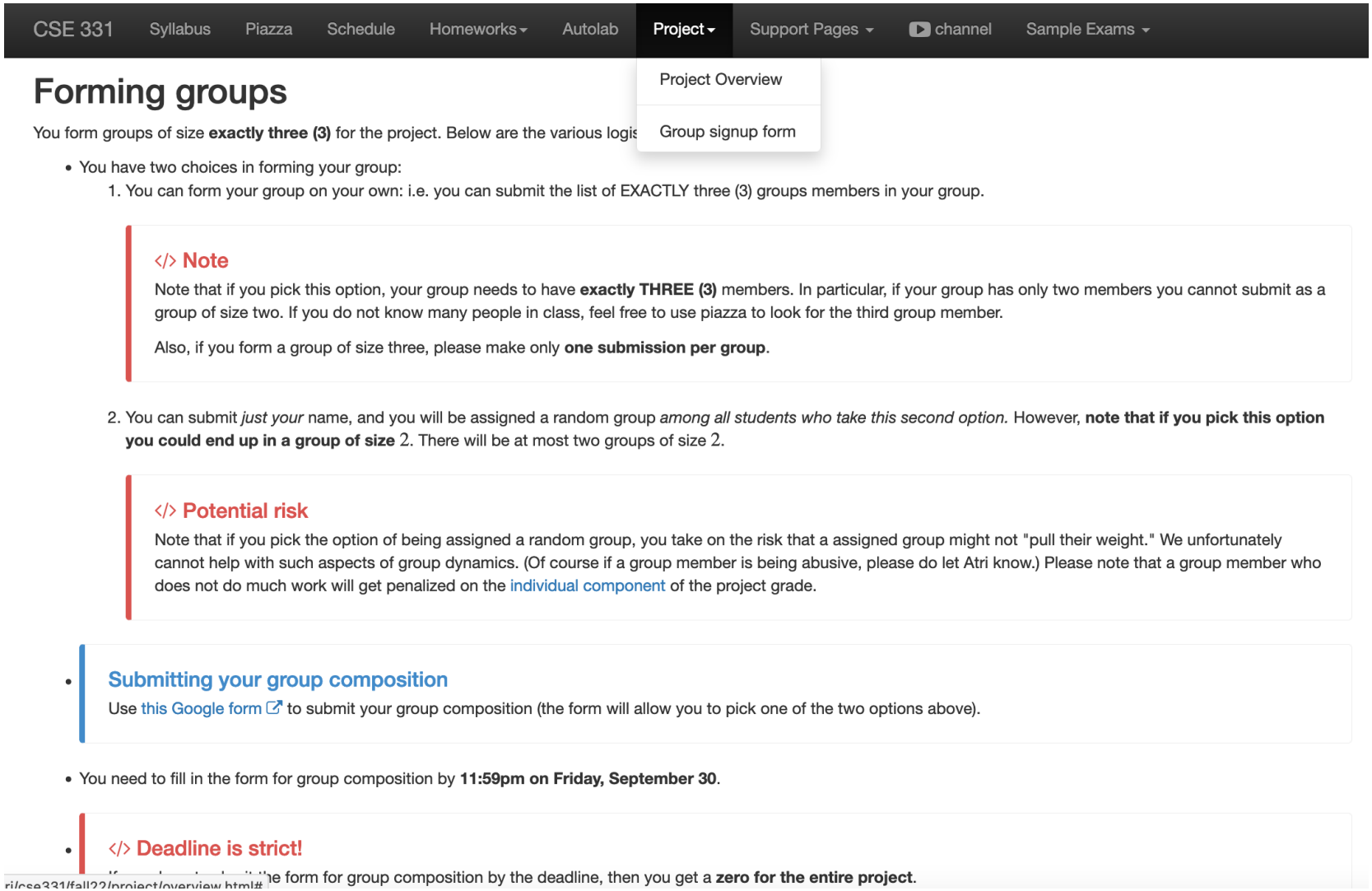
Lecture 7

CSE 331

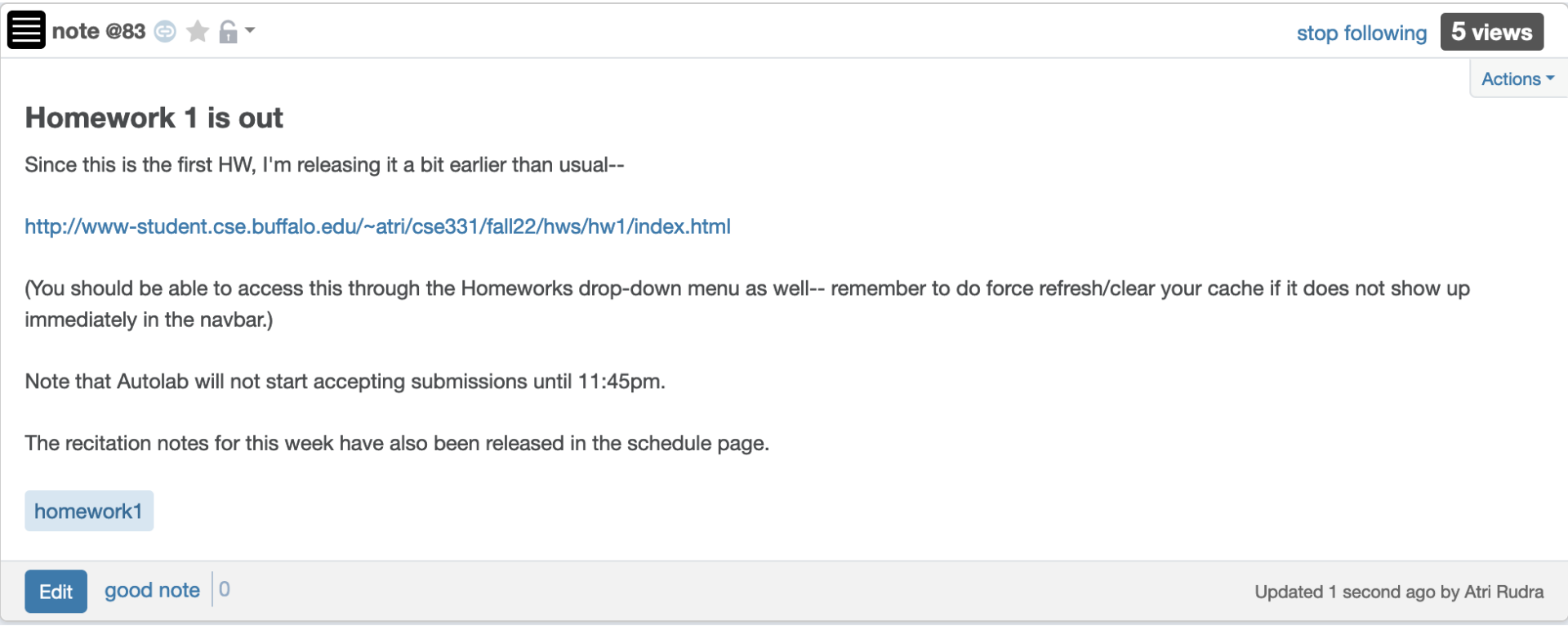
Sep 14, 2022

Register your project groups

Deadline: Friday, Sep 30, 11:59pm



HW 1 is out!


note @83

stop following 5 views

Actions

Homework 1 is out

Since this is the first HW, I'm releasing it a bit earlier than usual--

http://www-student.cse.buffalo.edu/~atri/cse331/fall22/hws/hw1/index.html

(You should be able to access this through the Homeworks drop-down menu as well-- remember to do force refresh/clear your cache if it does not show up immediately in the navbar.)

Note that Autolab will not start accepting submissions until 11:45pm.

The recitation notes for this week have also been released in the schedule page.

homework1

Edit good note 0

Updated 1 second ago by Atri Rudra

Working in groups

note @80 stop following 0 views Actions

Working in groups

Given that HW 1 will be out today, I figured I should re-post an entry from last year's piazza, which might be useful for y'all. Without further ado, below is the post from last time (copied verbatim).

During my office hour today some of you mentioned that students are feeling scared to form groups. Assuming this is not an isolated event, I wanted to state emphatically that **y'all are STRONGLY encouraged to work in groups for the homeworks** (you do not have a choice for the project since there is only one submission per group for the project).

As a practical reason why y'all should be working as a group, please note that Q2 on the HWs are supposed to hard *for a group*! So if you are working alone, then you are setting yourself up for a lot of extra work that you do not need to. (If you do have a lot of free time in your schedule then working alone *might* be doable but for a typical schedule not working in groups is setting yourself up with a completely *avoidable* handicap.)

I was told the issue was fear of breaching academic integrity if you work on your HW as a group. So let me offer some clarifications/suggestions:

- It is true that you are only supposed to collaborate to the extent of proof/algorithm idea and not work on proof/algorithm details together. Also while taking notes during the discussion is fine, it is generally not a good idea to copy things down verbatim from the discussion. (But see next point.)
- A related worry is that even if y'all do the above, then the submissions within a group would still be similar that would lead to academic integrity violation. This is **simply incorrect!** We do understand that when collaborating together, the final submission would be similar (even if the submissions were written up individually) and this is perfectly acceptable! What we do not want is to receive essentially identical submissions-- as graders, we can pretty easily figure out

Just putting in time is not enough

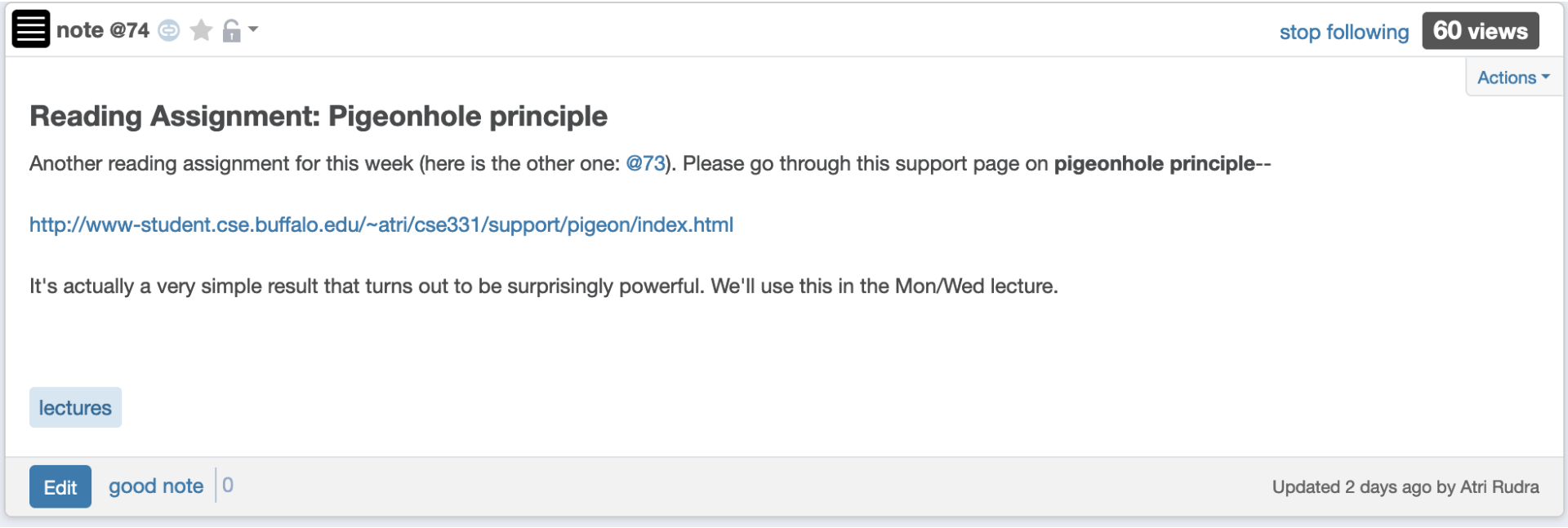
You will be graded on *what you submit* and **not** how much time you spent

Be smart in how you spend your time

Please ask for help, get feedback if you get stuck!

Questions/Comments?

Read your reading assignment?



Gale-Shapley Algorithm

Intially all men and women are free

While there exists a free woman who can propose

Let w be such a woman and m be the best man she has not proposed to

w proposes to m

If m is free

(m,w) get engaged

Else (m,w') are engaged

If m prefers w' to w

w remains free

Else

(m,w) get engaged and w' is free

Output the engaged pairs as the final output

Observation 1

Intially all men and women are free

While there exists a free woman who can propose

Let w be such a woman and m be the best man she has not proposed to

w proposes to m

If m is free

(m,w) get engaged

Else (m,w') are engaged

If m prefers w' to w

w remains free

Else

(m,w) get engaged and w' is free

Once a man gets engaged, he remains engaged (to "better" women)

Output the engaged pairs as the final output

Observation 2

Intially all men and women are free

While there exists a free woman who can propose

Let w be such a woman and m be the best man she has not proposed to

w proposes to m

If m is free

(m,w) get engaged

Else (m,w') are engaged

If m prefers w' to w

w remains free

Else

(m,w) get engaged and w' is free

If w proposes to m after m', then she prefers m' to m

Output the set S of engaged pairs as the final output

Questions/Comments?

Today's lecture

GS algorithms always outputs a stable marriage

The Lemmas

Lemma 1: The GS algorithm has at most n^2 iterations

Lemma 2: S is a perfect matching

Lemma 3: S has no instability

Questions/Comments?

On to the board…