Lecture 24

CSE 331

Oct 30, 2023

Project deadlines coming up

Tue, Oct 31		(HW 5 in)
Wed, Nov 1	Multiplying large integers ▶F22 ▶F21 ▶F19 ▶F18 ▶F17 x^2	[KT, Sec 5.5] *Reading Assignment:* Unraveling the mystery behind the identity
Fri, Nov 3	Closest Pair of Points ▶F22 ▶F21 ▶F19 ▶F18 ▶F17 x^2	[KT, Sec 5.4] (**Project (Problems 1 & 2 Coding) in**)
Mon, Nov 6	Kickass Property Lemma ▶F22 ▶F21 ▶F19 ▶F18 ▶F17 x^2	[KT, Sec 5.4] (**Project (Problems 1 & 2 Reflection) in**)

Group formation instructions

Autolab group submission for CSE 331 Project

The lowdown on submitting your project (especially the coding and reflection) problems as a group on Autolab.

Follow instructions **EXACTLY** as they are stated

The instruction below are for Coding Problem 1
You will have to repeat the instructions below for EACH coding AND reflection problem on project on Autolab (with the appropriate changes to the actual problem).

Form your group on Autolab

Groups on Autolab will NOT be automatically created
You will have to form a group on Autolab by yourself (as a group). Read on for instructions on how to go about this.

Click to add notes

Do not use Join a Group "feature"

Actions ▾

When forming groups on Autolab

I forgot to add this warning earlier but I have updated the Autolab project page to add a warning to **not click on the "Join a Group" function when you are creating your group on Autolab:**

Do NOT click on `Join a Group`

Do NOT use the "Join a Group" feature. ONLY follow the instructions above EXACTLY.

This step can be un-done but needs intervention on our part BUT that'll cause delays on your side and we are not responsible if you miss your deadline due to this delay.

Here is what such an option looks like (the actual group name and group members would be different in your case:

Join a Group ← Do NOT use this option

TAs_(Java_testers)

Gitanjali Nandi, Thomas Sherwood

Ask to Join Group

project   autolab

Please be in touch w/ your group

Actions ▾

Please respond to your project group mates

Please do respond back if a group project member reaches out to you to get started on the project. Just FYI, *I always reserve the right to kick you out of your group (which means a 0 for you)* in case you are unresponsive to repeated requests from your group members.

I understand some of you might be busy now-- it is fine with me if your group decide *as a whole* how the work will be divided (so e.g. someone does less work on the initial problems and someone does more work on the later problems). As long as the group agrees, I do not care about the details.

But please do respond back in a timely fashion: not doing so is you not doing your part in a group project.

project

Edit   good note │ 0   Updated 2 weeks ago by Atri Rudra

Mid-term temp grade assigned

Mid-term temp grade

(For details on grading of mid-term exam, see @376 and @386. More details on one-on-one meetings are in @392.)

Your temp letter grades have been assigned. To calculate your grade, you must first calculate your raw score R as follows:

- Add up your HW scores from HW1-3 to calculate H (out of a max of 300)
- Let Q be your quiz 1 score (out of a max of 10)
- Let M be your mid-term score (out of a max of 100).

Then R is calculated as follows (out of a maximum possible of 55):

$$R = \tfrac{30}{300} \cdot H + Q \cdot \tfrac{3}{10} + \tfrac{22}{100} \cdot M.$$

(I know the above does not fully follow the grading rubric since it does not drop any HW score and does not substitute the quiz score with the final exam T/F score if you do better on the latter. However, since this is just supposed to give you an idea of where you stand in the course, I think the above is fine as a proxy.)

Here are the stats of the raw score:

- Average: 17.28
- Median: 15.15
- Std. Dev: 10.37
- Max: 44.69

(For those who are interested the median raw score is 4 *lower* as compared to last year.)

Now to calculate your letter grade, read it off from the following map:

- A:$R \in [49.5, 55]$
- A-:$R \in [34.5, 49.5)$
- B+:$R \in [31, 34.5)$
- B: $R \in [22, 31)$
- B-: $R \in [15.15, 22)$
- C+: $R \in [13, 15.15)$
- C: $R \in [10.5, 13)$
- C-: $R \in [9, 10.5)$
- D: $R \in [6.5, 9)$

1-on-1 meeting slots

Actions ▾

Meetings to discuss CSE 331 performance

By Sunday tonight, I will email those who have a D+ or below in their mid-term grade (for more details on the grade see @393) to setup a one-on-one meeting to talk with me but I figured I should post the information about meeting times now rather than tomorrow.

Of course you can also come and talk about your 331 performance even if you have a temp grade higher than D+ (though students with a D+ or below will get preference).

I have locked out certain times over next week or so for **15 mins** meetings. Please note that **these are NOT walk-ins**: if no one signs up for a slot, I will NOT be on zoom then. If you want to come and talk with me, **please EMAIL me with ALL the slots below that work for you**. (Private posts on piazza will not work: please email me!) *Slots will be assigned on a first-come-first-serve basis. Also I might only be able to confirm your time after 11pm on the day* before *your scheduled slot.*

Note: These are my current availabilities-- some of the slots might be used up in some other non-CSE 331 meetings. So please send multiple choices for when you can meet.

To make things easier, **ALL meeting will be on zoom** (https://buffalo.zoom.us/j/96902087672?pwd=UXVxL21OQkdLYWd1VzdhdHFNbmlPdz09)

Below are all the available slots (below the start times are listed: a slot that is already taken has a strike-through):
- **Monday (Oct 30):** 9:00am, 9:15, 9:30, 9:45, 10:00, 12:30pm, 2:30, 2:45, 5:15, 5:30, 5:45, 6:00, 6:15, 6:30, 6:45
- **Tuesday (Oct 31):** 9:45am, 10:00am, 2:45pm
- **Wednesday (Nov 1):** 9:00am, 9:15, 9:30, 9:45, 10:00, 1:00pm, 1:15, 5:15, 5:30, 5:45, 6:00, 6:15, 6:30
- **Thursday (Nov 2):** 9:00am, 9:15, 9:30, 9:45, 10:00, 10:15, 10:30, 10:45, 11:00, 11:15, 11:30, 11:45, 12:00pm, 12:15, 12:30, 12:45, 1:00, 1:15
- **Friday (Nov 3):** 9:00am, 9:15, 9:30, 9:45, 10:00, 12:30pm

(Apologies but my schedule for this semester is bit of a mess. If none of the times above work for you but you still want to meet, please email me and we can set up a time for the week of Nov 5.)

You can of course also stop by during my office hours (but students with Qs on the HWs will get higher priority) and you unfortunately cannot book a slot during my usual office hours.

Again, **please email me your (at least top 3) choices** (again note the ALL slots are virtual).

mid-term   grading

Edit   good note | 0   Updated 21 minutes ago by Atri Rudra

Questions/Comments?
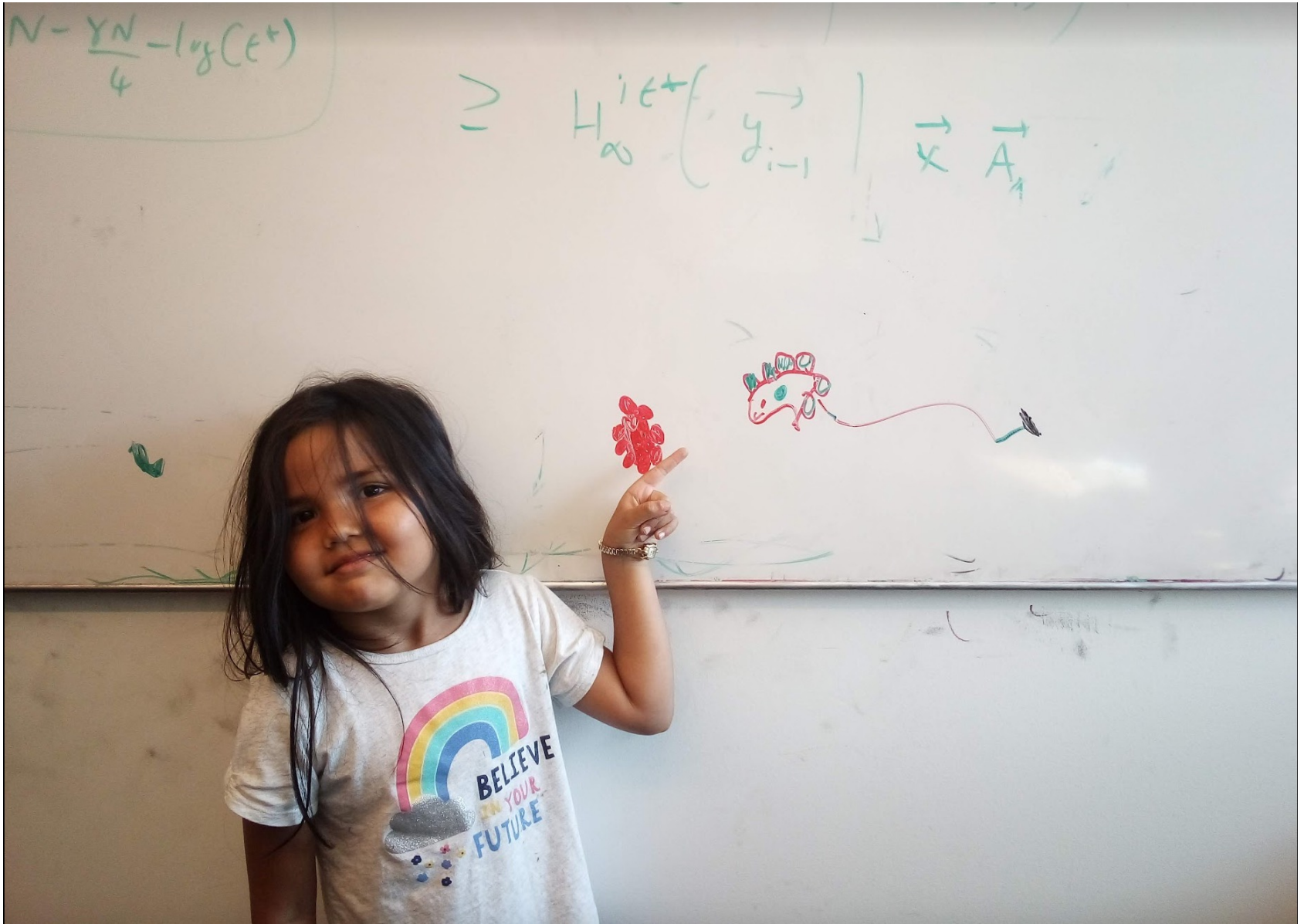
Mergesort algorithm

Input: $a_1, a_2, ..., a_n$ Output: Numbers in sorted order

MergeSort(a, n)

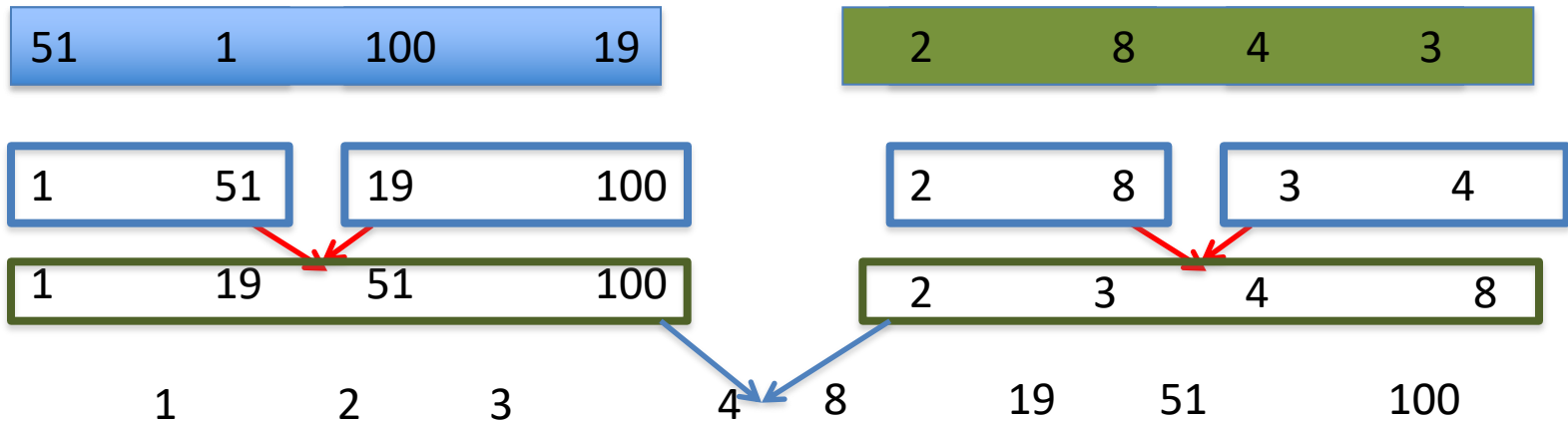   If n = 1 **return** the order a_1

    If n = 2 **return** the order $\min(a_1, a_2)$; $\max(a_1, a_2)$

    $a_L = a_1, ..., a_{n/2}$

    $a_R = a_{n/2+1}, ..., a_n$

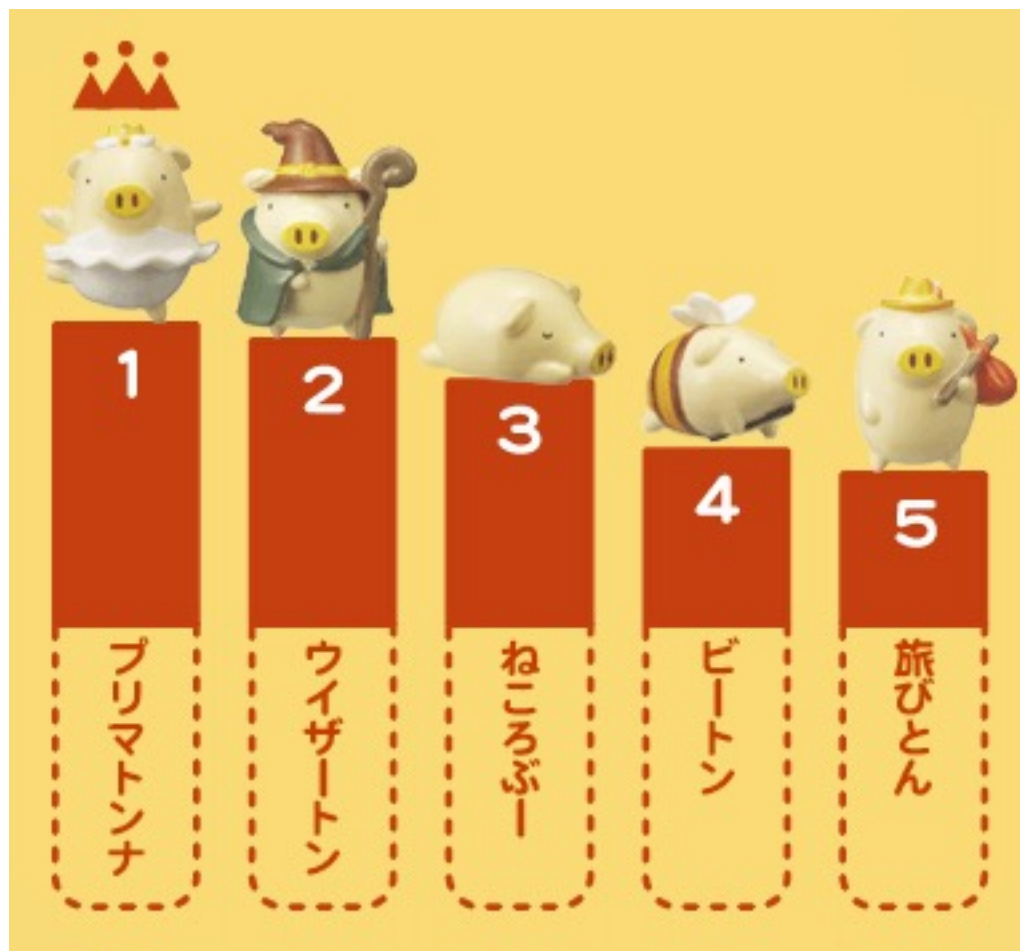   **return** MERGE (MergeSort(a_L, n/2), MergeSort(a_R, n/2))

An example run

51	1	100	19

2	8	4	3

1	51

19	100

2	8

3	4

1	19	51	100

2	3	4	8

| 1 | 2 | 3 | 4 | 8 | 19 | 51 | 100 |

MergeSort(a, n)

 If $n = 1$ **return** the order a_1

 If $n = 2$ **return** the order $\min(a_1, a_2)$; $\max(a_1, a_2)$

 $a_L = a_1, \ldots, a_{n/2}$

 $a_R = a_{n/2+1}, \ldots, a_n$

 return MERGE (MergeSort(a_L, $n/2$), MergeSort(a_R, $n/2$))

Correctness

Input: $a_1, a_2, ..., a_n$ Output: Numbers in sorted order

MergeSort(a, n)

   If $n = 1$ **return** the order a_1
   If $n = 2$ **return** the order $\min(a_1, a_2); \max(a_1, a_2)$

   $a_L = a_1, ..., a_{n/2}$

   $a_R = a_{n/2+1}, ..., a_n$

   return MERGE (MergeSort($a_L, n/2$) MergeSort($a_R, n/2$))

By induction on n

Inductive step follows from correctness of MERGE

Runtime analysis on the board…

Rankings

How close are two rankings?