Lecture 36

CSE 331

Dec 1, 2023

Quiz 2 on Monday

Actions ▾

Quiz 2 on Monday

A gentle reminder that Quiz 2 is on Monday, Dec 4 from 11:00-11:10am. The lecture will start at 11:15am.

Everything until tomorrow's lecture will be on quiz 2. There will be three questions. The first two will be T/F without justification (like Q1(a) on sample final @503) and the 3rd one will be T/F with justification (like Q2(a) on sample final @503).

Like in the final exam, you are allowed two 8.5" X 11" review sheets (you can use all four sides).

quiz2

Edit   good note | 0   Updated 1 minute ago by Atri Rudra

Apply to be a CSE 331 TA in 2024!

Want to be a UTA for 331 in 2024?

Prof. Akhter be teaching 331 in the upcoming Spring semester and is looking for UTAs. I expect to be teaching 331 again in Fall 2024 (though this is **not** finalized and is subject to change) and will be looking for TAs then as well. So Prof. Akhter and I are looking to jointly interviewing candidates for CSE 331 TAs for 2024 (on **zoom** tentatively the final week (Dec 14 and after) and/or the week after that (week of Dec 18), 2023).

(As an aside: I also have openings for doing research but I'll post on those once I'm done with all 331 related stuff: i.e. after the grades have been submitted.)

These will be *paid* positions. Time-commitment wise here is what we're looking for

- *Ideally,* you should be able to commit close to 10 hours/week on average. More is of course better!
- Depending on your background (e.g. if you have TAed before), we're willing to be OK with ~5 hours/week on average but no lower than that (and no more than 1-2 TAs with << 10 hrs/week).

A few important points:

- There is *no* formal minimum grade requirement to be a 331 UTA (Of course you don't know your grade by now). For now, we're basically looking for interested students who enjoyed 331 so far and would be excited to help others.

- A large fraction of your current TAs will be TAing CSE 331 this spring (but pretty much all of them will be gone by the summer) so there will be fewer slots for Spring 24 (5-10) as compared to Fall 24 (10+).
- Being a 331 UTA is definitely a great experience (feel free to ask one of your TAs!) and also **a great preparation for your interviews -- there is no better way to learn algorithms than to teach it!**
- The application process is basically you presenting an algorithm that is covered in class to a "mock recitation"-- once you apply, we will provide more details on the process.
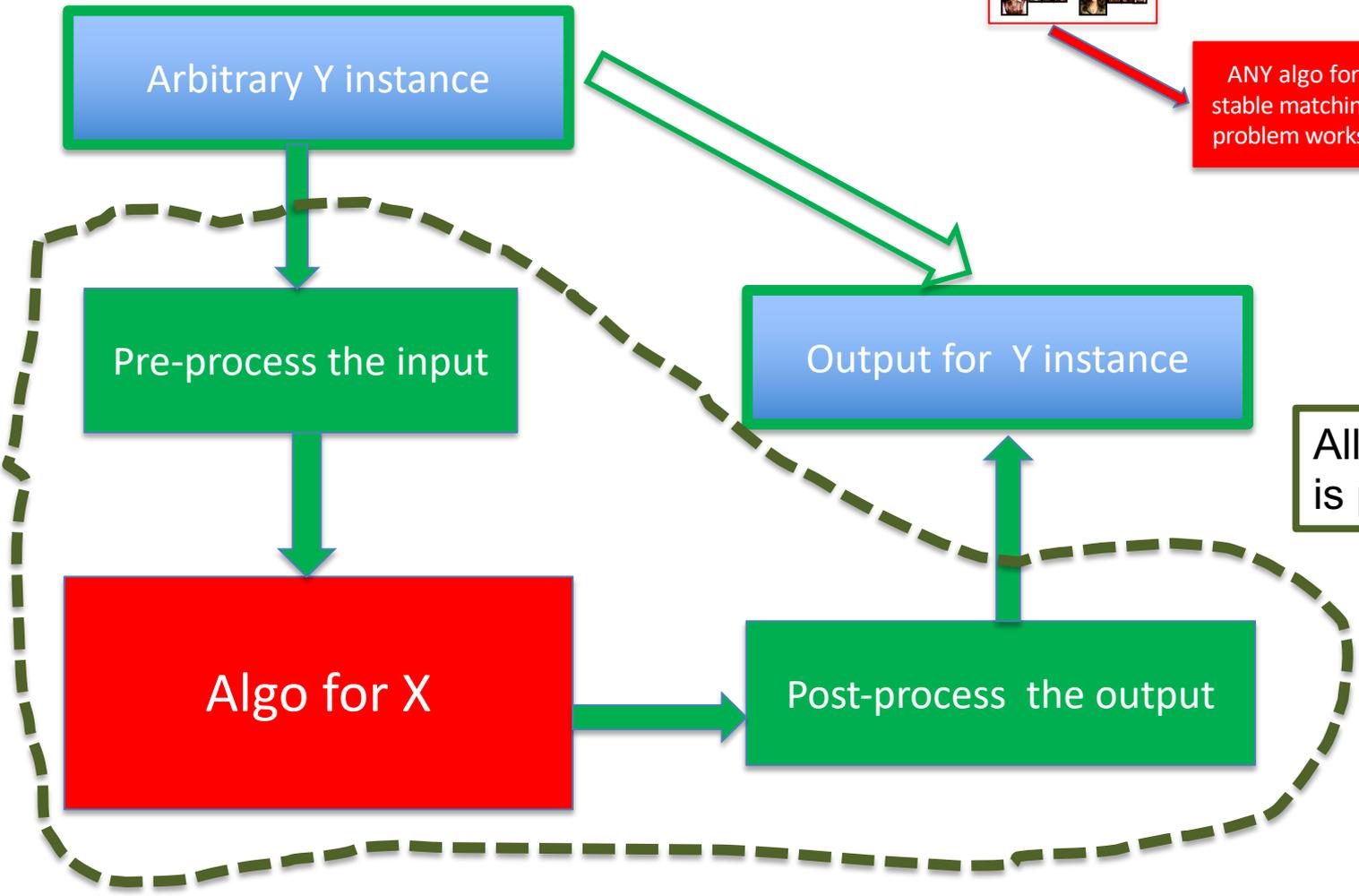
Questions?

$$Y \leq_P X$$

NRMP
National Resident Matching Program

Production Company		Slot 1	Slot 2	Slot 3	Slot 4
P_1		S_1	free	S_2	free
P_2		free	S_1	free	S_2

Production Company		Slot 1	Slot 2	Slot 3	Slot 4
P_1		S_1	free	S_2 (truncate here)	
P_2		free	S_1 (truncate here)		

Poly time steps

ANY algo for stable matching problem works!

Arbitrary Y instance

Output for Y instance

Pre-process the input

Algo for X

Post-process the output

All processing is poly-time

Implications of $Y \leq_P X$

Arbitrary Y instance

Pre-process the input

Algo for X

Post-process the output

Output for Y instance

Polynomial algo for Y

$\Rightarrow$

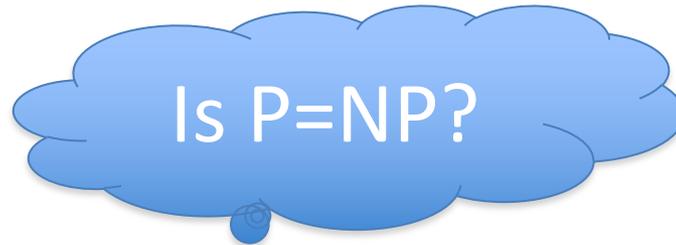Polynomial algo for X

All processing is poly-time
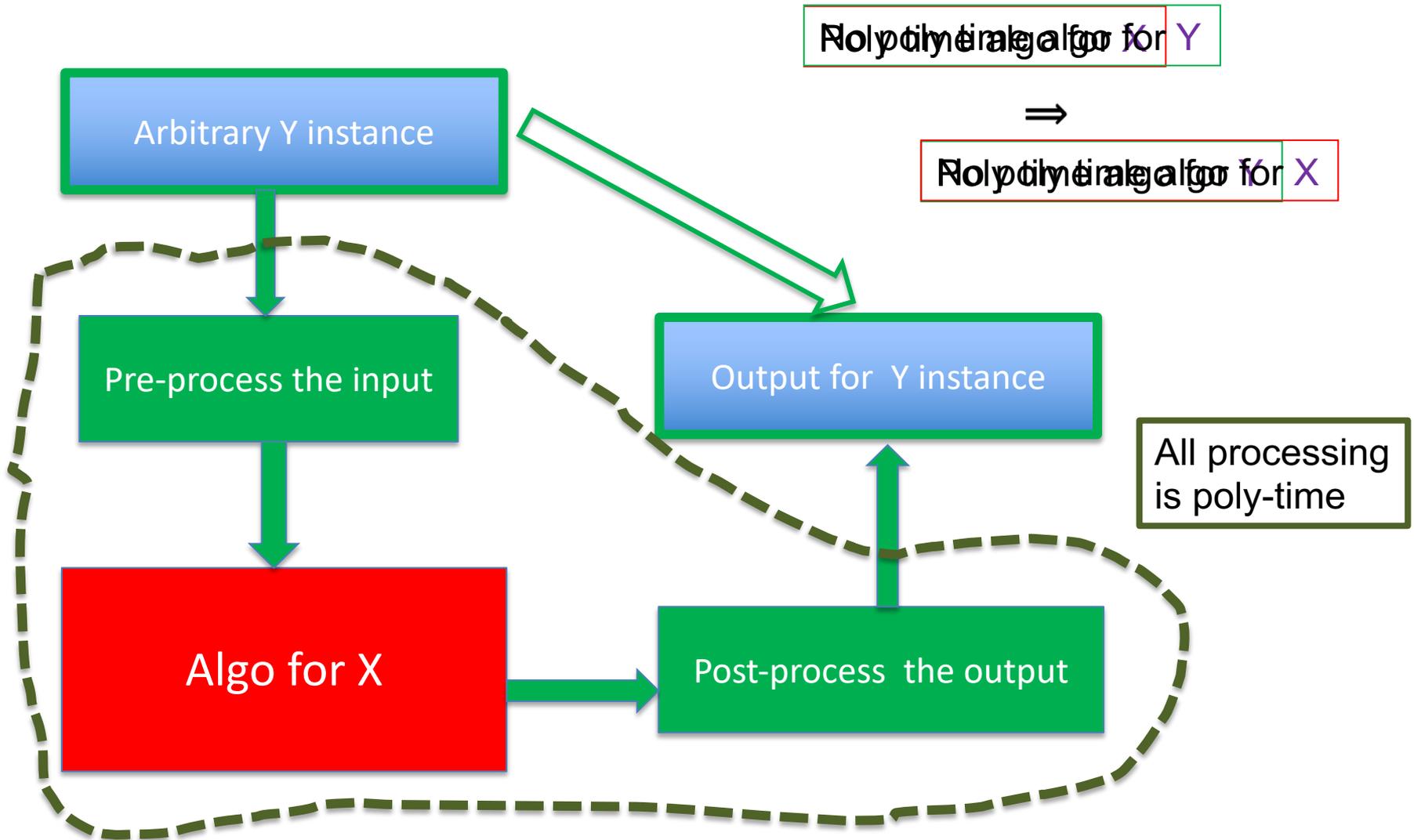
P vs NP question

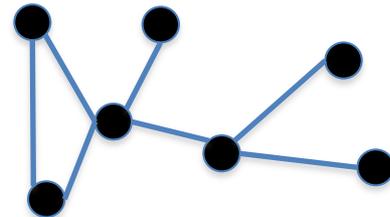P: problems that can be solved by poly time algorithms

Is P=NP?

NP: problems that have polynomial time verifiable witness to optimal solution

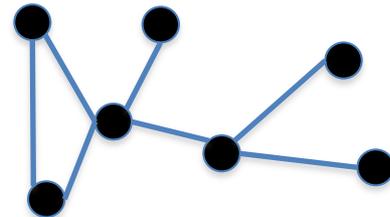# Independent Set (IS)

Input: Graph G = (V,E) and number k

Output: Yes iff G has an IS of size ≥ k

Vertex Cover (VC)

Input: Graph G = (V,E) and number k

Output: Yes iff G has a VC of size ≤ k

Questions?

Plan for today

Define P and NP

Define NP-completeness

IS $\leq_P$ VC