Lecture #10: Nondeterministic Time — More about $\mathcal{NP}$, and co-$\mathcal{NP}$

What Will Happen During the Lecture

Remember... You Had Homework!

Students were asked to work through the following set of lecture notes before this lecture.

- Lecture Notes — "Nondeterministic Time — More about $\mathcal{NP}$, and co-$\mathcal{NP}$".

The presentation of an $\mathcal{NP}$-complete language, here, will almost certainly be new. Most of the rest might be review, but students might not remember it well (if, at all).

Activities During the Lecture Presentation

The lecture notes included the claim that the complexity class $\mathcal{NP}$ is closed under polynomial-time many-one reductions; a simple proof of this claim will be discussed.

A co-$\mathcal{NP}$-complete language, that is related to the $\mathcal{NP}$-complete language in the lecture notes, will be presented and discussed: It is *not* quite as easy to show that this language is co-$\mathcal{NP}$-complete as one might imagine when hearing its definition.

Finally, an $\mathcal{NP}$-completeness question, that might be suitable for a term test, will be discussed — in enough detail, in class, for students to be able to complete this practice question themselves.