Lecture #8: Introduction to Nondeterministic Computation
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 — "Introduction to Nondeterministic Computation".

Once again, a significant part of the material — which initiates a new major topic in this course — should be review.

Activities During the Lecture Presentation

Recall that a non-negative integer n, such that $n \geq 2$, is ***prime*** if the only integers k, such that $1 \leq k \leq n$ and k divides n, are 1 and n; an integer n such that $n \geq 2$ is ***composite***, otherwise.

Now let

$$\Sigma_D = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9\}$$

and let $L_{\text{comp}} \subseteq \Sigma_D^\star$ be the set of unpadded decimal representations of non-negative integers n such that $n \geq 2$ and n is composite.

During the lecture presentation, the use of nondeterministic computations will be reviewed by presenting an argument that $L_{\text{comp}} \in \mathcal{NP}$.

In order to keep this simple (and focused) it will be assumed, here that deterministic polynomial-time algorithms for the addition and multiplication of non-negative integers — given by their unpadded decimal representations — are available.