

Lecture #8: Nonregular Languages, Part One

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 — “Nonregular Languages, Part One”.

As always, you may attend the lecture presentation if you have not worked through this material ahead of time — but it will not be repeated for you, and you might get a little bit lost, during the presentation, if you haven’t worked through this.

Problem To Be Solved

The “Pumping Lemma for Regular Languages”, and its use to prove that certain languages are *not* regular, will be discussed. This result will be used to solve the following problem.

“Let $\Sigma = \{a\}$. Prove that the language

$$L = \{a^{(n^2)} \mid n \in \mathbb{N}\} \subseteq \Sigma^*$$

is not regular.”

If You Want To Get Started . . .

If you have time then you should try to solve the above problem ahead of time — or, if you do not feel ready to do that, list the steps that you should take (and the things you need to discover) in order to do this.

An outline for notes, to be used during the lecture presentation, is also available. If you time then you might also wish to fill in parts of this outline in order to be better prepared for the presentation.