

# Lecture #6: Computation on Strings — Intermediate Models

## What Will Happen During the Lecture

### Remember... You Had Homework!

Students were asked to have worked through a set of notes before this first lecture:

- Lecture Notes — “Computation on Strings: Intermediate Models”

Of course, 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 during the lecture presentation.

### Putting the Material into Context

The material in this lecture concerns at least one model, “Post-Turing Programs”, that you have probably not seen before this. It is also sufficiently different from the models of computations that have been presented in lectures, before this, that it might not even be clear what the “equivalence” of computational models even means here, or how it can be proved.

Figuring out “what equivalence means” involves looking closely at the material about **encodings** that was included in the previous lecture (along with this one) and how functions from strings to strings were defined to be “primitive recursive”, “ $\mu$ -recursive”, and “ $\mathcal{S}$ -computable” in the previous lecture — as well as how functions with natural numbers as inputs were defined to be “weakly computable” and “strongly computable” (with Post-Turing programs) in the notes for this lecture.

**Simulations** are used to prove equivalence of computational models, once one knows what this means.

Students in this course have almost certainly seen simulations, used in this way, before this — but might now remember it. The lecture presentation will be used to review simulations including their components, and their use — so that material in the current lecture can be better related to material that students have (ideally) seen before.