Turing Machines

Discrete II

Spring 2015

Learning Objectives

- Learn about Turing Machines
- Define Turing Machines
- Compare Turing machines and finite state automata.

Project Description

In this project you will need to research Turing machines, learn what they are, and describe them. In particular, there are three parts:

1. Describe informally, in English sentences what a Turing machine is.
2. Formally define a Turing machine in terms of sets and functions. Give a one-sentence description of what each set or function is.
3. Given any Grammar G_1, a Turing machine can determine what strings are in the language $L(G_1)$. Given any regular Grammar G_2, a finite state automata can determine what strings are in the language $L(G_2)$. Use these two facts to compare Turing machines and finite state automata. Explain.

Other Specifications

- The write-up for each part should be not more than ½ page.
- You may work in groups (max 4 people) or alone.
- Once you have determined your group, choose a group leader who will then e-mail Dr. Beyerl a list of your group members. The group leader is responsible for organizing group meetings and submitting the final project. If the group changes, the group leader will update Dr. Beyerl via e-mail.
- The project should be typed and saved as a PDF, then submitted on Blackboard. The penalty for incorrect submission format is 10% of the maximum score.
- Cite any sources that you use – plagiarism will result in a 0% grade. For each source, please write a single sentence remarking on how credible you believe the source is. Especially on the internet, some websites are better than others: use any source you like, I just want you to think about how credible they are.
- The project is due on Blackboard Thursday April 21st at midnight. Assignments submitted late will receive a late penalty of 0.2% per hour. (The submission link will not open until April 11th)