Homework 6: Unit 2 Reflection and Unit 3 Introduction

Due 11:59pm, Thursday, November 3, 2022

CSCI 161
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Overview. As with your homework the week of the last midterm, this week's homework will be a quick turnaround and is an easy opportunity to improve your homework grade. The first question is a similar reflection, and the second asks you a few questions you can answer during Wednesday's lecture. Their answers can also be found in the first few pages of Chapter 3 in the text and Section 3 in the lecture notes.

Question 1. (8pts) Think about what went well for you in Unit 2 compared to Unit 1. Go back and read your start-stop-continue response from Homework 3. How well did you stick with your plan, and what did you need to adjust? What do you hope to get out of the rest of the course? Try to frame your answer not in terms of grades, but in terms of things like content mastery, problem solving, logical reasoning, mathematical communication, career goals, etc. What are you going to do to keep this objective your focus for the last 3.5 weeks of the quarter?

Question 2. (2pts) On Wednesday, we discussed Turing machines (TMs) as the Unit 3 model of computation. Answer the following questions based on the discussion in class:

(i) A PDA has a Last-In First-Out memory stack that it can access as it digests an input string in one sweep from left to right. What kind of memory does a Turing machine have?

A Turing machine has a memory tape, kind of memory.

(ii) What do we have to provide to describe a high-level TM?

We have to provide check conditions, instructions for what to do for when check conditions are met or not, and instructions for whether TM should reject or accept.

(iii) What do we have to provide to describe a fully specified, low-level TM?

We need to have a low level pseudo code.

(iv) How many start, accepting, and rejecting states can a TM have?

There is one start state, one accepting state, and n − 1 rejecting states w/ n states.

(v) Are TMs deterministic?

(vi) What pieces of information does a configuration tell you about a TM as it's running?

(vii) What type of sequence of configurations shows that a string is in the language recognized by a TM?

(viii) Does a TM have to read all of its input string before it halts?