

PART 1 Due: Tuesday, Apr. 24, beginning of class

PART 2 Due: Tuesday, Apr. 24, 11:59PM

28 points

On homework, you may discuss with other students in the course about how to solve a problem, but the write-up should be your own. You **must include the names** of any students you consulted with. Give credit where credit is due. You will use JFLAP for some of the problems. All the problems listed below referring to a book are from the JFLAP book.

PART 1: Written, Bring to class

1. (10 pts) Read the paper “On Computable Numbers with an Application to the Entscheidungsproblem” by Turing.

Write a one page summary of the paper addressing the importance of this paper to computers and algorithms.

PART 2: Submit online Create a README file to also submit (see below).

Note: A two-tape Turing machine should have only ONE input, and that input should be only on the first tape. There are examples in the book that allow input also on other tapes, but JFLAP has been modified since then to only allow on input. If you want multiple inputs, then put them together with a separator that is not the Blank symbol, and then in your program, first pull them apart and put them on the separate tapes.

1. (6 pts) Construct a two-tape TM for Chapter 9, Problem 10 a) in the JFLAP book. Name the file hw8tm1
2. (6 pts) Construct a two-tape TM for Chapter 9, Problem 11 c) in the JFLAP book. Name the file hw8tm2
3. (6 pts) Using JFLAP, construct an unrestricted grammar for the following language. Your derivations must run in a reasonable amount of time.

$\Sigma = \{a, b, c, d\}$, $L = \{a^n b^m c^n d^m \mid n > 0, m > 0\}$. For example, aaabbccdd and abcd are in L.

Save this unrestricted grammar in the file hw8gram

Submitting Part 2 To submit files, you can use Eclipse. Make sure you select *cps140* and *homework8* for the location to submit.

Submit a README file and all the .jff files at one time. You can submit more than once, if so, we only grade the last submission.