CS 390

Exam III

The ODU honor code is in effect, you may not discuss this exam with anyone but it is open book and open notes. You may also watch any of our previously recorded class sessions.

You need to submit your exam as email attachment by noon on Tuesday the 22nd of April to [cs390@cs.odu.edu](mailto:cs390@cs.odu.edu) (if it makes you feel better you can cc me at jdm@cs.odu.edu).

Your solutions must be submitted as JFLAP solution files for full credit. The alphabet for all of the following problems is the same: A, B, C, null

All tapes read from left to right the same as in JFLAP.

1. single tape Turing machine: initial tape has (A+B+C)\*

if AAA substring then it is rewritten as BBB

if CCC substring appears then all BBB substrings are rewritten as ABA

1. single tape Turing machine: initial tape has (A+B+C)\* final tape has A\*B\*C\*
2. single tape Turing + single push down stack:

initial tape is blank

initial stack is (A+B+C)\*

final tape is A\*B\*

final stack is C\*

1. single tape Turing + single push down stack:

initial tape is (A+B+C)\*

initial stack is empty

final tape is empty

final stack contains only the character that is most commonly found on the initial tape

5) Two tape Turing machine

both tapes initially contain (A+B+C)\*

each tape is read sequentially at the same time, e.g. position 0 on both tapes, then position 1 on both tapes etc.

if the characters match on both tapes at one specific position then nothing is changed

if the characters do not match then the characters are swapped.