COS 451/550 Spring 2018 Class Exercise 1   *5 questions; 2 pgs.*   *2018-01-23*

Today Introduction; recursion theorem (quick). § 0.∗, § 6.1.[1]
Next class Preliminaries and more. § 0.∗ (thoroughly); § 6.1 (the best you can).

1. List the members of your group below. Underline your name.

2. 1000 keys to success:

   (a) Remove __________ ; this work on undivided attention and sharp focus.

   (b) Read assigned material __________ and after class.

   (c) Read in __________ -mode, not in fiction-mode or speed-mode.

   (d) Mathematical reading is a __________ activity.

   (e) Use the __________ for questions and discussions outside class.

   (f) Do not be __________ by difficulties.

   (g) You should be very __________ if everything seems easy.

   (h) Go back and forth between intuitive and __________ statements.

3. Refer to Lemma 6.1 (p. 246) in the textbook. Provide an implementation of Q in a suitable programming language (e.g., Scheme, Python, Java, C).

   For today, interpret *Turing Machine* as an runnable (or running) program (process) and a *TM description* as its source code.

[1] Throughout this course, section numbers such as these will, by default, refer to the textbook: Michael Sipser. *Introduction to the Theory of Computation.* Cengage Learning, 3rd edition, 2013.

4. Use the scheme described on p. 247 of the textbook to generate a concrete implementation of the *self* program.

   Ask questions and use group discussions to clarify ideas.

   Explain how your program works by detailing the correspondence between its elements and those in the description.

5. (informal homework) Write and test a program based on the above. Share your work and observations on the class newsgroup. Freely use multiple programming languages.