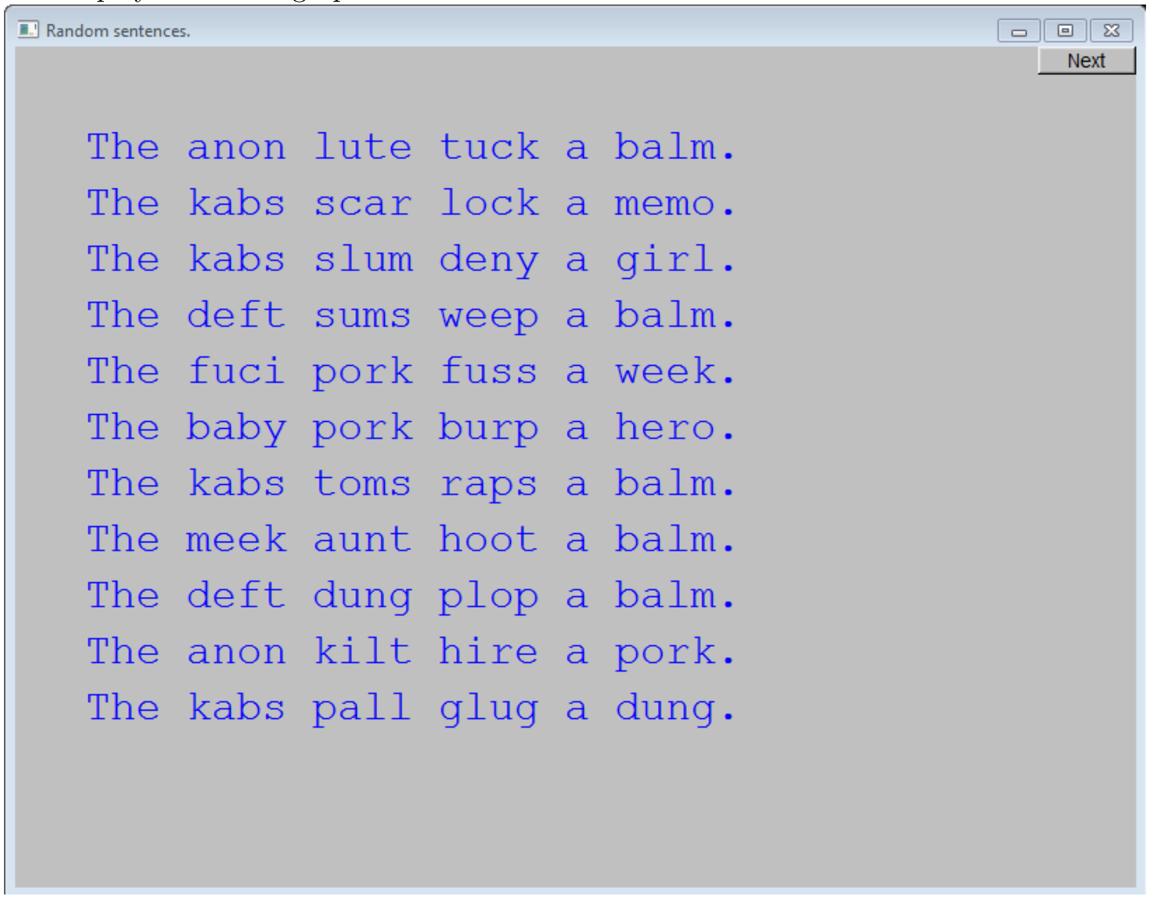
CS 7B - Spring 2016 - Midterm 1. 4/26/16

Write responses on separate paper. Submit all code by email.

1. Add a command `from(x)` to the calculator from Chapter 7 that makes it take input from a file x. Add a command `to(y)` to the calculator that makes it write its output (both standard output and error output) to file y. Write a collection of test cases based on ideas from 7.3 and use that to test the calculator. Discuss how you would use these commands for testing.

2. Write a program that will read from a long list of words (see fourletterwords.txt or twotofiveletterwords.txt) and ask the user to either skip the word as uninteresting or classify it either as a adjective, noun or verb and create separate files to store each of these space-separated lists of adjectives, nouns and verbs. After enough words have been collected in each category, the program will then create random sentences from these files of the form `The [ajective] [noun] [verb] a [noun].` and collect these into a `Vector_ref` of `Text` objects and display these in a graphics window like so:



```
The anon lute tuck a balm.
The kabs scar lock a memo.
The kabs slum deny a girl.
The deft sums weep a balm.
The fuci pork fuss a week.
The baby pork burp a hero.
The kabs toms raps a balm.
The meek aunt hoot a balm.
The deft dung plop a balm.
The anon kilt hire a pork.
The kabs pall glug a dung.
```

3. Do the striped circle class of Chapter 14, exercise 6.

4. Do the Binary Tree class of Chapter 14, exercise 11.

5. Do Conway's Game of Life on a hex grid.

6. Design and implement a Riemann Sums graphic to represent the integral of a function as approximated by the sum of rectangular areas fit under a curve.

7. Make an "analog clock," that is, a clock with hands that move. You get the time of day from the operating system through a library call. A major part of this exercise is to find the functions that give you the time of day and a way of waiting for a short period of time (e.g., a second for a clock tick) and to learn to use them based on the documentation you found. Hint: `clock(), sleep()`.