Warm up discussion problem:

"The Locking Out the KGB Puzzler" from Car Talk, 12/17/2007):

"Imagine you have a friend who lives in Russia where the KGB spies on everyone and everything and you want to send a valuable object to this friend. So you have a box which is more than large enough to contain the object and you have several locks with keys."

"Now this box, I suppose you could call it a strongbox, has a lock ring which is more than large enough to have a padlock attached to it. In fact it's large enough to accommodate several locks. But your friend does not have the key to any lock that you have. Now you can't send a key in the mail because the KGB will intercept it and they will copy it. And you can't not lock the box, because the object is very valuable. So you have to send it through the mail. You can't hand deliver it. You want to lock it so that your friend can open it, but the KGB can't."

Workshop:
Sequences

1. Given the initial statements:

   ```
   s1 = "spam"
   s2 = "ni!"
   ```

   Show the result of evaluating each of the following string expressions.

   (a) `"The Knights who say, "+ s2`

   (b) `3 * s1 + 2 * s2`

   (c) `s1[1]`

   (d) `s1[1:3]`

   (e) `s1[2] + s2[:2]`

   (f) `s1 + s2[-1]`

   (g) `s1.upper()`

   (h) `s2.upper().ljust(4) * 3`

   (i) `s2.upper().ljust(4) * 3`

     (j) `s1[::-1]`

2. Given the same initial statements as in the previous problem, show a Python expression that could construct each of the following results by performing string operations on `s1` and `s2`.

     (a) `"NI"`

     (b) `"ni!spamni!"`

     (c) `"Spam Ni! Spam Ni! Spam Ni!"`

     (d) `["sp","m"]`

     (e) `"spm"`

3. A certain CS professor gives 5-point quizzes that are graded on the scale 5-A, 4-B, 3-C, 2-D, 1-F, 0-F. Write a program that accepts a quiz score as an input and prints out the corresponding grade.

4. Show the string that would result from each of the following string formatting operations. If the operation is not legal, explain why.

     (a) `"Looks like {1} and {0} for breakfast".format("eggs", "spam")`

     (b) `"There is {0} {1} {2} {3}".format(1,"spam", 4, "you")`

     (c) `"Hello {0}".format("Susan", "Computewell")`

     (d) `"{0:0.2f} {0:0.2f}".format(2.3, 2.3468)`

     (e) `"{7.5f} {7.5f}".format(2.3, 2.3468)`

     (f) `"Time left {0:02}:{1:05.2f}".format(1, 37.374)`

     (g) `"{1:3}".format("14")`

5. Write a program that reads a file and writes out a new file with the lines in reversed order (i.e. the first line in the old file becomes the last one in the new file.)