INTRODUCTION TO COMPUTER SCIENCE I
LAB 11
Files, exceptions, and randomization (oh my!)

Your current big project, Project 3, require the use of a number of new capabilities. Specifically, to perform file encryption/decryption, you need to handle the reading and writing of files, the handling of exceptions, and the randomization of a dictionary.

This week's lab will focus, in somewhat simplified ways, on those tasks. If you solve the problems below, you will have meaningful building blocks for Project 3.

1 Your assignment

Create a new module, `showfile.py`, and in it, create a program that does the following:

- **Read the file:**

  1. Prompt the user for a filename, and then open that file. If the file does not exist, inform the user and prompt again for a filename.
  2. Once an existing file is opened, read its contents into a string.
  3. Print that string to the screen.

- **Catalog the characters used:**

  1. Take the string that contains the file's contents. Create a list that contains each unique character that appears in the string. For example, if the file contains the message ...

     ```
     abracadabra!
     ```

     ...then your program should create the unique character list ...

     ```
     ['a', 'b', 'r', 'c', 'd', '!']
     ```

  2. Print this unique character list.

- **Make a character map:**

  Create a dictionary of characters from this string. The *keys* should be the characters from the unique character list. The *values* should be those same characters, but in a randomly selected order.

  For example, given the above unique character list, you might create this dictionary:

```
{'a': 'r',
 'b', '!',
 'r': 'b',
 'c': 'a',
 'd': 'c',
 '!': 'd' }
```

- **Print a scambled message:**

  Now print the original string, except for each character printed, use the dictionary to replace it with its randomly-ordered counterpart.

2 Submitting your work

As always, go to the course submission page, and submit your completed `showfile.py` for Lab 11.

This assignment is due by Wednesday, Apr-23, at 11:59 pm.