Homework 3

Due Date: March 5

Purpose

In this little project, you will see how IT professionals use Bash scripts to accomplish small tasks.

Problem

You are an intern at Googly, and as such, you have to supply software tools for the various engineers and computer scientists. They are much too important to be writing scripts to take of simple tasks, so the job falls to you. You must write a small suite of Linux Bash scripts for various tasks, the names for which follow Linux conventions of being in all lower-case letters and which will be run without file extensions (the file names for the scripts themselves should have the `.sh` extention). Below are descriptions of the executable scripts (the "g" is for "Googly"):

1. `gcp` *source destination* - copy the file *source* to the file *destination*. You may **not** use the `cp` command in your implementation; rather, think of this problem as: how did the Linux developers implement the `cp` command?

2. `gadder` - add a list of integers supplied by the user.

3. `gfind [OPTION]` *filename* - search for *filename*.

4. `gmean [OPTION]` *filename* - return the floating point average of a list of integers stored in the file named *filename*.

5. `gmedian` *filename* - find the median of a list of integers stored in the file named *filename*.

6. `setup.sh` - automatically set up the scripts above so that they can be run and done so without the `.sh` extension. This will be run first, and then all of the scripts above should work.

Input

The following uses the number of the script as defined above.

1. The input will be two file names. Each file name is a valid string with no spaces. Underscores and periods are valid. This is the case with all file names below as well.

2. The user will input non-negative integers to add, one per line. A zero indicates the end of the input. The script should provide a prompt for each integer, and should be simply: "> "

   You do not have to do error checking of the input. (You've seen that some Linux commands just crash/terminate if the input isn't defined.)

3. The option is `-a`, which means search "all," meaning the user's entire file space. With no option, just search the current directory.

4. The option is *-number*, where *number* is an integer from 1-5 indicating the number of decimal places to **round** to. If no option is given, then the default is whatever the computation returns in Linux. The file contains a valid list of integers, one per line. There is no other data in the file.

5. The file contains a valid list of integers, one per line. There is no other data in the file.

6. No input.

Output

- Output should be as defined for the problems above and/or how you think Linux would handle it. That is, the output usually does not have any descriptive text, for example, because the results of the command may be piped to another command.

- If a script returns no data, the output is up to you, but again should follow Linux conventions (e.g., do you want to output 0 or nothing at all?).

Specifics

- You may use any Linux commands within your code **except** you may not use the `cp` command within the `gcp` script.

- Write a command at the top of each script with:

  - your name
  - the name of the script
  - a brief description of its function
  - an exact description of valid input
  - an exact description of what is output

- Be sure to name and implement all of your scripts as described above. I will write my own script to test yours, and if something goes wrong because you have misnamed a file or put the arguments in an order not specified, your grade will suffer.

Notes

- Begin a good IT intern, you want to be as succinct as possible in all of your scripts. This means that you want to sue as many Linux and/or Bash built-in tools as is feasible. Try to make each script as short as possible, although this will not impact your grade.

- Bundle all of your scripts into one tarball. Name this file using the convention *firstInitial+ lastName+*`Answers3.tar`, as in `mgousieAnswers3.tar`. Upload this file to Canvas before 11:59:59 PM on the due date for full credit.

All the best people in life seem to like Linux.
– Steve Wozniak (Do you know who this is?)