

Ruby #1

Due Date: Jan 25 (11:59 pm).

Total points: 60 points

Directions: For each of the following tasks you need to write a program. Then, you run the program and submit the code for each task. You need also submit a README file which lists sample input and sample output of all the programs. Check Gitlab <https://gitlab.com/sanroy/sp22-cs3060-hw> (or check Canvas) for details. The preferred process for completing this assignment should be as follows:

1. Fork the Repository “sp22-cs3060-hw” to a new Repository named “sp22-cs3060-hw” under your namespace (your gitlab username).
2. "git clone" the newly created repository on your local machine
3. Complete this assignment whose details are in hw1 sub-folder, committing changes to files in hw1.
4. Push all commits to your Gitlab repository
5. Add TA (with his gitlab username kvruakhil2) and Roy (gitlab id is sanroy) as a developer of your Gitlab repository

If for some reason Gitlab does not work for you, then you submit the ruby code and README file on Canvas.

Tasks:

1. **(8 Points) program #1:** Ask the user to type 3 lines (e.g., before going to the next line the user will hit the 'Enter' key, etc.) on keyboard, and your program should save the lines to a file named "myFile.txt". Then, your program also needs to open the file, and for each line report the total number of characters that are present.
2. **(6 Points) program #2:** Ask the user to type the name of a file. Then, search the content of the file. If the file (content) contains “Python” or “Ruby”, then print “The file is important”, else if the file contains “Scala”, then print “The file is interesting”, else if the file contains “Haskell” then print “the file is valuable”; otherwise, print "The file is worthless".
3. **(8 Points) program #3:** Write a function bar(n) to compute the value of x^x without using the exponent operator, (i.e., you need to use the loop syntax) whereas x is a positive integer. Test your program at least for 3 values of x such as 4, 7, and 9.
4. **(6 Points) program #4:** Print the string “The 9-th multiple of integer n is x ” while substituting n by numbers from 5 to 13 and x by the value of $9n$.
5. **(10 Points) program #5:** Let the user pick a number (say x) between 15 and 30. Now your program simulates tossing a coin x times. In particular, your program can contain a loop and in each iteration it randomly makes a choice: head (represented by string 'HEAD') or tail (represented by string 'TAIL'), and stores the outcome ('HEAD' or 'TAIL') in an array. After the iterations, traverse the array and count how many heads and tails were generated. Also, report the ratio of number of heads and number of tails.
6. **(14 Points) program #6:** Go to <http://www.textfiles.com/stories/> and check that this site ¹ hosts multiple stories while each story is in a textfile. Download two textfiles of your choice, which have at least 400 words, and save the files as storyA.txt and storyB.txt. Your program needs to read these files and processes them to collect some statistics. In particular, for each story x report the the number of unique words in x , the third-most frequent word in x and its frequency. Also, your program needs to report the

¹Disclaimer: we did not really check whether this website contains any improper story or language. If you find something improper, please ignore this site and use some other source

number of unique words that are present in both the files. **Hints:** A template code is given to you. We use Array and Hash data structures as they are available in Ruby. You may design a regular expression to define a *word*.

7. **(8 Points) program #7:** Write a C program that prints "Hello, class of CS 3060". Use gcc command to compile the program to generate executable file a.out. Submit a screenshot showing the gcc command. Then, open the file a.out in an editor and check the content of a.out. Is it readable? Submit a screenshot. Then, run a.out and report the outcome. Submit a screenshot. Also, submit your C program. Now write a Ruby program that prints "Hello, class of CS 3060". Do you need the compilation step? Also, submit your Ruby program.