HW-8 CSci-451 40 points Due: ondayMay, 11/16/2020

This assignment is to honor the Zucca Gigantopithecus (great pumpkin),

who flies through the air on Halloween night delivering homework solutions.

to computer science students throughout the world. Of course, he only

visits the sincerest computer science students, the rest must

complete their own assignments. How sincere are you?

Program 0

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Program 0 (parent) will create a semaphore, create two pipes, spawn

3 children (named program1, program2, and program3), and pass the

semaphore ID and pipe IDs to the children (as required) via command

line arguments.

Program 1 and program 2 must be forked at the same time and the

semaphore MUST be used to synchronize reading/writing to one of the

pipes. Program3 can be forked after 1 and 2 terminate.

Program 1

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Program 1 will read a text file called "input.data" and extract the

words. Note that words will be separated only by spaces, commas, or

periods. Commas and periods will be considered part of a word. As

each word is extracted, program 1 will write the words (1 word per

line) into the pipe.

input.data:

It is the Zucca Gigantopithecus, or Great Pumpkin, Charlie Brown.

Program 2

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Program 2 will read from the pipe and convert each word into Pig Latin

(rules shown below) and write the converted word to another pipe.

Program 2 will also keep track of how many words of each form (2 types

possible) were converted and write those values to 2 other files

(shared1.dat and shared2.dat).

Pig Latin rules:

1) Type 1: For all words beginning with a vowel add the text "ray" to the

end of the word. For example: "and" becomes "andray," "end" becomes "endray",

etc. Note that any punctuation marks must remain at the end of the newly

formed word (and. becomes andray.).

2) Type 2: For all words beginning with consonants move the first letter to

the end of the word and add "ay". For example, "number" becomes "umbernay,"

"letter" becomes "etterlay," etc. Note that any punctuation marks must

remain at the end of the newly formed word.

Program 3

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Program 3 will open shared1.dat and shared2.dat files and display the values

contained on the screen using the format:

Type 1: word\_count

Type 2: word\_count

Program 3 will also open the second pipe and reconstruct the original document

(multiple words per line) and write it out to output.data. For example:

output.data:

Itray isray hetay uccaZay igantopithecusGay, orray reatGay umpkinPay,

harlieCay rownBay.

REQUIREMENTS:

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1. Your program must compile and run on Linux Mint.

2. Your full name must appear as a comment at the beginning of your

program.

3. Your programs MUST be named program0, program1, program2, and program3.

My script will assume those filenames. If your programs do not work because you used different filename; you will get 0 points.

4. You must include your source files and instructions on how to compile them

(or a makefile).

5. Your tarball must be named hw8-yourname.tar

6. Your code must adhere to coding style 1TBS (https://en.wikipedia.org/wiki/Indentation\_style)

7. Failure to follow the above directions will result in

loss of points.