Operating Systems
Assignment 2

Assignment for PG1 VLSI only

Instructions :
1. Please code following questions in C.
2. Do not use any special library other than stdio.h
3. Deadline : 23rd August, 2013

Questions:

1) Write a program which reads a line (assume maximum of 80 characters long), and delete all vowels in the line.

Input
This is an important line.
Output
Ths s n mprtnt ln.

2) Write a program that merges words alternatively from two files and write the results to a new file. If one file has less number of words than the other, the remaining words from the large file should be simply copied into the target file.

3) Given an input text file, compute number of characters, number of lines, number of words in the file.

Input:
story.txt //name of the file
Output: (print number of characters, number of lines, number of words)
60000 1000 10000

4) Write a program that will inflate all the numbers that appears in the input by 12 percent

Input :
Ram has 7 cows gave 120.5 liters of milk today. They will come home at 4 P.M.
Output :
Ram has 7.84 cows gave 134.96 liters of milk today. They will come home at 4.48 P.M.

5) Write a program to multiply two large positive Integers (that cannot be stored using int or long long int). Input Size more than 50 digits.

Input :
4324791287598147235987 418723645123648612387461 92
Output :
1810892372342093947476047468008479316542216115 04

6) Write a program to check whether the brackets are matching well in a given input

Input: <String>
Output: YES OR NO

Eg:
Input : {[}}
Output : NO

7) Given an input string, write a function that returns the Run Length Encoded string for the input string.
Input : wwwwaaadexxxxxx
Output : w4a3d1e1x6

8) Write a function that takes an infix string and converts it into a postfix notation. (using stacks)
Infix String : a+b*c-d
Postfix String : abc*+d-

9) Write a program to create a linked list. And add following functionalities using a menu-driven code :-
1. Adding a Node in End.
2. Adding Node at desired Location.
3. Deleting the node at desired Location.

10) [Optional] Write a Program using Recursion, to solve(finding minimum number of moves) Towers of Hanoi. Constraints are :-
1. One disk is allowed to move at a time.
2. Larger disk must not be placed on top of smaller disk.
3. No direct move are allowed between A and C and vice-versa.

Note: Handle boundary conditions.
Upload Format: .tar.gz

Create a folder with your roll number as its name.
Create a tar.gz named “Assignment2.tar.gz” and upload it.

Assignment for all other students

Objective:
To understand the file system services provided by OS.

Question:
Write a program to simulate GNU “ls” command. Options to be implemented:

-l : Long listing format
-R : Recursive
-a : All
-d : List directory entries instead of contents
-S : Sort by file size
-t : Sort by modification time

Usage:
$ ./myls -lS
$ ./myls -l -ta
$ ./myls -lt

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$ ./myls -R -lt
$ ./myls -l <file/directory>
$ ./myls -l -t <file/directory>
$ ./myls -lt > output.txt
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Output format:

Output should be similar to the output provided by "ls" command. The output is in multiple columns (normal behavior) but when the standard output is not a terminal, the contents are printed one per line.

It must resolve symbolic links and provide details of where the link points with long listing option (-l).

Useful man pages:

- stat
- getpwuid
- getgrgid
- localtime
- scandir
- readlink

Note: Provide proper error messages.
Upload Format: .tar.gz

Create a folder named your roll number.
Create a "README" file containing the details of options implemented and also place your '.c' or '.cpp' files in the folder.
Create a tar.gz named "Assignment2_ls.tar.gz" and upload it.
Deadline : 23rd August, 2013