COMP 300 SPRING 2024

FORMAN CHRISTIAN COLLEGE

(A CHARTERED UNIVERSITY)

COMPUTER ORGANIZATION WITH ASSEMBLY LANGUAGE

CLASS PROJECT

Total Marks: 100

This project MUST be completed in isolation on individual basis.

It's an open books and open notes task. Use of Internet is allowed, but you must provide references to web sites and /or tutorials from where you got help. You MUST NOT share your work with any of your class fellow. Any such attempt will result in a ZERO grade.

Hard Dead Line:Submit the code files with input /output text files in a zipped folder on MOODLE on or before Sunday June 02, 2024 (11:59 pm) Submit hard copy of report on June 04 in lab session.

Report carries 20 marks.

Important Note:

- **Start early.**
- **A delayed submission will be capped with 70% reduction in marks.**
- **Make sure that you submit your work on or before time.**
- **You need to upload the file/s of working simulation along with the csv file/s on Moodle Course Page.**
- **Your submission must carry the following:**
  - **Code file/s**
  - **Report of the project with detailed theoretical concepts and description of different sections of the program. Screen shots of output. At least seven sample outputs for each section.**
  - **All code files and report document must be in zipped format.**
  - **Name of the zip file should be your roll number.**
- **Hard copy of the project report must be submitted on day specified above.**
- **Report will be evaluated based on how effectively you have explained the algorithm and logic of each task in the project.**
- **Your explanation should be augmented with at least three or four sample runs of different inputs.**

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Task-1 [20 Marks]

In this task you will learn how to read and write text files using MIPS assembly programming. This task will simply test you on the basis of your self-learning. Note that this skill will help you complete next tasks of this project as well.

You will write a MIPS assembly program that should be able to read a text file (name of the file is provided in the program) and write the contents of this file into another file. Both files should be located in the same folder as your program file.

Task-2 [30 Marks]

Now that you have learnt how to read and write a text file using MIPS assembly language, you are ready to take a step ahead.

In this task you will write a MIPS assembly program that should read a file and display the number of lines, words and characters in the file on screen with appropriate messages. Your program should ignore newline characters and the EOF character in the file.

A word can be any single or a group of characters that occurs

- Either on start of a line
- Or end of line
- Or in between the line with space/s around it.

A line can have any number of spaces in the start followed by a single or multiple words.

Note that if there is a blank line in the file, your program should count it. Similarly, if user has pressed RETURN key at the end of the file, a new blank line is created. Your program should add it to the sum of lines in the file.

Start with files carrying three or four lines to test your code and then move on to larger files.

Also note that output of this program only carries the count of lines, words and characters. The file should not be displayed. Here file is displayed for reference purposes only.

Sample run is shown

Input File:

```
Hello this is an input file.
COMP300 class project!
```

Output:

```
Lines: 2
Words: 9
Characters: 50
```

Task-3 [30 Marks]

This is a continuation of task-2. Here user will provide your program with a string (without any space) and a text file name. Your program should search for the string in the file and determine the line number and column number (the character number in the line) where this string starts. Note that your program should determine the first occurrence of the string.

Assuming that the input file is same as we have in task-2 sample run, the sample run is as shown:

```
Enter a word to search from the file: an
The word found in the file on line 1 col 15.
```

Task-4 [20 Marks]

In this task your target is to read a text file and remove blank lines in the file if any exists.

Your program should write the contents of the input file in another file without blank lines.

Sample Run

Input file:

```
Hello there
It is a sample file

and there came first blank line
in the file.

This is second one.
```

Output file:

```
Hello there
It is a sample file
and there came first blank line
in the file.
This is second one.
```