

Assignment 1

Operating System Lab (CS341)

Department of CSE, IIT Patna

Date:- 08-Jan-2019

Time:- 3 hours

Instructions:

1. All the assignments should be completed and uploaded by 5 pm. Marks will be deducted for the submissions made after 5 pm.
2. Markings will be based on the correctness and soundness of the outputs. Marks will be deducted in case of plagiarism.
3. Proper indentation and appropriate comments (if necessary) are mandatory. **[2+2 marks]**
4. You should zip all the required files and name the zip file as ***roll_no.zip***, eg. ***1501cs11.zip***.
5. Upload your assignment (**the zip file**) in the following link:
<https://www.dropbox.com/request/uulSQFgm4ftxGGrT4J7u>

Questions:

1. Collect the following basic information about your machine using the `/proc` file system and answer the following questions:
 - a. How many CPU and cores does the machine have?
 - b. What is the frequency of each CPU ?
 - c. How much memory does your system have?
 - d. How much of it is free and available? What is the difference between them?
 - e. What is total number of user-level processes in the system? **[5 marks]**
2. A text file ***welcome.txt*** consists of the following passage:
“An operating system (OS) is system software that manages hardware, software resources, provides common services for computer programs. Every general-purpose computer must have operating system to run other applications.”

Write a program in shell script to display the followings:

- A. the number of unique words in the file.

- B. the word which is present for maximum number of times in the file. **[5 marks]**
3. Suppose you have a fibonacci sequence of length n , where n is a positive integer and multiple of 3. Now you decide to cut down the sequence in three equal segments and do an element-wise sum of the first and third segments. Finally, you concatenate the second segment to the summed segment. Write a program in shell script to represent these procedures. Display the results after each step. **[8 marks]**
4. A folder named **OS** contains four non-empty and one empty text files. Each of the non-empty files contains different number of sentences. Write a program in shell script to copy the first sentence from each non-empty file to the empty file. The sentences should be placed based on the ascending order of the size of the non-empty files. **[8 marks]**