CSE 301: Operating Systems
Homework 4
(due Noon Nov 27)

Instructions

1. The deadline is a hard one. The form upload will close at sharp noon Nov 27th. There will be no extensions.
2. Total marks = 6
3. You have to type the assignment using a word processing engine, create a pdf and upload on the form. Please note that only pdf files will be accepted.
4. Name the submission as {branch}_{roll_number}_{name}.pdf
5. All code/Jupyter notebooks must be put up as **secret gists** and linked in the created pdf. Again, only secret gists. Not the public ones.
6. Any instances of cheating/plagiarism will not be tolerated at all.
7. Cite all the pertinent references in IEEE format.
8. The least count of grading would be 0.5 marks.
9. Some suggestions for plotting - WolframAlpha, Academo.Org, Geogebra, Matploltib, GNUplot, Matlab, Octave
10. You can find the course VM on the course web page. The root password is: 1234

1. Write Python programs (or any other language you want to write in) for:
   (a) Finding the number and size of files in each directory starting from root. Use this to make two plots: i) showing the distribution of number of files in directories. Some directories will have 0 files, some will have 1000s of files. What does this distribution tell you? ii) distribution of file size. What does this tell you? [2 marks]

(b) Create a simple CSV file where you store the mapping between all the inodes and file names at a given time. Rerun the program after 5 minutes and save a new CSV. What is the difference between the two CSVs? Have new files been allocated, have some files been deleted? If so, which ones and why? [1 mark]

2. Textbook Chapter 37, question 4. Submit the gifs of the visual run of the programs, along side the explanation [1 mark]

3. Textbook Chapter 38, question 5. [1 mark]

4. Mount a pen-drive on your system as read only and show that you're unable to write to it. Attach gif/screenshot [1 mark]