

Assignment 1

Intro to System Calls

Operating Systems, Monsoon 2018

Deadline : 19th August, Sunday, 23:59

Please do start early. The deadline will not be extended at any costs.

The following are the sub-tasks for the assignment. For each of the requirement, an appropriate example is given along with it.

Task 1: Reverse a File

Given a file, you need to reverse the contents of that file and invert the case of each English character in the file and store the result in a new file within a new directory named "Assignment". The file and directory thus created, can only be read/written by the user who created it. Program will be tested on **LARGE (> 1 GB)** files.

Example:

INPUT :

"My name is Athira.\n"

OUTPUT :

"\n.ARIHTa SI EMAN Ym"

Note : Print non-alphabetic characters as it is.

Task 2 : Test and Verify

Write a program to

- Create a symlink to the above created file in "Assignment/.." (Directory where the original file is present)
- Verify the creation of the symlink, new file and new directory created in the above part of question
- Check permissions for the three files mentioned in the above point.
- Check if the file created is reversed and case-inverted version of the input file.

- Play around with the file permission commands and check which types of permissions you can give to various users, groups and others.

Example:

Checking whether the directory has been created: Yes

Checking whether the file has been created: Yes

Checking whether the symlink has been created: Yes

Checking whether file contents have been reversed and case-inverted: Yes

User has read permission on file: Yes

User has write permission on file: Yes

User has execute permission on file: No

Group has read permission on file: No

Group has write permission on file: No

Group has execute permission on file: No

Others has read permission on file: No

Others has write permission on file: No

Others has execute permission on file: No

Note : Print the above 9 for the Assignment directory also.

Guidelines (Read these thoroughly)

1. **All programs must use system calls only.** Usage of printf and scanf are also restricted.
 2. Use man pages exclusively.
 3. Useful commands : read, write, lseek, stat, symlink , readlink
 4. Assignments **should be coded in C**. Indent your codes properly, comment wherever needed.
 5. Add a Readme file.
 6. Compilation and/or Segmentation errors at the time of evaluations are embarrassing and will be penalised.
 7. You can submit in following format RollNo_AssignNo.tar.gz on portal.
 8. Deadline is strictly 23:59, 19th August 2018. There will be no further delays, and submission via mail will not be considered.
 9. **Do not cheat in assignments, any kind of incident will have serious consequences.**
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