

# Operating Systems

## Assignment 1

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**Deadline** : Aug 16th, 2017 (9 PM)

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 the 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.

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## **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 9:00 PM, 16<sup>th</sup> August 2017. 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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