Assignment1: Linux File System Permissions

Worksheet

Exercise 1: Conversion between symbolic mode and octal mode

For each nine-character symbolic permission, give the equivalent three-digit octal permission and the three-character symbolic permissions that apply to each of User/Owner, Group, and Other.

| Row | Symbolic Mode | Octal Mode | Owner | Group | Other |
| --- | --- | --- | --- | --- | --- |
| 1 | rwxrw-r-x | 765 | rwx | rw- | r-x |
| 2 | r---wx-w- | 432 | r-- | -wx | -w- |
| 3 | -wx-wx--x | 331 | -wx | -wx | --r |
| 4 | r-x-w---- | 520 | r-x | -w- | --- |
| 5 | rwxr-x--- | 750 | rwx | r-x | --- |

Exercise 2: Conversion between octal mode and symbolic mode

For each three-digit octal permission in the following table, give the equivalent nine-character symbolic permission and the three symbolic permissions that apply to each of Owner, Group, and Other

| Row | Octal Mode | Symbolic Mode | Owner | Group | Other |
| --- | --- | --- | --- | --- | --- |
| 1 | 000 | --------- | --- | --- | --- |
| 2 | 001 | --------x | --- | --- | --x |
| 3 | 020 | ----w---- | --- | -w- | --- |
| 4 | 220 | -w--w---- | -w- | -w- | --- |
| 5 | 300 | -wx------ | -wx | --- | --- |
| 6 | 004 | ------r-- | --- | --- | r-- |
| 7 | 050 | ---r-x--- | --- | r-x | --- |
| 8 | 600 | rw------- | rw- | --- | --- |
| 9 | 007 | ------rwx | --- | --- | rwx |
| 10 | 715 | rwx--xr-x | rwx | --x | r-x |

Exercise 3 : Understanding directory permissions

| Table of OK and PD for different values of chmod permissions | | | | | |
| --- | --- | --- | --- | --- | --- |
| Row | Command line | cd top | touch top/file | mkdir top/dir | ls –l top |
| 1 | chmod 000 top | PD | PD | PD | PD |
| 2 | chmod 100 top | OK | PD | PD | PD |
| 3 | chmod 200 top | PD | PD | PD | PD |
| 4 | chmod 300 top | OK | OK | OK | PD |
| 5 | chmod 400 top | PD | PD | PD | ? |
| 6 | chmod 500 top | OK | OK | PD | ? |
| 7 | chmod 600 top | PD | PD | PD | ? |
| 8 | chmod 700 top | OK | OK | OK | ? |

Exercise 4: Minimum Permissions for common file operations

| MINIMUM rwx symbolic permissions needed to perform each of the commands | | | |
| --- | --- | --- | --- |
| Command line | On the source directory | On the source file | On the target directory |
| 1. copy a file | --x | r-- | -wx |
| 2. move a file | -wx | --- | -wx |
| 3. link a file | --x | --- | -wx |
| 4. delete a file | --x | --- | N/A |
| 5. read a file | --x | r-- | N/A |
| 6. modify an existing file | --x | -w- | N/A |
| 7. create a new file | -wx | N/A | N/A |