# Linux Shell Commands

# Introduction

- Many people says that Linux  is a command based operating system.
- So many of us thinks that Linux is not so user friendly OS.
- But it is not true. Linux is a GUI based OS with a Shell which is more powerful than its counter part in Windows OS.
- We will be familiar with some shell commands.

# Identity

- Type ***uname*** and Linux will tell his name to you
- If you want to know your name type ***whoami***

# Manual

- For each command Linux contains manual. To view the manual : ***man*** name
  - ***man uname***

# Editors

- To view files a large number of editors are available. They are:
  - kwrite
  - emacs
  - gedit
  - vi
- To view : ***editorname filename***
  - ***kwrite file.txt***

# User

- In Linux , root is the most powerful user. But other users can be created easily. Each linux user must be under certain group.
  - To add a group : ***groupadd group1***
  - To delete a group : ***groupdel group1***
  - To add a user : ***useradd –g groupname username***
  - To delete a user : ***userdel username***
  - To change a user : ***su user1***
  - To update the passwd : ***passwd user1***

# View Text

- To view a line of text in the shell: ***echo***
  - ***echo 'welcome to linux'***
- To clear the shell : ***clear***

# Directory and File Permissions

- Each file or directory has 3 security groups.
  - Owner
  - Group
  - All Others
- Each security group has 3 flags that control the access status : read, write, execute
- They are listed as 'rwx' or a "-" if the access is turned off.
  - ***rwxrwxrwx*** [read, write and executable for owner, group and all others]
  - ***rw-r--r--*** [read and write by owner, read only for group and all others]

# Directory and File Permissions

- To change the permissions type ***chmod***
  - u, g, o or all [whose permission you are changing ]
  - + or - [ type of change: add or subtract permission]
  - combination of r , w or x [ which permission you are changing: read, write or execute ]
  - file or directory [name of file or directory to change]
    - ***chmod go+rw file1 file2*** add read and write access for group and others for files 'file1' and 'file2'
    - ***chmod a+rwx file1*** add read, write and execute for everyone for 'file1'.
    - ***chmod 555 file1***

# Directory and File Permissions

- To change the owner of a file or directory type ***chown***.
- ***chown*** username <file or directory>
  - ***chown user1 file***

- To change the group of a file or directory type ***chgrp***.
- ***chgrp*** groupname <file or directory>
  - ***chgrp group1 file1 file2***

# Directory and File Listings

- To list information about directory or files : ***ls***
- This command contains some options.
  - -***a*** [ do not hide entries starting with . ]
  - -***A*** [ do not list implied . and ..]
  - -***h*** [ print sizes in human readable format ]
  - -***l*** [ use a long listing format ]
  - -***S*** [ sort by file size ]
  - **Permissions.Directories.Owner.Group. Size. Date. Name**

    drwx---rwx . 2 . oracle . oinstall . 1206 . Jan 22 15:10 . a

# Directory Operations

- To print the current directory : ***pwd***
- To change the current directory : ***cd dirname***
  - The variable HOME is the default directory.
- To make a new directory : ***mkdir***
  - -m [set permission mode (as in chmod)]
  - -v [print a message for each created directory
- To delete an empty directory : ***rmdir***

# Directory Operations

- To move to a directory pushing the current directory to stack : ***pushd dirname***
- Effect:
  - adds  a directory to the top of the directory stack
  - or rotates the stack making the new top of the stack the current working directory

# Directory Operations

- To moves to the directory at the top of the stack as well as to remove the topmost entry : ***popd***
- Effect:
  - removes the top directory from the stack
  - performs a ***cd*** to the new top directory.

# Directory Operations

- To display the list of currently remembered directories : ***dirs***
- The default display is on a single line with directory names separated by spaces.
- How to add to the list : ***pushd***
- How to remove from the list : ***popd***

# File Operations

- To copy a file : ***cp***
- Copy source to destination or multiple sources to directory
  - -***i*** [ prompt before overwrite ]
  - -***r*** [ copy directories recursively ]
  - -***u*** [ copy only when the src file is newer than the dest file or when the dest file is missing

# File Operations

- To remove a file or directory : ***rm***
  - ***-f*** [ignore nonexistent files, never prompt ]
  - ***-i*** [ prompt before any removal ]
  - ***-r*** [ remove the contents of directories recursively ]
  - ***-v*** [ explain what is being done ]

# File Operations

- To move or rename a file : ***mv***
  - rename src to dest or move src(s) to directory
  - -***i*** [ prompt before overwrite ]
  - -***u*** [ move only when the src file is newer than the dest file or when the dest file is missing
  - -***v*** [ explain what is being done ]

# File Operations

- To determine file type : ***file filename***
- File tests each argument in an attempt to classify it. This causes the file type to be printed
  - - ***i*** [ show the mime type].
  - -***v*** [ Print the version of the file]
    - ***file a.txt*** : a.txt: very short file
    - ***file a.xls*** : a.xls: Microsoft Office Document
    - ***file -i a.xls*** : a.xls: \o12- application/msword

# File Operations

- To concat files and print on the standard output : ***cat file1 file2 file3 …***
  - ***-n*** [ number all output lines ]
  - ***-s*** [ never more than one single blank line ]

# File Viewing

- To view files in shell use: ***more*** or ***less***.
  - ***more filename***
  - ***less filename***
- The main difference between more and less is that
  - less allows backward and forward movement using the arrow keys.
  - more only uses the [Spacebar] and the [B] key for forward and backward navigation.

# File Viewing

- To output the first lines of files : ***head file1 file2 file3 …***
- Print the first 10 lines of each file to standard output
- With more than one file , precede each with a header giving the file name
  - -***n*** [ output the first n lines, instead of the first 10 ]

# File Viewing

- To output the last lines of files : ***tail file1 file2 file3 …***
- Print the last 10 lines of each file to standard output
- With more than one file, precede each with a header giving the file name
  - -***n*** [ output the last n lines, instead of the last 10 ]

# File Viewing

- To sort lines of a text files : ***sort file1 file2 file3…***
- Write sorted concatenation of all file(s) to standard output.

# File Viewing

- To print the number of lines, words and bytes in files : ***wc file1 file2 file3 …***
- print byte, word, and newline counts for each file and a total line if more than one file is specified.
  - ***-l*** [ print the newline counts ]
  - ***-w*** [ print the word counts ]

# Standard I/O/E

- By default, three default files known as standard files are automatically opened when a command is executed.
- They are standard input (***stdin***) ,standard output (***stdout***) and standard error (***stderr***).
- For example, the command ***ls -a*** scans the current directory and collects a list of all the files, produces a human readable list, and outputs the result to the terminal window.

# Redirection

- Linux redirection features can be used to detach the default files from ***stdin***, ***stdout*** and ***stderr*** and attach other files to them.
- **Input redirection**:
  - < - get input from file instead of the keyboard
- **Output redirection**:
  - > - send output to file instead of the terminal window
- **Append output**:
  - >> - command is used to append to a file if it already exists

# Piping

- The input of a command may come from the output of another command.
- This is accomplished with the ' | ' pipe operator.

- **How to view the lines 15-20 of  a file named 'a.txt' ?**

# Piping

- The input of a command may come from the output of another command.
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- **How to view the lines 15-20 of a file named 'a.txt' ?**
  - ***head -20 a.txt | tail -5***

# Grep

- grep matches a pattern in a given a list of files or standard input and outputs only the matching lines.
  - ***grep*** pattern filename
    - ***grep abc file.txt***
- grep patterns are case sensitive by default.
- Some options
  - -***i*** [ case insensitive search ]
  - -***c*** [count of total matches]
  - -***E*** [regular expressions can be provided as patterns]
  - -***n*** [display the line numbers of the matched lines]

# Find

- Search for files in a directory hierarchy.
- By default, find returns all files below the current working directory.
  - ***find .***
- To search a pattern : ***find . -name '*txt*'***
- To search for a file type :
  - ***find . -type d*** [find all directories]
  - ***find . -type f*** [find all regular files]
- Find executes the ***'-print***' action by default. To change it to style such as '***ls***' : ***find . -type f –ls***

# Find

- To search all the directories (not recommended)
  - ***find / -name '*.java' -type f***
- To search a specific directory
  - ***find /home/dir1 -name '*.java' -type f***
- To search multiple directories
  - ***find dir1 dir2 -name '*.java' -type f***
- To search for all files owned by a user
  - ***find . -user userid***
- To take an action
  - ***find . -type f -name '*x*' -exec chmod a+rwx {} \;***
  - ***{}*** is replaced with the name of the file
  - The ***;*** indiates the end of the command.

# Thanks