Operating Systems

Lab – 11

Objectives:

- Software Installation
- User Management
- File System Architecture

Linux Environment

Perform all the tasks on your machine and write in your notebook the particular one's.

1. Create a **lab11/** directory on your desktop and perform the following tasks in it.

Software Installation

Task 01:

a) What is the difference between a **binary** package and a **source** package?
b) What is the role of a **package** manager, what all **package** managers are available to you for installing Debian packages.
c) Install binary package **fortune** on your machine using **apt-get** command.

   Open **/etc/apt/sources.list** in **vim** and **uncomment** the lines starting with **deb-src.**

d) Download source package **hello** and **cmatrix** using (**sudo apt source cmatrix)**. Use configure-build-install steps to install them on your machine, see their **manual** pages, use them and finally **uninstall** them. Note down all your **observations** and **commands** used.

User Management

Task02:

a) Create a new username **kakamanna**.
b) View the contents of **/etc/passwd**, **/etc/shadow**, and **/etc/group** which of these files you cannot **see** as kakamanna.
c) As root, assign a **password** to kakamanna and try **logging** in again as kakamanna.
d) Login in as **kakamanna**, and see the contents of his home directory.
e) Change the personal information of kakamanna using the **chfn** command. Do it as root and then do it as **kakamanna** and note the difference. All files have been changed.
f) Login as **root**, and delete user **kakamanna**. See the contents of files **/etc/passwd**, **/etc/shadow**, and **/etc/group**. Note your observations. Also, see if the home directory of the user is **deleted** or not?

Task 03: Login as root, create **three groups** with the name of **faculty**, **staff** and **students** and perform the following tasks.

a) Create three users and make them members of the **faculty** group.
b) Create three users and make them members of the **staff** group.
c) Create three users and make them members of the **students** group.
d) Give **Sudo privileges** to the users of the **faculty** group by adding them to the **Sudo** group.

*What happens if you forget to use that **append flag** while assigning a group to the user?*

File System Architecture

Task 03:

a) List all **processes** that have that file opened **/etc/passwd**.
b) Display your file system **disk space** usage.
c) Displays the list of files that the current **bash** process has opened.
d) What are the steps that are followed by the Linux kernel when a user tries to read a file **/home/Students/result**. Describe by **drawing** and **labeling** diagrams.
e) When a user **creates** a file on the disk, what are the steps that are followed by the Linux **kernel** to populate different **data structures** on the hard disk. Describe by **drawing** and **labeling** diagrams showing **contents** of directories involved.