Practical No.1

AIM: Installation and Configuration of virtual machine

A) Installation of virtual machine software

Step 1:

- Download the VMWARE WORKSTATION 11.0 software from the official Website or Google
- Save it on the local disk of your machine.

Step 2:

- Double click on Downloaded exe file. It will show you Next and cancel button.
- Select Next button.
- In next window select the first radio button to accept terms and conditions then click on Next button.

Step 3:

- New window "Setup Type" will appear. Here we have to select Typical Installation (default) as shown below.

Step 4

- Next window "Software Update" ask for automatic update selection. We can skip it. So we have uncheck the checkbox and click on next button.
- Next window "User experience Improvement Program" will appear. Here also we can uncheck Help Check box and click on next button as shown below

Step 5:

- Next window "Shortcut" will appear. Here you have to keep the default values as it is and then click on next button as shown below.
- Next window "Ready to perform the Requested Operations" will appear. Here click on continue button as shown below.

Step 6:

- Wait for some moment till the window indicates finishing installation.
- Next window will ask for entering License Key. If you have license Key then enter it or Click on Skip button as shown below

Step 7:

- Next window "Setup Wizard Complete" indicates installation is finished so click on Finish button.
- To start using the VMWare workstation. From start menu select "VMWare workstation" or from desktop, double click on "VMWare workstation" icon.

Step 8:

- Your windows might ask your permission to continue. Accept all requests and then your "VMWare workstation" is ready to use.

B) Installation of Windows OS

For this we need the ISO file of Windows 8.1.

Step 1:
- Open VMWARE-> File -> New Virtual Machine
- In Welcome wizard Select the installation type as Typical.
- In next window give the path of Windows 8.1 OS ISO file for installation. Then Click on Next.

Step 2:
- In next window will ask the information about windows License Key. If you don't have it then keep it blank, fill the other information about user Full name and Password and then click on Next button as shown below(optional).
- As we have not provided the License Key, a message box will prompt indicating that in future we have to provide Windows License key. Here Click on Yes button.
- The Next window will ask for Name of virtual machine, we can change it or we can keep it as default and then click on Next button as shown below.
- Next window will prompt for disk space we can modify it or keep it unchanged and the click on Next button as shown below.

Step 3:
- Next window informs us that virtual machine creation is done after clicking the Finish button.
- Then wait for moment as VMWare creates the Disk space for installation.
- Then it starts with windows initial installation screen.
- In next window it shows the progress of installation

Step 4
- We have to wait until the VMware finishes the installation of windows.
- After finishing the installation on next screen, enter password if we have created otherwise click on login or it will directly login.
- After that our Windows Operating system on Virtual Machine is ready to use.

C) Installation of Linux OS

To install Red Hat operating system on virtual machine software, we must have either installation disk or ISO installation file.

Step 1:

Open VMWARE-> File => New Virtual Machine In Welcome wizard Select the installation type as Typical.
- In next window give the path of RedHat Linux OS ISO file for installation. Then Click on Next.

Step 2:
- In next window "Easy Install Information it asks some information about Full Name, username and password. Enter this information and click on Next button.

- In Next window "Name the Virtual Machine", it asks for the name of your choice, you can change it or keep the default name as it is as shown below.

Next window ask about disk capacity. Here we can select default, also we can modify the disk space and then click on next

Step 3:
- Next window "Ready to create Virtual Machine" Inform us about finishing the creation Job after clicking the Finish.
- Then again we have to go back to VMWare Workstation. Where we can find our newly created Virtual Machine Name and Click the option "Power on this Virtual Machine".
- The Installation of RedHat Linux will begin inside the VMWare Workstation

Step 4:
- Next Window will show the progress of RedHat Linux Installation process.
- After Completion of Installation, next window will ask Selection of Username and also we have to provide appropriate password which we have already set in Step 2.

Step 5: Now we all set to use and explore the RedHat Linux Operating system.
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Practical No.2

AIM: Windows (DOS) Commands

How to open windows DOS prompt?
- Right-click on the Start button in the lower-left corner of the screen and select the Command Prompt option from the Power User menu.

A) Date, time, md, cd, rd, path.

1. Date :
To find the current date, MS-DOS provides the DATE commands.

Syntax

C:\Users\Tushar>date
Current date is: 05-09-2016
Enter new date (mm-dd-yy):

2. Time:
To find the current time, MS-DOS provides the TIME commands.

Syntax
C:\Users\Tushar>time
The current time is: 12:21:06.72
Enter the new time:

3. MD:
Allows you to create your own directories in MS-DOS.

Syntax:
MKDIR [drive:]path
OR
MD [drive:]path

Example
C:\>mkdir "sir"
Or
C:\>md sir
It will create a folder named “sir”

4.cd:
CD (Change Directory) is a command used to switch directories in MS-DOS and the Windows command line.

CD Goes to the highest level, the root of the drive.
CD. Goes back one directory. to C:\Users> directory.

Syntax:
C:\Users\sandeep>cd ..
C:\Users>

C:\Users\sandeep>cd abc
C:\Users\sandeep\abc>

5. rd:
Removes an empty directory in MS-DOS.

Example

C:\>rmdir c:\test
Or
C:\>rd test1

Remove the test directory, if empty.

6.Path
Path is used to specify the location where MS-DOS looks when using a command.

Syntax
D:\>path
PATH=C:\ProgramData…

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B) Chkdsk, copy, format, fidsk, cls, defrag, del, move.

1. chkdsk:
- Chkdsk is a utility that checks the computer's hard drive status for any cross-linked or any additional errors with the hard drive.
- Run this command in Administrative mode. Open it by right click on windows button and select Command Prompt(Admin)

Syntax
C:\WINDOWS\system32>chkdsk c:

The type of the file system is NTFS.
Stage 1: Examining basic file system structure...
Progress: 80703 of 201728 done; Stage: 40%; Total: 13%; ETA: 0:00:30 .....

2. copy:
Allows you to copy one or more files to an alternate location.

Syntax
C:\abc\>copy abc.txt D:\

3. format:
Format is used to erase information of a computer diskette or fixed drive.

Syntax:
C:\>format d:
This would erase the contents of your D:

4. fdisk:

Fdisk is used to delete and create partitions on the hard drive in earlier versions of MS-DOS and Windows.

Syntax:
C:\>Fdisk
Open the fdisk option screen that you can see in the fdisk simulation.

5. cls:

Cis is a command that allows you to clear the complete contents of the screen and leave only a prompt.

Syntax: C:\>cls

6. defrag:

Microsoft Defrag was first introduced with MS-DOS 6.0 and is a software utility capable of organizing and optimizing the files on the hard drive to improve system performance.

D:\>defrag c:
Defrag the main hard drive and correct any fragmented files.

7. del:

Del is a command used to delete files from the computer.

Syntax:
C:\>del test.txt

8. Move

Allows you to move files or directories from one folder to another, or from one drive to another

Syntax:
c:\windows\user> move abc.txt desktop

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C) Diskcomp, echo , Edit, find, rename

1. Diskcomp:

Compares the contents of a floppy disk in the source drive to the contents of a floppy disk in the target drive.

Example

C:\>diskcomp a: b: /1
Compares the first side of A: with B:

2. echo
echo is one of the most commonly and widely used built-in command that typically used in scripting language and batch files to display a line of text/string on standard output or a file.

Example
C:\>echo "hi"
hi

3. Edit:
The MS-DOS editor is a command line text editor that allows you to view, create, or modify any file on your computer

Example
C:\>edit myfile.txt

This would bring up a blank edit screen, as long as the file is saved upon exit this will create the file myfile.txt.

4. find:
Allows you to search for text within a file.
D:\>find "Frame" TText.java
—----------TTEXT.JAVA

5. rename:
Used to rename files and directories from the original name to a new name.

Syntax
C:\>rename D:\Test NewTest

Rename the directory Test to NewTest.

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Practical no.3

AIM : Linux commands

A) pwd, cd, absolute and relative paths, ls, mkdir, rmdir

1. pwd:
This command display current working directory!

[Abhinav@localhost ~]$ pwd
/home/Abhinav

2 cd:
This command is used to change the directory for working.

Examples
Move to the etc folder
[Abhinav@localhost etc]$ cd /etc
[Abhinav@localhost etc]$ pwd
/etc

3.ls:
This command is used to list the details about the files.

[Abhinav@localhost ~]$ ls
example file1.txt file2.txt file3.txt

4. mkdir:
To create a directory, 'mkdir' command is used.

[Abhinav@localhost ~]$ mkdir Demo
[Abhinav@localhost ~]$ ls

Desktop Documents Downloads Music Pictures Public Demo Templates Videos

5. rmdir:
Remove directory, this command will only work if the folders are empty.

Syntax
[Abhinav@localhost ~]$ rmdir Demo
[Abhinav@localhost ~]$ ls

Desktop Documents Downloads Music Pictures Public Templates Videos

B) file, touch, rm, cp. mv, rename, cat, tac.

1. File
The file utility determines the file type
[Abhinav@localhost ~]$ file demo.txt
Text file

2. touch:
To create an empty file is with touch.
[Abhinav@localhost ~]$ touch test1
[Abhinav@localhost ~]$ ls
Desktop Downloads Pictures Templates test1
Documents Music Public Videos

3. Rm
The rm command is used to rmove the file permanently from the machine.

[Abhinav@localhost ~]$ ls
Desktop Downloads Pictures Templates Documents Music Public test1 Videos

[Abhinav@localhost ~]$ rm test1
[Abhinav@localhost ~]$ ls
Desktop Downloads Pictures Templates Videos
Documents Music Public

4. cp:
The cp is a Linux shell command to copy files and directories.

Copy single file main.c to destination directory demo:
[Abhinav@localhost ~]$ cp main.c demo

5. mv:

The my command is used to move files and directories.
Syntax:
[Abhinav@localhost ~]$ mv demo desktop

6. rename:
The rename command will rename the specified files by replacing the first occurrence of from in their name by to.

Example
[Abhinav@localhost ~]$ rename abc.txt demo.txt

7. cat:
The cat command is used to display the content of text files and to combine several files to one file. The cat command does not accept directories

To View text file data:
[Abhinav@localhost ~]$ cat list1.txt
milk
bread
apples

[Abhinav@localhost ~]$ cat list2.txt
House
car

[tushar@localhost ~]$ cat list1.txt list2.txt

milk
bread
apples
house
car

8. tac:
This command just work opposite of cat command. It displays the output of cat in reverse manner.

[Abhinav@localhost-~]$ cat count
One
Two

[Abhinav@localhost-~]$ tac count
Two
One

C) ps, top, kill, pkill, find

1. ps:
This command is used to report the process status. ps is the short name for Process Status.

Example:
Typing ps alone would list the current running processes:
[Abhinav@localhost ~]$ ps

PID TTY
TIME CMD
2671 pts/2 00:00:00 bash

3021 pts/2 00:00:00 ps

2. top:
The top command in linux is used to find CPU usage. It provides dynamic real- time view of a running system.

Example
[Abhinav@localhost ~]$ top -c

3. kill:
This command is used to kill the background process.

Example
[Abhinav@localhost ~]$ kill 1428

The kill command kills or terminates the background process with process id 1428.

4. pkill:
The pkill command is used to terminate or stop a running process immediately.

Example
[Abhinav@localhost ~]$ pkill chrome

5. find:
The find command finds one or more files assuming that you know their approximate filenames.

Example:
For searching any file named 'cal.txt' in the current directory and any subdirectory in system.

[Abhinav@localhost ~]$ find -name 'cal.txt

D) date, cal, uptime, w, whoami

1. date:
The date command prints the date and time.

Example
[Abhinav@localhost ~]$ date

Tue nov 11 21:52:45 PDT 2024

2. cal:

The cal command is used to display the calendar

Example
[Abhinav@localhost ~]$ cal

3. uptime:
The uptime command tells us how long the system has been running.

Example:
[Abhinav@localhost ~]$ uptime

22:05:34 up 2:34, 2 users, load average: 0.00, 0.00, 0.00

4. whoami: The whoami command is used to print current user's login name along with effective userid.

Synatx:
[Abhinav@localhost ~]$ whoami
Abhinav

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Practical No. 4

AIM : Working with Linux Desktop and utilities

A. The vi editor:
Click on Applications -> System Tools -> Terminal..... Then Type vi with file name.

Interacting with vi Editor

1. Make a new file called "Demo" by opening a console and typing this line after the $prompt and press Enter:
[Abhinav@localhost ~]$ vi Demo

2. We will get an empty console screen since Vi will start with the empty new file. Remember, Vi always starts Command mode, so press the I key to enter the Insert mode.

3. Next, type this line: "Welcome to vi Editor Practical."

4. Press the Esc key to return to the Command mode.

5. Save the file by holding down the Shift key and pressing the Z key twice: ZZ

B. Slideshow images using inbuilt image viewer utilities.

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C. Using the browsers

- A web browser is a type of software that allows us to find and view websites on the Internet.
- There are many different web browsers, but some of the most common ones include Google Chrome, Internet Explorer, Safari, and Mozilla Firefox.
- As more options are available so we will see the common and essential functionalities of all browsers in this practical.
- In this practical we will cover navigating to different websites, using tabbed browsing, creating bookmarks, and more.

Downloading files

- Links don't always go to another website. In some cases, they point to a file that can be downloaded, or saved, to our computer.
- If we click a link to a file, it may download automatically, but sometimes it just opens within our browser instead of downloading.
- To prevent it from opening in the browser (Normally PDF), we can right-click the link and select Save link as (different browsers may use slightly different wording, like Save target as)

D. Creating users and shares

- RedHat Linux provides the User Manager application that allows us to view, modify, add, and delete local users and groups in the graphical user interface.

Note: To Manage the users we need root Privileges, so login to system with root user.

To start the User Manager application:
System-> Administration-> Users and Groups.
->system-config-users

- **Adding a New User**:
To add a new user, follow the steps given below.
a) Click the Add User button.
b) Enter the user name and full name in the appropriate fields
- Type the user's password in the Password and Confirm Password fields. The password must be at least six characters long. (It is always better to use long and complex password for security reasons.

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Practical No. 5

AIM:Running C/C++/Python programs in Linux

A. Compiling and executing the C program

Method 1: Using CC Compiler

In this method, we will be compiling and executing the C program code using CC Compiler.

Step1:
Firstly, we need to open the text editor and terminal for writing code and executing it through the terminal.

Step 2:
In the text editor we need to write any code using a C programming language.

Example

```
#include <stdio.h>
int main() { printf("Welcome to the world of Linux");
return 0;
}
```

Step 3:
Now, we need to save the file with the .c extension. So in this example, we have saved the file as welcome.c.

Step 4: Open the terminal and install GCC by using following command:

First type SU then enter login password
-> type gcc then hit enter it will ask Y or N enter Y.

Now compile and run the C code in the terminal using the below commands.

```
cd /Desktop    // go to file saved location of file
cc welcome.c
./a.out
```

Method 2: Using GCC Compiler

We can also compile and execute the script using the GCC compiler. Create new file as shown in previous example. Use following code. Save the file with name add.c

Example Script:

```
#include <stdio.h>
int main()
 {
int a=10,b-20, c;
c=a+b;
printf("addition of=%d\n",c);
return 0;
}
```

Step 1:
Navigate to the directory where the file is been saved. Use the below commands.

```
 cd Desktop/
```

Step 2:
Execute the below command in the terminal for compilation and execution.
cc-o add add.c
./add
—----------

B. Compile and Run C++ Code in Linux

In this method, we will be compiling and executing the C++ program code using G++ Compiler.

Step 1:
Write the C++ program code in a text file using a text editor simlilarly as previous and save the file with the .cpp extension. (my.cpp)

Example Script:

```
#include <iostream>
using namespace std;
int main() {
cout << "Welcome to World of Linux";
return 0;
}
```

Step 2:
Open terminal and use following command to install g++

-> su
-> enter login password
-> g++
-> press Y
-> again press Y

After successful installation Navigate to the directory where the file is been saved.
cd /Desktop/

Step 3:
Execute the below command for compilation and execution.
g++ my.cpp
/a.out

C. Compile and Run Python Code in Linux

Step 1:
Open the text editor and type following python code.

print ("Welcome to Python, Linux rules!")
Save the file with name First.py

Step 2:
Open terminal and navigate to the directory where the file is saved.
cd/Desktop/

Now run the file using following command
python3 First.py
