TRAINING CONTENT

Linux Basics

YOUR NEXT DESTINATION
OF SOFTWARE OUTSOURCING

Lecture Outline

- APT and Dpkg

- Difference Between APT and Dpkg

- Package installation using APT and Dpkg

- Scripting

- Nginx Web Server

APT and Dpkg

- Apt (Advanced Package Tool) is a newer package manager that offers more features than dpkg. It can automatically handle dependencies, so you don't have to worry about manually installing them. Apt also has a wider range of repositories from which you can install packages..

- Dpkg (Debian Package Management System) is the older package manager. It doesn't have as many features as apt, but it's still a powerful tool. Dpkg can't automatically handle dependencies, so you'll need to install them manually. Dpkg also has a limited range of repositories, but you can still find the most common packages..

- This tools **allow system administrators and users to install, update, uninstall, search, verify and manage system software packages.**

Difference Between APT and Dpkg

Functions	APT	dpkg
Can download packages from remote repositories	YES	NO
Can resolve dependencies	YES	NO
Install local packages	YES (using dpkg)	YES
Install remote package	YES (using dpkg)	NO (users need to manually download a package if they wish to use dpkg)
List installed packages	YES	YES

Package Installation Using APT and Dpkg

#To fetch updates
$sudo apt update
#To upgrade all packages currently installed on the system
$sudo apt upgrade
#To see the list of packages that can be upgraded on the system
$sudo apt list --upgradable
#To Install a package using Apt
$ sudo apt install package_name
#To remove a package using Apt
$sudo apt remove package_name
#To search packages in apt
$apt search package_name
#To install package using dpkg
$sudo dpkg -i package_name
#To remove package using dpkg
$sudo dpkg -r package_name
#Updating Repositories using dpkg
$sudo dpkg --update-avail

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Shell Scripting

What is Shell Scripting

Shell Scripting is **a program to write a series of commands for the shell to execute**. It can combine lengthy and repetitive sequences of commands into a single and simple script that can be stored and executed anytime which, reduces programming efforts.

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Advantages of shell scripts

- The command and syntax are the same as those directly entered in command line, so programmer do not need to switch to entirely different syntax

- Writing shell scripts are much quicker

- Quick start

- To avoid repetitive work and automation

- System admins use shell scripting for routine backups

- System monitoring

How to Write Shell Script in Linux

- **Create a file using** a **vi** editor(or any other editor). Name script file with **extension .sh**

- **Start** the script with **#! /bin/sh**

- Write some code.

- Save the script file as filename.sh

- For **executing** the script type **bash filename.sh or ./filename**

Adding #!/bin/bash as the first line of **your script, tells the OS to invoke the specified shell to execute the commands that follow in the script**. #! is often referred to as a "hash-bang", "she-bang" or "sha-bang".

Sample Script

#vi script1.sh

#!/bin/bash

cat /etc/redhat-release

date

pwd

who

free

df

uptime

#chmod +x script1.sh

#./script1.sh

```
[root@localhost ~]# ./script1.sh
CentOS Linux release 7.0.1406 (Core)
Thu Nov 11 09:17:02 BDT 2021
/root
(unknown) :0                 2021-11-11 08:47 (:0)
root      pts/0              2021-11-11 08:48 (192.168.43.113)
             total      used       free     shared    buffers     cached
Mem:       1016796    553984     462812       7196        876     199836
-/+ buffers/cache:     353272     663524
Swap:      2129916         0    2129916
Filesystem              1K-blocks    Used Available Use% Mounted on
/dev/mapper/centos-root  40268584 3771096  36497488  10% /
devtmpfs                   499168       0    499168   0% /dev
tmpfs                      508396      80    508316   1% /dev/shm
tmpfs                      508396    7112    501284   2% /run
tmpfs                      508396       0    508396   0% /sys/fs/cgroup
/dev/sda1                  508588  121028    387560  24% /boot
 09:17:02 up 29 min,  2 users,  load average: 0.00, 0.01, 0.05
```

Shell Script some common statements

- if-statement

- if-else statement

- Nested if-else statement

- For loop

- Infinite loops

- While loop

Command	Description
&&	Logical AND
||	Logical OR
$0	Argument 0 i.e. the command that's used to run the script
$1	First argument (change number to access further arguments)
-eq	Equality check
-ne	Inequality check
-lt	Less Than
-le	Less Than or Equal
-gt	Greater Than
-ge	Greater Than or Equal

Script using If Else statement

Syntax
if [expression]
then   Statement(s) to be executed if expression is true
else   Statement(s) to be executed if expression is not true
fi
#!/bin/bash

a=2

b=7

if [$a -ge $b]

then

  echo "The variable 'a' is greater than the variable 'b'."

else

  echo "The variable 'b' is greater than the variable 'a'."

fi

Nginx Web Server Install & Configure

```
#Before installing any software it's a good idea to update apt
$ sudo apt update
#install Nginx web server and its dependencies
$ sudo apt install nginx -y
#Check the firewall status
$sudo ufw status
#Open the HTTP port 80 through the default Ubuntu firewall ufw
$sudo ufw allow 80
#To check the status of the nginx service
systemclt status nginx
service nginx stop     #To stop the service
service nginx start    #To start the service
service nginx status  #To  check the stauts
cd /var/www/html/    #Default working directory of nginx
vim index.html         #create a html page in /var/www/html/ directory
service nginx reload  #To reload the new changes on the server
Check from your browser
```

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Thank You

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