Ex 3 COMPILING FROM THE SOURCE

Date: 29.08.20

Aim:

To study and implement the compiling from the source.

Description:

tar

The Linux 'tar' stands for tape archive, is used to create Archive and extract the Archive files. tar command in Linux is one of the important commands which provides archiving functionality in Linux. We can use Linux tar command to create compressed or uncompressed Archive files and also maintain and modify them.

zip

ZIP is a compression and file packaging utility for Unix. Each file is stored in a single .zip {.zip-filename} file with the extension .zip. ZIP is a compression and file packaging utility for Unix. Each file is stored in a single .zip {.zip-filename} file with the extension .zip.

gzip

gzip command compresses files. Each single file is compressed into a single file. The compressed file consists of a GNU zip header and deflated data. If given a file as an argument, gzip compresses the file, adds a ".gz" suffix, and deletes the original file. With no arguments, gzip compresses the standard input and writes the compressed file to standard output.

Difference between Gzip and zip command in Unix and when to use which command

- ZIP and GZIP are two very popular methods of compressing files, in order to save space, or to reduce the amount of time needed to transmit the files across the network, or internet.
- In general, GZIP is much better compared to ZIP, in terms of compression, especially when compressing a huge number of files.
- The common practice with GZIP, is to archive all the files into a single tarball before compression. In ZIP files, the individual files are compressed and then added to the archive.

- When you want to pull a single file from a ZIP, it is simply extracted, then decompressed. With GZIP, the whole file needs to be decompressed before you can extract the file you want from the archive.
- When pulling a 1MB file from a 10GB archive, it is quite clear that it would take a lot longer in GZIP, than in ZIP.
- GZIP's disadvantage in how it operates, is also responsible for GZIP's advantage. Since the compression algorithm in GZIP compresses one large file instead of multiple smaller ones, it can take advantage of the redundancy in the files to reduce the file size even further.
- If you archive and compress 10 identical files with ZIP and GZIP, the ZIP file would be over 10 times bigger than the resulting GZIP file.

Commands:

Sl. No.	Command Name	Syntax	options
1.	**rpm**	rpm {rpm-file}	**-a, --all** Query all packages **-f** Query for packages owning given file
2.	**apt-get**	apt-get [options] source pkg1 [pkg2 ...]	**-a** It prints all the system information in the order **-s** It prints the kernel name. **-n** It prints the hostname of the network node **-r** It prints the kernel release

			date **-v** It prints the version of the current kernel
3.	**tar**	tar [options] [archive-file] [file or directory to be archived]	**-c** Creates Archive **-x** Extract the archive **-f** Creates archive with given filename **-t** Displays or lists files in archive file **-u** Archives and adds to an existing archive file **-A** Concatenates the archive files **-z** zip, tells tar command that create tar file using gzip **-W** Verify a archive file **-r** update or add file or directory in already existed .tar file

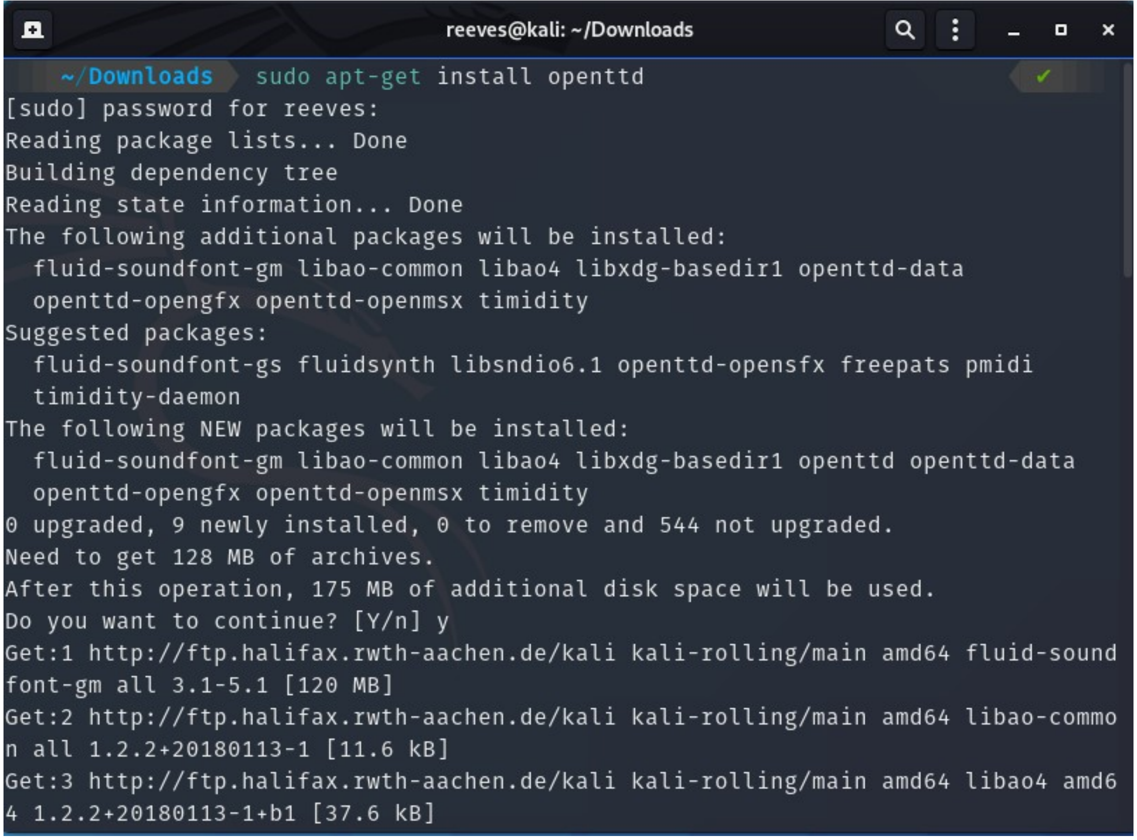
4.	**zip**	zip [options] zipfile files_list	**-d** : Removes the file from the zip archive **-u** : Updates the file in the zip archive **-m** : Deletes the original files after zipping **-r** : To zip a directory recursively **-x** : Exclude the files in creating the zip **-v** : Verbose mode or print diagnostic version info
5.	**gzip**	gzip [Options] [filenames]	**-f** : Sometimes a file cannot be compressed **-k** : By default when you compress a file using the “gzip” command you end up with a new file with the extension **-L** :

			This option displays the gzip license **-r** : This option can compress every file in a folder and its subfolders **-[1-9] :** It allows to change the compression level **-v :** his option displays the name and percentage reduction for each file compressed or decompressed **-d** : This option allows you to decompress a file using the “gzip” command.

Exercise:

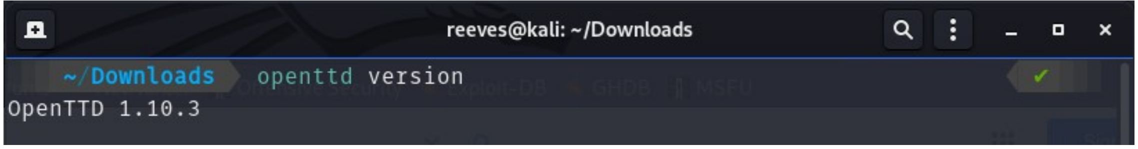
1. Compile the source from Openttd package

Installing Openttd using package manager



```
 ~/Downloads  sudo apt-get install openttd                                   ✔
[sudo] password for reeves:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  fluid-soundfont-gm libao-common libao4 libxdg-basedir1 openttd-data
  openttd-opengfx openttd-openmsx timidity
Suggested packages:
  fluid-soundfont-gs fluidsynth libsndio6.1 openttd-opensfx freepats pmidi
  timidity-daemon
The following NEW packages will be installed:
  fluid-soundfont-gm libao-common libao4 libxdg-basedir1 openttd openttd-data
  openttd-opengfx openttd-openmsx timidity
0 upgraded, 9 newly installed, 0 to remove and 544 not upgraded.
Need to get 128 MB of archives.
After this operation, 175 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://ftp.halifax.rwth-aachen.de/kali kali-rolling/main amd64 fluid-sound
font-gm all 3.1-5.1 [120 MB]
Get:2 http://ftp.halifax.rwth-aachen.de/kali kali-rolling/main amd64 libao-commo
n all 1.2.2+20180113-1 [11.6 kB]
Get:3 http://ftp.halifax.rwth-aachen.de/kali kali-rolling/main amd64 libao4 amd6
4 1.2.2+20180113-1+b1 [37.6 kB]
```

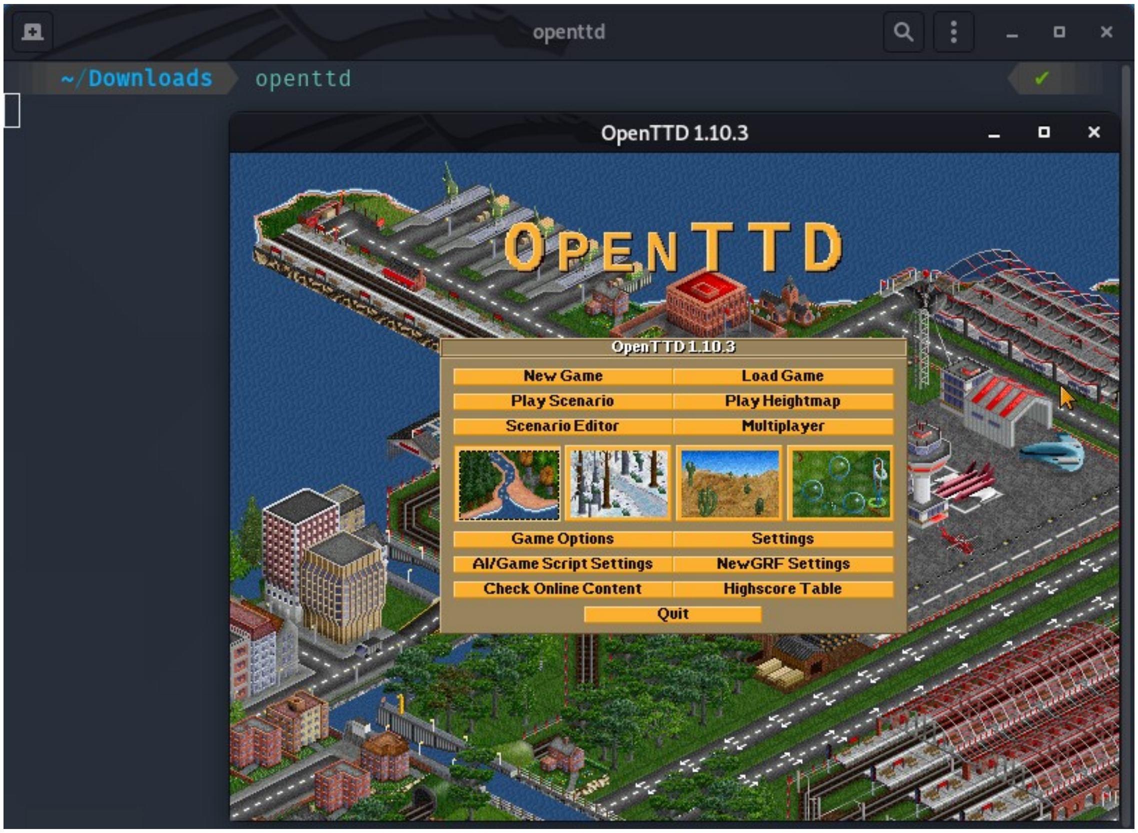
Check the version of Openttd



```
 ~/Downloads  openttd version                                                ✔
OpenTTD 1.10.3
```

Output:

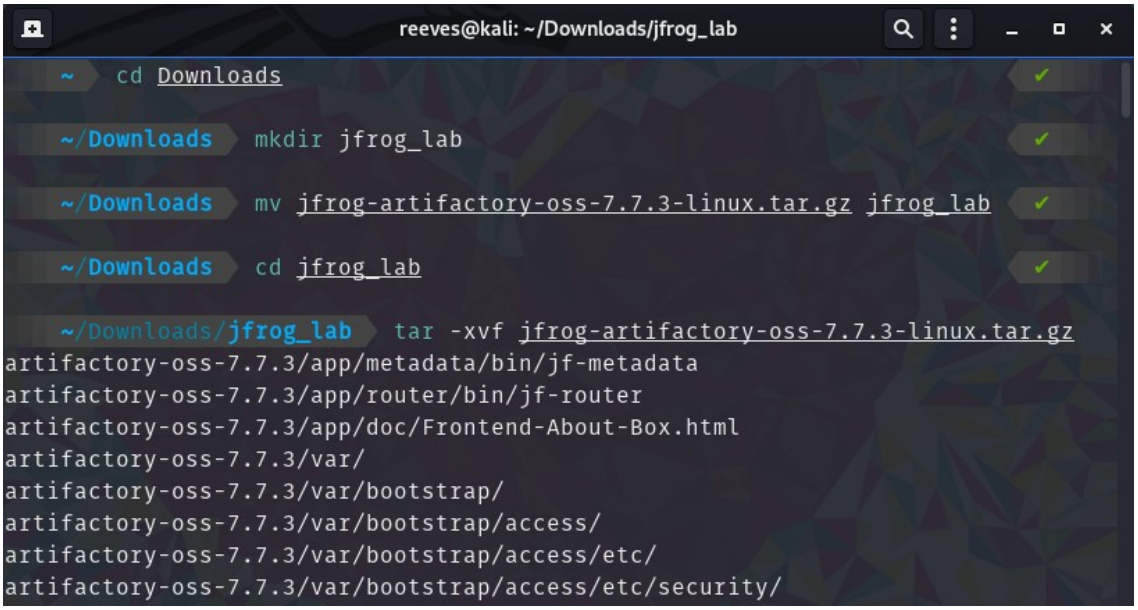
Run the Openttd



```
~/Downloads  openttd
```

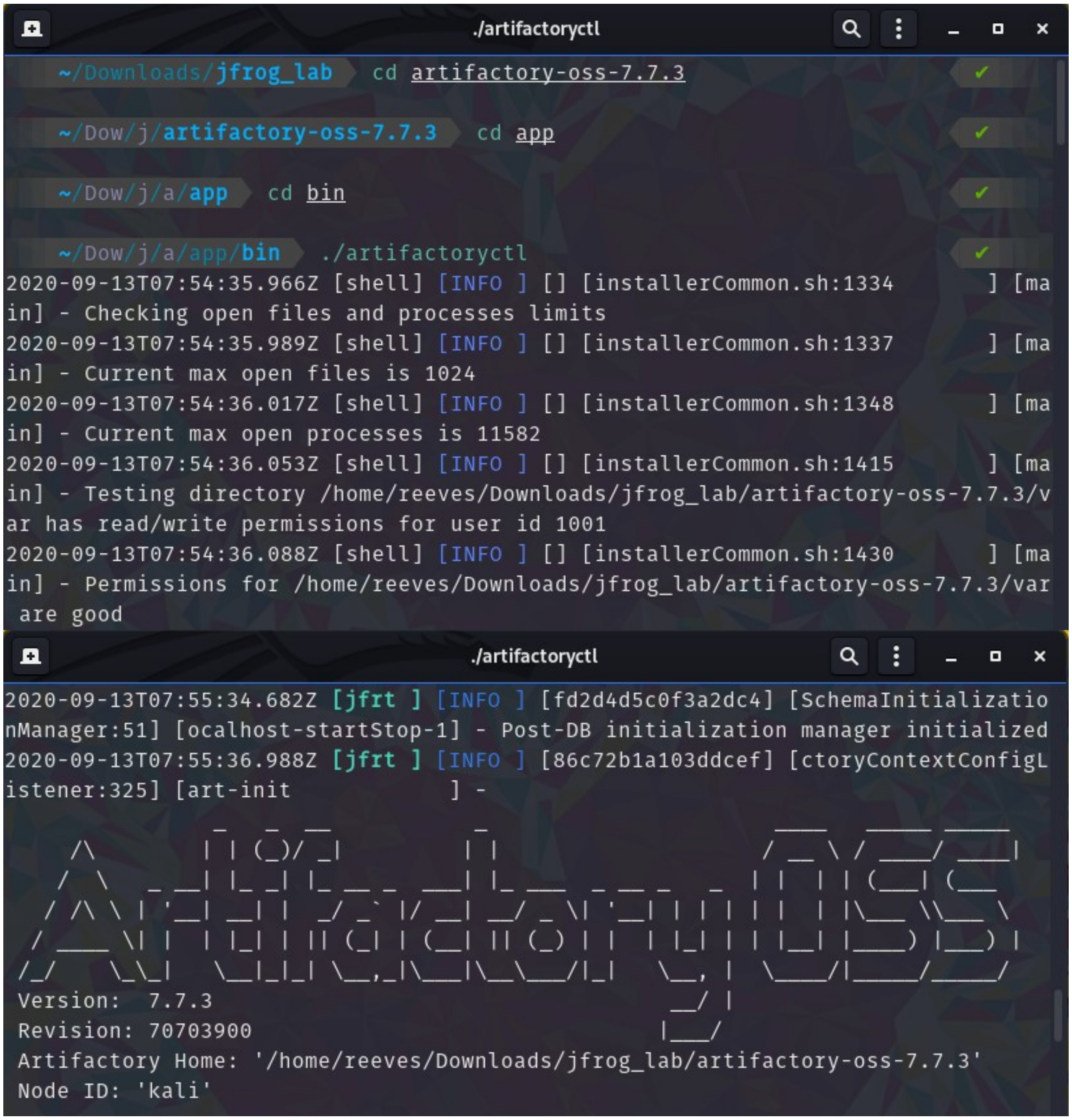
2. Compile the source from JFrog package

Download and Extract the JFrog file



```
~  cd Downloads
~/Downloads  mkdir jfrog_lab
~/Downloads  mv jfrog-artifactory-oss-7.7.3-linux.tar.gz jfrog_lab
~/Downloads  cd jfrog_lab
~/Downloads/jfrog_lab  tar -xvf jfrog-artifactory-oss-7.7.3-linux.tar.gz
artifactory-oss-7.7.3/app/metadata/bin/jf-metadata
artifactory-oss-7.7.3/app/router/bin/jf-router
artifactory-oss-7.7.3/app/doc/Frontend-About-Box.html
artifactory-oss-7.7.3/var/
artifactory-oss-7.7.3/var/bootstrap/
artifactory-oss-7.7.3/var/bootstrap/access/
artifactory-oss-7.7.3/var/bootstrap/access/etc/
artifactory-oss-7.7.3/var/bootstrap/access/etc/security/
```

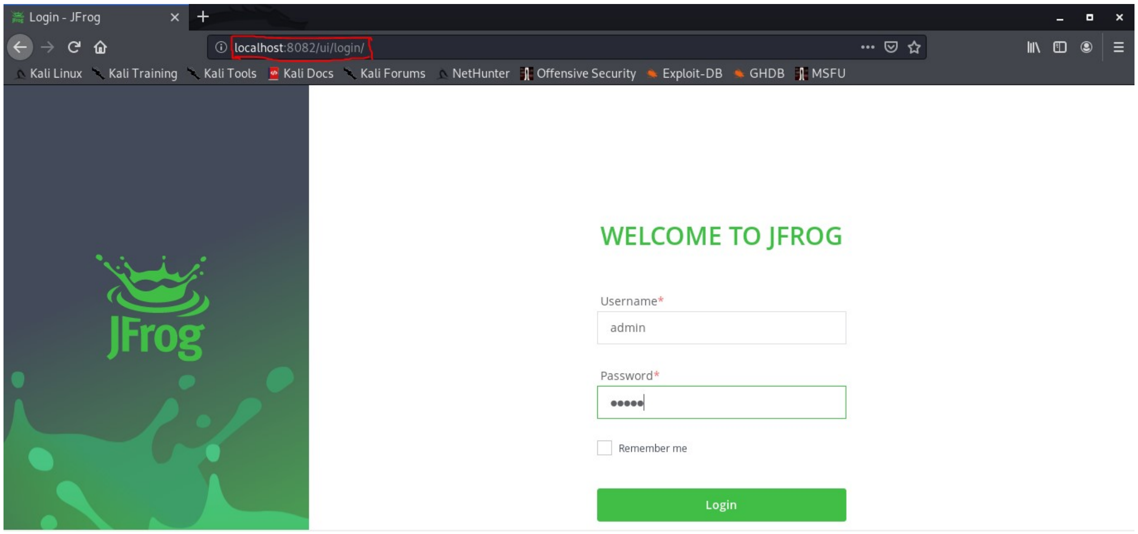
Compiling the Source of JFrog



```
 ~/Downloads/jfrog_lab  cd artifactory-oss-7.7.3                              ✔

 ~/Dow/j/artifactory-oss-7.7.3  cd app                                        ✔

 ~/Dow/j/a/app  cd bin                                                        ✔

 ~/Dow/j/a/app/bin  ./artifactoryctl                                          ✔
2020-09-13T07:54:35.966Z [shell] [INFO ] [] [installerCommon.sh:1334       ] [ma
in] - Checking open files and processes limits
2020-09-13T07:54:35.989Z [shell] [INFO ] [] [installerCommon.sh:1337       ] [ma
in] - Current max open files is 1024
2020-09-13T07:54:36.017Z [shell] [INFO ] [] [installerCommon.sh:1348       ] [ma
in] - Current max open processes is 11582
2020-09-13T07:54:36.053Z [shell] [INFO ] [] [installerCommon.sh:1415       ] [ma
in] - Testing directory /home/reeves/Downloads/jfrog_lab/artifactory-oss-7.7.3/v
ar has read/write permissions for user id 1001
2020-09-13T07:54:36.088Z [shell] [INFO ] [] [installerCommon.sh:1430       ] [ma
in] - Permissions for /home/reeves/Downloads/jfrog_lab/artifactory-oss-7.7.3/var
 are good
```

```
2020-09-13T07:55:34.682Z [jfrt ] [INFO ] [fd2d4d5c0f3a2dc4] [SchemaInitializatio
nManager:51] [ocalhost-startStop-1] - Post-DB initialization manager initialized
2020-09-13T07:55:36.988Z [jfrt ] [INFO ] [86c72b1a103ddcef] [ctoryContextConfigL
istener:325] [art-init            ] -
               _   _  __           _                    ____   _____ _____
     /\       | | (_)/ _|         | |                  / __ \ / ____/ ____|
    /  \   _ __| |_ _| |_ __ _  ___| |_ ___  _ __ _   _| |  | | (___| (___
   / /\ \ | '__| __| |  _/ _` |/ __| __/ _ \| '__| | | | |  | |\___ \\___ \
  / ____ \| |  | |_| | || (_| | (__| || (_) | |  | |_| | |__| |____) |___) |
 /_/    \_\_|   \__|_|_| \__,_|\___|\__\___/|_|   \__, |\____/|_____/_____/
 Version:  7.7.3                                   __/ |
 Revision: 70703900                               |___/
 Artifactory Home: '/home/reeves/Downloads/jfrog_lab/artifactory-oss-7.7.3'
 Node ID: 'kali'
```

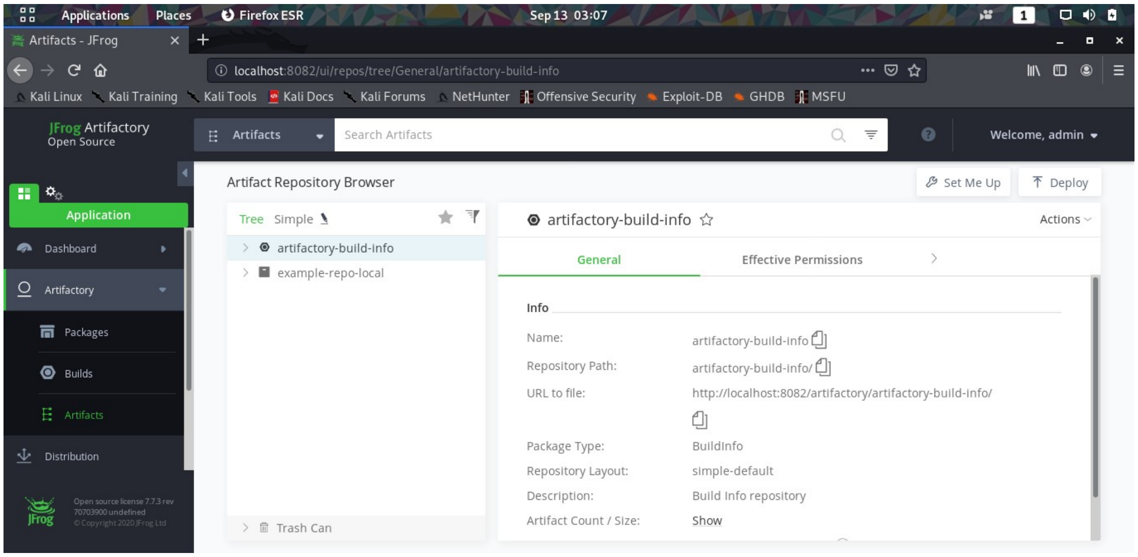
Run the JFrog in the Browser and Enter Valid Credentials



Username*
admin

Password*
•••••

Output:



artifactory-build-info

Info

Name: artifactory-build-info

Repository Path: artifactory-build-info/

URL to file: http://localhost:8082/artifactory/artifactory-build-info/

Package Type: BuildInfo

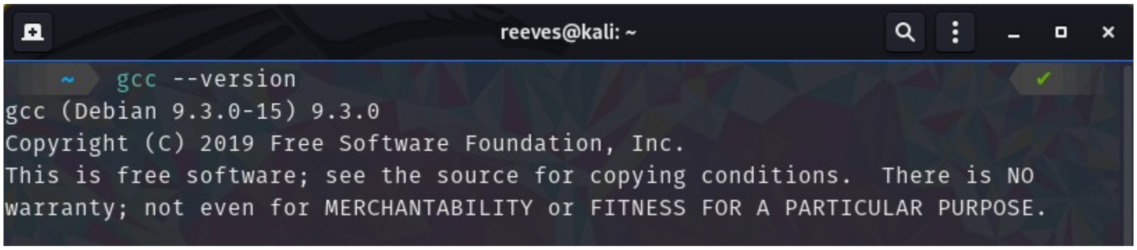
Repository Layout: simple-default

Description: Build Info repository

Artifact Count / Size: Show

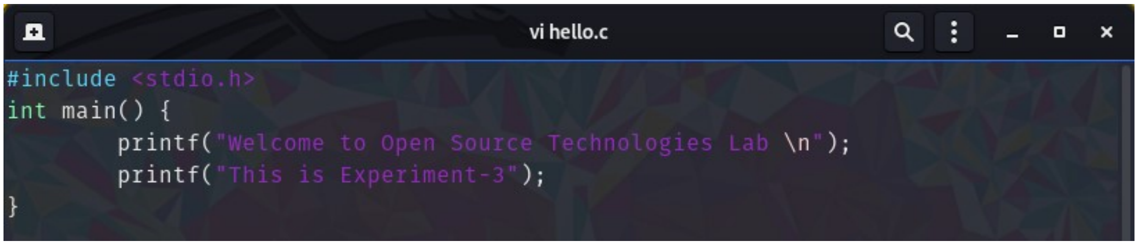
3. Compile the Source from gcc

Check the Version of gcc



```
 ~  gcc --version
gcc (Debian 9.3.0-15) 9.3.0
Copyright (C) 2019 Free Software Foundation, Inc.
This is free software; see the source for copying conditions.  There is NO
warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
```

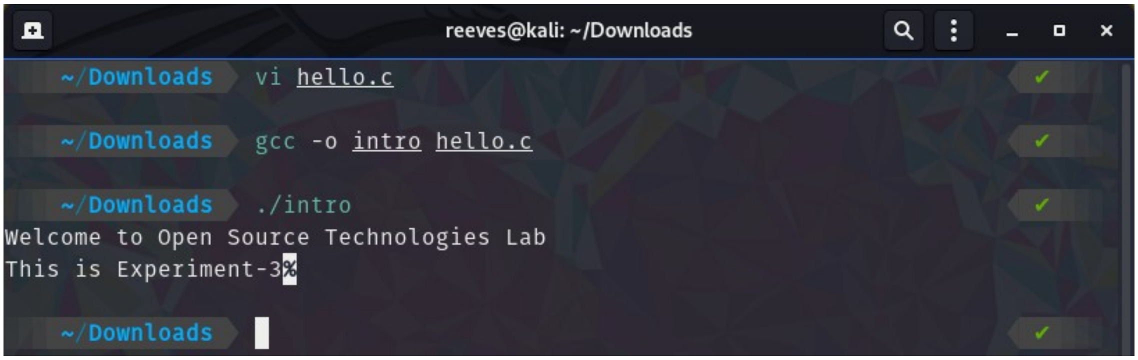
Sample Program



```
#include <stdio.h>
int main() {
        printf("Welcome to Open Source Technologies Lab \n");
        printf("This is Experiment-3");
}
```

Output:

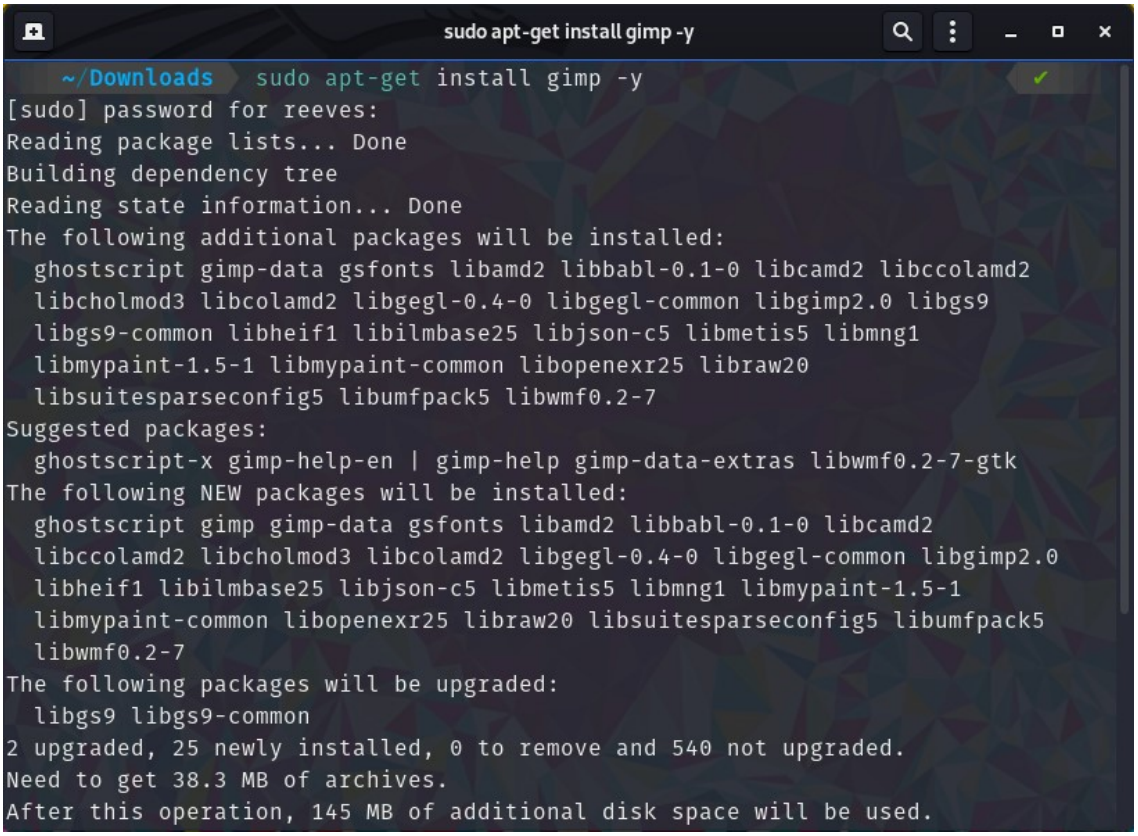
Compile and Run the C program using gcc



```
 ~/Downloads  vi hello.c

 ~/Downloads  gcc -o intro hello.c

 ~/Downloads  ./intro
Welcome to Open Source Technologies Lab
This is Experiment-3%

 ~/Downloads  
```

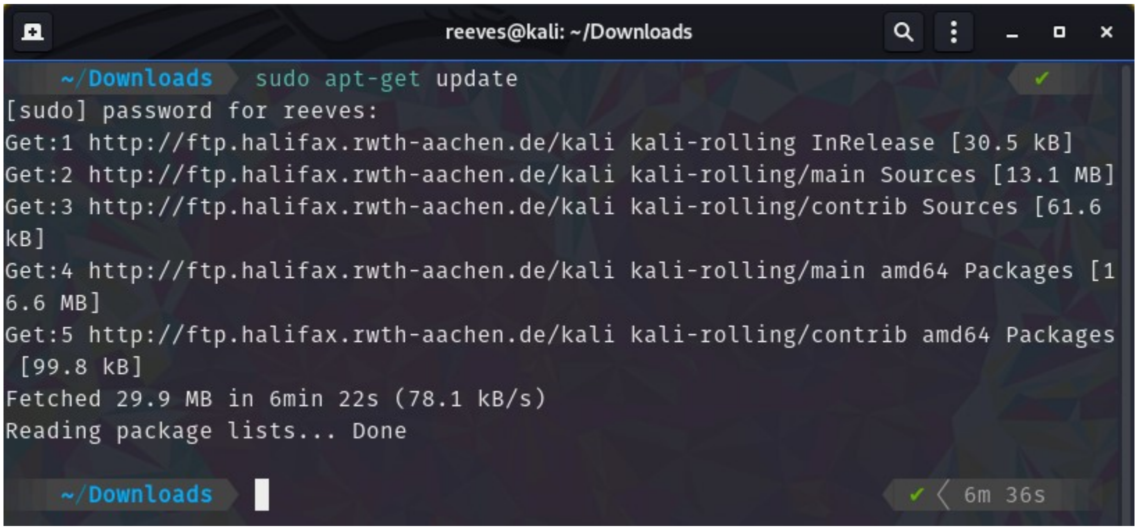
4. Compile the source from any open source package(GIMP)

Installing GIMP using package manager



```
 ~/Downloads  sudo apt-get install gimp -y                                    ✔
[sudo] password for reeves:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  ghostscript gimp-data gsfonts libamd2 libbabl-0.1-0 libcamd2 libccolamd2
  libcholmod3 libcolamd2 libgegl-0.4-0 libgegl-common libgimp2.0 libgs9
  libgs9-common libheif1 libilmbase25 libjson-c5 libmetis5 libmng1
  libmypaint-1.5-1 libmypaint-common libopenexr25 libraw20
  libsuitesparseconfig5 libumfpack5 libwmf0.2-7
Suggested packages:
  ghostscript-x gimp-help-en | gimp-help gimp-data-extras libwmf0.2-7-gtk
The following NEW packages will be installed:
  ghostscript gimp gimp-data gsfonts libamd2 libbabl-0.1-0 libcamd2
  libccolamd2 libcholmod3 libcolamd2 libgegl-0.4-0 libgegl-common libgimp2.0
  libheif1 libilmbase25 libjson-c5 libmetis5 libmng1 libmypaint-1.5-1
  libmypaint-common libopenexr25 libraw20 libsuitesparseconfig5 libumfpack5
  libwmf0.2-7
The following packages will be upgraded:
  libgs9 libgs9-common
2 upgraded, 25 newly installed, 0 to remove and 540 not upgraded.
Need to get 38.3 MB of archives.
After this operation, 145 MB of additional disk space will be used.
```

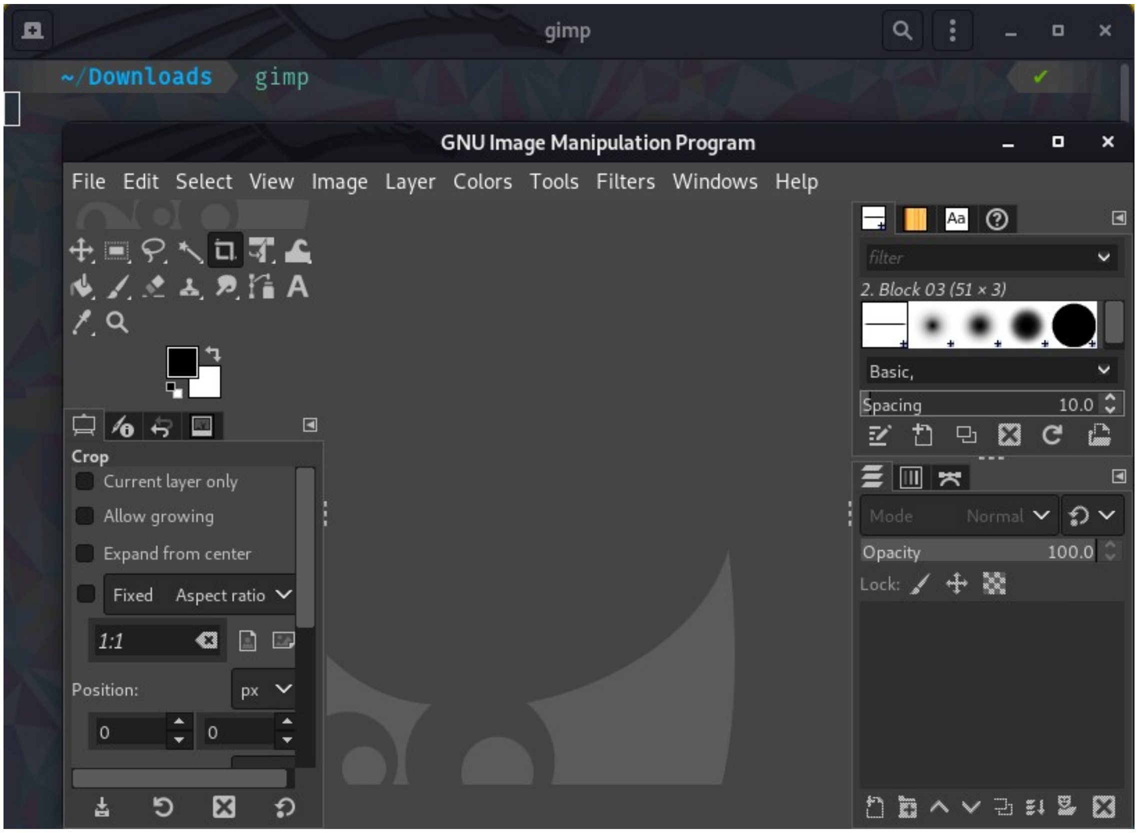
Update the System to Compile GIMP



```
 ~/Downloads  sudo apt-get update                                             ✔
[sudo] password for reeves:
Get:1 http://ftp.halifax.rwth-aachen.de/kali kali-rolling InRelease [30.5 kB]
Get:2 http://ftp.halifax.rwth-aachen.de/kali kali-rolling/main Sources [13.1 MB]
Get:3 http://ftp.halifax.rwth-aachen.de/kali kali-rolling/contrib Sources [61.6
kB]
Get:4 http://ftp.halifax.rwth-aachen.de/kali kali-rolling/main amd64 Packages [1
6.6 MB]
Get:5 http://ftp.halifax.rwth-aachen.de/kali kali-rolling/contrib amd64 Packages
 [99.8 kB]
Fetched 29.9 MB in 6min 22s (78.1 kB/s)
Reading package lists... Done

 ~/Downloads                                                       ✔ 〈 6m 36s
```

Output:

Run the GIMP



```
~/Downloads  gimp
```

GNU Image Manipulation Program

Crop

- Current layer only
- Allow growing
- Expand from center
- Fixed Aspect ratio
- 1:1
- Position: px
- 0 0

2. Block 03 (51 × 3)

Basic,

Spacing 10.0

Mode Normal

Opacity 100.0

Lock:

Results:

The compiling from the source is studied and executed.

Video Link:

https://youtu.be/mdW1xSbEUes