18CS2064 - Open Source technologies Lab | URK17CS304

Ex. 3	Date: 29.08.20	COMPILING FROM THE SOURCE

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.

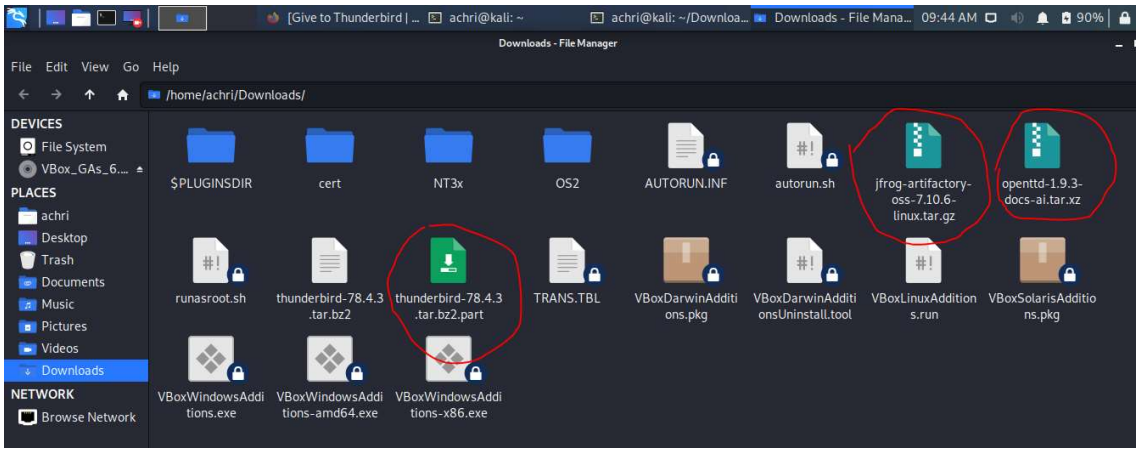
			-n It prints the hostname of the network node **-r** It prints the kernel release date **-v** It prints the version of the current kernel
3.	**tar**	tar [options] [archive-file] [file or directory to be archived]	**-c** Creates Archive **-x** Extract the archive **-f** Creates archive with given filename **-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

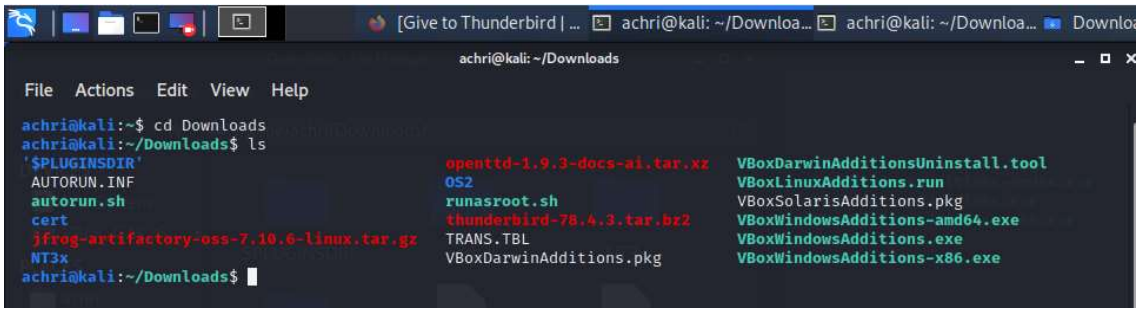
Exercise:

1. Compile the source from OpenTTD package

Downloaded file:



Check the file if it exists in the Downloads:

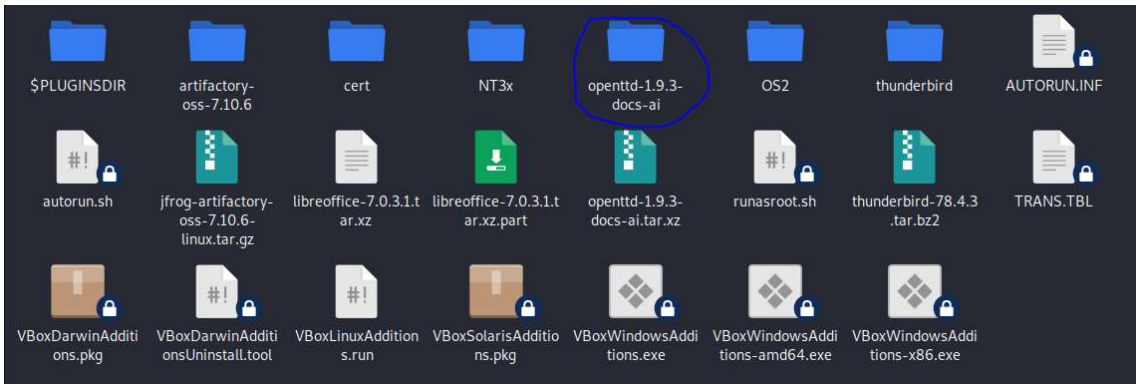


Compiling the file:

```
achri@kali:~/Downloads$ tar -xvf openttd-1.9.3-docs-ai.tar.xz
```

```
achri@kali:~/Downloads$ tar -xvf openttd-1.9.3-docs-ai.tar.xz
openttd-1.9.3-docs-ai/
openttd-1.9.3-docs-ai/html/
openttd-1.9.3-docs-ai/html/open.png
openttd-1.9.3-docs-ai/html/classAIEventStationFirstVehicle.png
openttd-1.9.3-docs-ai/html/functions_k.html
openttd-1.9.3-docs-ai/html/classAISubsidyList.html
openttd-1.9.3-docs-ai/html/functions_p.html
openttd-1.9.3-docs-ai/html/classAITownEffectList.html
openttd-1.9.3-docs-ai/html/classAIRail.png
openttd-1.9.3-docs-ai/html/classAIAirport.html
openttd-1.9.3-docs-ai/html/functions_func_n.html
openttd-1.9.3-docs-ai/html/classAISubsidy.html
openttd-1.9.3-docs-ai/html/sync_on.png
openttd-1.9.3-docs-ai/html/classAIStationList__Vehicle.html
openttd-1.9.3-docs-ai/html/tabs.css
openttd-1.9.3-docs-ai/html/classAIVehicleList.html
openttd-1.9.3-docs-ai/html/functions_func_c.html
openttd-1.9.3-docs-ai/html/menu.js
openttd-1.9.3-docs-ai/html/classAIMarine.html
openttd-1.9.3-docs-ai/html/classAIInfrastructure.png
openttd-1.9.3-docs-ai/html/classAIMap.png
openttd-1.9.3-docs-ai/html/classAIEvent.png
openttd-1.9.3-docs-ai/html/classAIRailTypeList.html
openttd-1.9.3-docs-ai/html/classAIBase.html
openttd-1.9.3-docs-ai/html/functions_func_f.html
openttd-1.9.3-docs-ai/html/classAIAirport.png
openttd-1.9.3-docs-ai/html/classAIEventSubsidyAwarded.png
openttd-1.9.3-docs-ai/html/classAITestMode.html
openttd-1.9.3-docs-ai/html/classAIEventDisasterZeppelinerCleared.png
openttd-1.9.3-docs-ai/html/functions_eval_p.html
openttd-1.9.3-docs-ai/html/classAIEventCompanyInTrouble.png
```

Output:

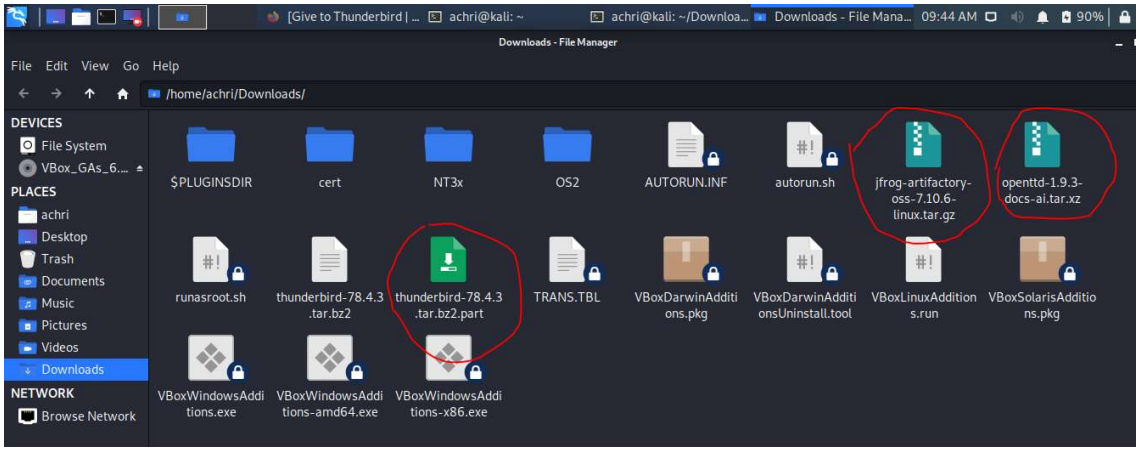



```
achri@kali:~$ cd Downloads
achri@kali:~/Downloads$ ls -alh
total 698M
drwxr-xr-x  9 achri achri 4.0K Nov 16 10:00  .
drwxr-xr-x 16 achri achri 4.0K Nov 16 09:58  ..
drwx------  2 achri achri 4.0K Aug 29 06:07 '$PLUGINSDIR'
drwxr-xr-x  4 achri achri 4.0K Nov 16 09:50  artifactory-oss-7.10.6
-r--r--r--  1 achri achri  763 Feb 20  2020  AUTORUN.INF
-r-xr-xr-x  1 achri achri 6.3K Jul 10 16:14  autorun.sh
drwxr-xr-x  2 achri achri 4.0K Aug 26 10:17  cert
-rw-r--r--  1 achri achri 360M Nov 16 09:39  jfrog-artifactory-oss-7.10.6-linux.tar.gz
-rw-r--r--  1 achri achri 230M Nov 16 10:00  libreoffice-7.0.3.1.tar.xz
drwxr-xr-x  2 achri achri 4.0K Aug 26 10:17  NT3x
drwxr-xr-x  3 achri achri 4.0K Sep 16  2019  openttd-1.9.3-docs-ai
-rw-r--r--  1 achri achri 298K Nov 16 09:37  openttd-1.9.3-docs-ai.tar.xz
drwxr-xr-x  2 achri achri 4.0K Aug 26 10:17  OS2
-r-xr-xr-x  1 achri achri 4.8K Jul 10 16:14  runasroot.sh
drwxr-xr-x  9 achri achri 4.0K Nov 16 09:53  thunderbird
-rw-r--r--  1 achri achri  63M Nov 16 09:45  thunderbird-78.4.3.tar.bz2
-r--r--r--  1 achri achri  547 Jul 10 16:22  TRANS.TBL
-r--r--r--  1 achri achri 3.6M Jul 10 16:14  VBoxDarwinAdditions.pkg
-r-xr-xr-x  1 achri achri 3.9K Jul 10 16:14  VBoxDarwinAdditionsUninstall.tool
-rwxr-xr-x  1 achri achri 7.1M Jul 10 16:15  VBoxLinuxAdditions.run
-r--r--r--  1 achri achri 8.9M Jul 10 17:15  VBoxSolarisAdditions.pkg
-r-xr-xr-x  1 achri achri  17M Jul 10 16:19  VBoxWindowsAdditions-amd64.exe
-r-xr-xr-x  1 achri achri 265K Jul 10 16:15  VBoxWindowsAdditions.exe
-r-xr-xr-x  1 achri achri 9.6M Jul 10 16:16  VBoxWindowsAdditions-x86.exe
achri@kali:~/Downloads$ cd openttd-1.9.3-docs-ai
achri@kali:~/Downloads/openttd-1.9.3-docs-ai$ ls
html
achri@kali:~/Downloads/openttd-1.9.3-docs-ai$
```

Run the OpenTTD

2. Compile the source from JFrog package

Download the file:

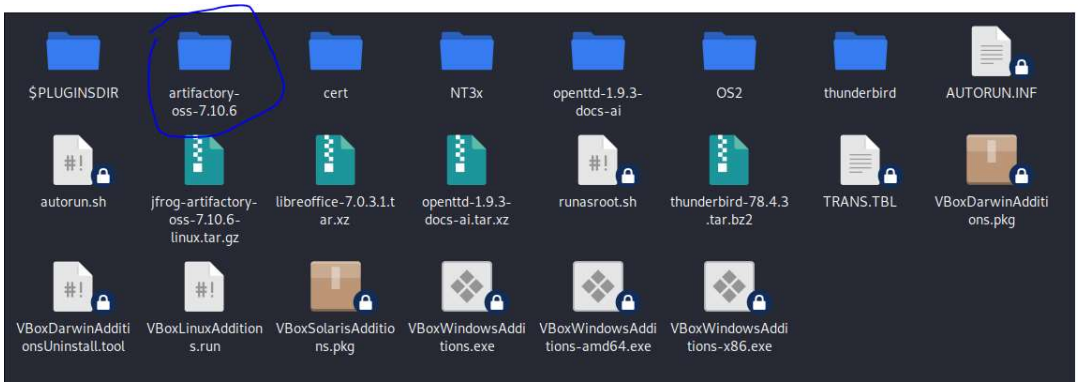


Compiling the JFrog file:

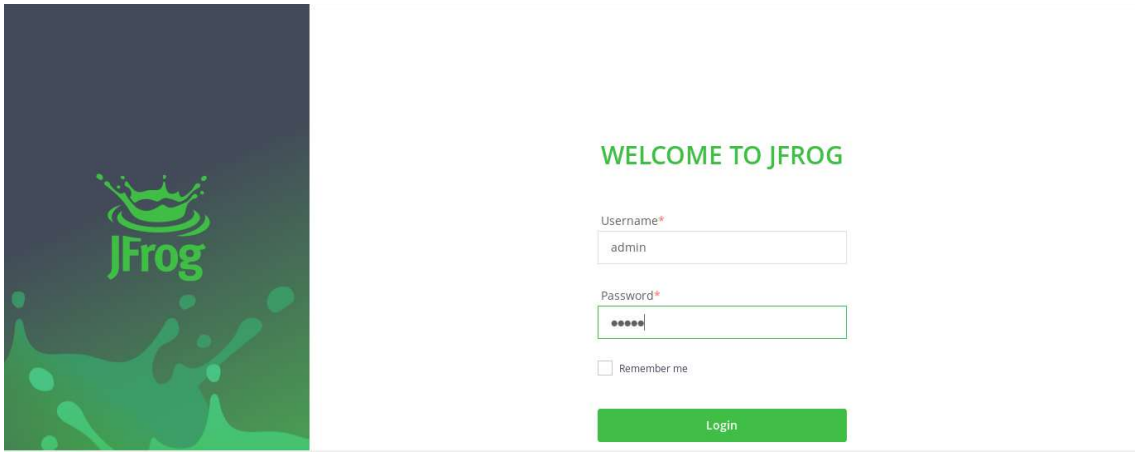
```
achri@kali:~/Downloads$ tar -xvf jfrog-artifactory-oss-7.10.6-linux.tar.gz
```

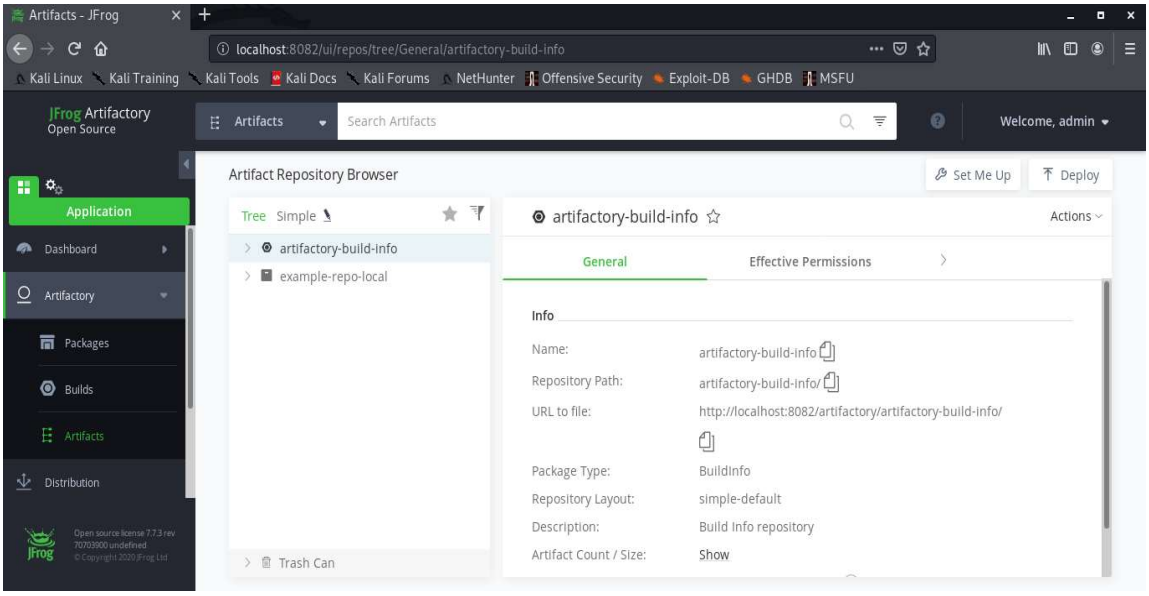
```
artifactory-oss-7.10.6/app/third-party/java/conf/security/policy/limited/default_US_export.policy
artifactory-oss-7.10.6/app/third-party/java/conf/security/policy/README.txt
artifactory-oss-7.10.6/app/third-party/java/conf/security/policy/unlimited/default_local.policy
artifactory-oss-7.10.6/app/third-party/java/conf/security/policy/unlimited/default_US_export.policy
artifactory-oss-7.10.6/app/third-party/java/conf/security/java.policy
artifactory-oss-7.10.6/app/third-party/java/conf/logging.properties
artifactory-oss-7.10.6/app/third-party/java/conf/sound.properties
artifactory-oss-7.10.6/app/third-party/node/
artifactory-oss-7.10.6/app/third-party/node/bin/
artifactory-oss-7.10.6/app/third-party/node/bin/node
artifactory-oss-7.10.6/app/third-party/node/LICENSE
artifactory-oss-7.10.6/app/third-party/yq/
artifactory-oss-7.10.6/app/third-party/yq/yq
artifactory-oss-7.10.6/app/third-party/yq/LICENSE
artifactory-oss-7.10.6/app/third-party/logrotate/
artifactory-oss-7.10.6/app/third-party/logrotate/README.md
artifactory-oss-7.10.6/app/third-party/logrotate/logrotate
artifactory-oss-7.10.6/app/third-party/libxml2/
artifactory-oss-7.10.6/app/third-party/libxml2/bin/
artifactory-oss-7.10.6/app/third-party/libxml2/lib/
artifactory-oss-7.10.6/app/third-party/libxml2/COPYING
artifactory-oss-7.10.6/app/third-party/libxml2/bin/xmllint
artifactory-oss-7.10.6/app/third-party/libxml2/bin/xmlcatalog
artifactory-oss-7.10.6/app/third-party/libxml2/bin/xml2-config
artifactory-oss-7.10.6/app/third-party/libxml2/lib/xml2Conf.sh
artifactory-oss-7.10.6/app/third-party/libxml2/lib/libxml2.la
artifactory-oss-7.10.6/app/third-party/libxml2/lib/libxml2.so
artifactory-oss-7.10.6/app/third-party/libxml2/lib/libxml2.so.2
artifactory-oss-7.10.6/app/third-party/libxml2/lib/libxml2.so.2.9.9
artifactory-oss-7.10.6/app/third-party/filebeat/
artifactory-oss-7.10.6/app/third-party/filebeat/LICENSE.txt
artifactory-oss-7.10.6/app/third-party/filebeat/filebeat
achri@kali:~/Downloads$
```

Output:



Run the JFrog in the Browser and Enter Valid Credentials :





3. Compile the Source from gcc

Check the Version of gcc:

```
achri@kali:~/Downloads$ 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.

achri@kali:~/Downloads$
```

Sample Program:

```
achri@kali:~$ vi hello.c
```

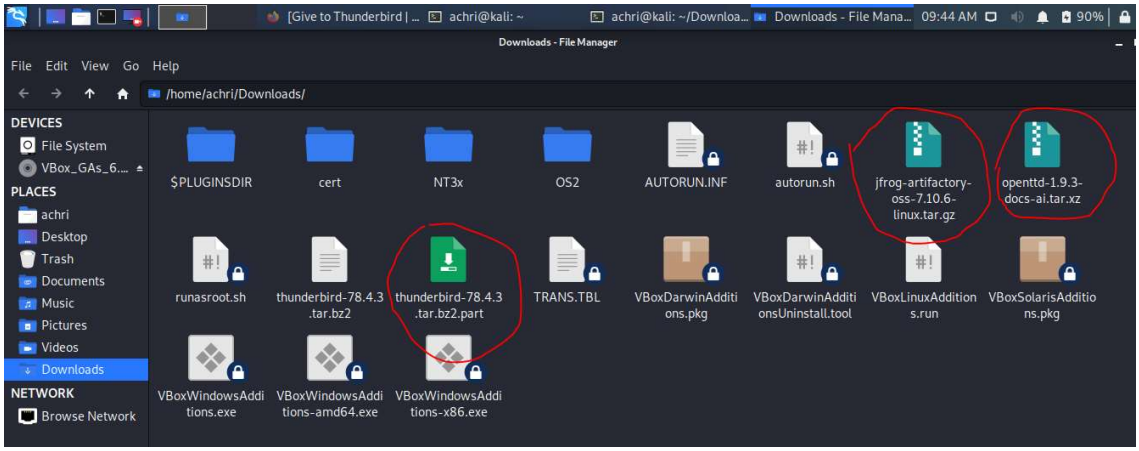
```
#include<stdio.h>
int main(){
        printf("HELLO WORLD\n ");
        printf("This is the 3rd experiment of Open Source Technologies Lab");
}
```

Output:

```
achri@kali:~$ gcc -o intro hello.c
achri@kali:~$ ./intro
HELLO WORLD
 This is the 3rd experiment of Open Source Technologies Labachri@kali:~$
achri@kali:~$
```

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

Download the file:

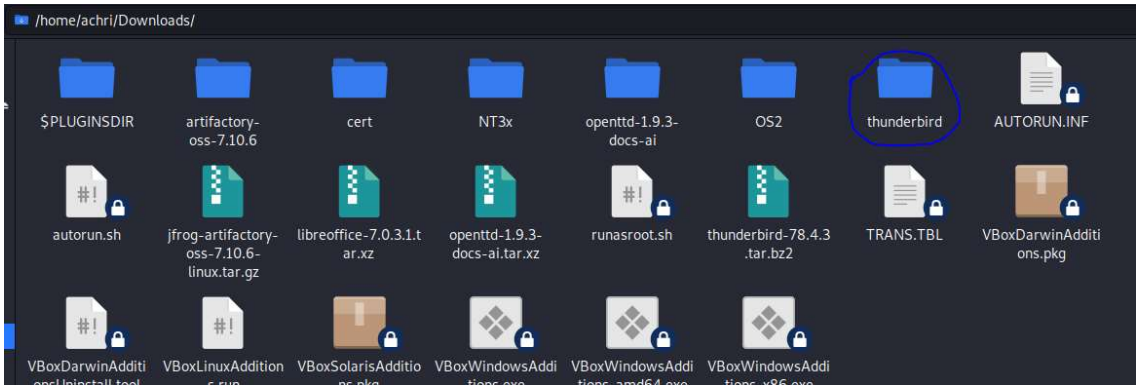


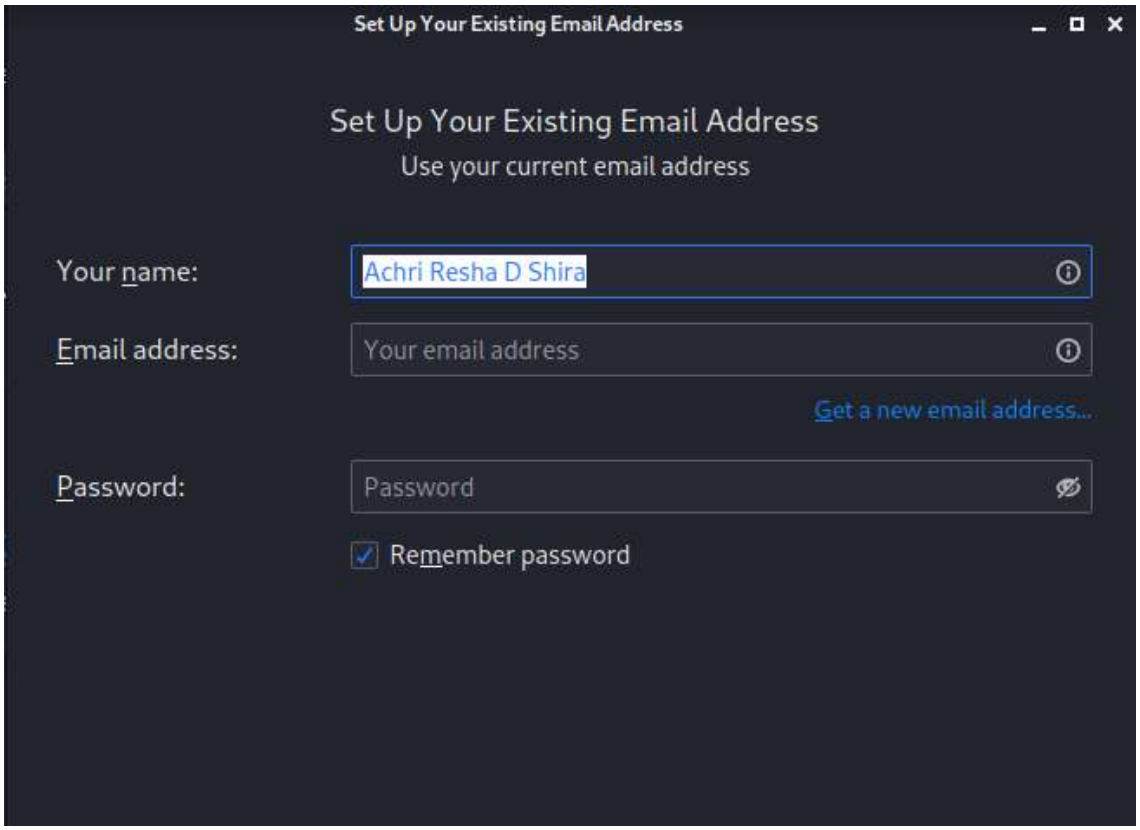
Compile the file:

```
achri@kali:~/Downloads$ tar -xvf thunderbird-78.4.3.tar.bz2
```

```
achri@kali:~/Downloads$ tar -xvf thunderbird-78.4.3.tar.bz2
thunderbird/updater
thunderbird/libfreeblpriv3.so
thunderbird/isp/Bogofilter.sfd
thunderbird/isp/SpamAssassin.sfd
thunderbird/isp/SpamPal.sfd
thunderbird/isp/POPFile.sfd
thunderbird/isp/DSPAM.sfd
thunderbird/update-settings.ini
thunderbird/liblgpllibs.so
thunderbird/libldif60.so
thunderbird/features/wetransfer@extensions.thunderbird.net.xpi
thunderbird/libnspr4.so
thunderbird/libprldap60.so
thunderbird/Throbber-small.gif
thunderbird/removed-files
thunderbird/defaults/messenger/mailViews.dat
thunderbird/defaults/pref/channel-prefs.js
thunderbird/crashreporter.ini
thunderbird/updater.ini
thunderbird/libmozsqlite3.so
thunderbird/pingsender
thunderbird/libmozgtk.so
thunderbird/libxul.so
```

Output:


/home/achri/Downloads/
$PLUGINSDIR
artifactory-oss-7.10.6
cert
NT3x
openttd-1.9.3-docs-ai
OS2
thunderbird
AUTORUN.INF
autorun.sh
jfrog-artifactory-oss-7.10.6-linux.tar.gz
libreoffice-7.0.3.1.tar.xz
openttd-1.9.3-docs-ai.tar.xz
runasroot.sh
thunderbird-78.4.3.tar.bz2
TRANS.TBL
VBoxDarwinAdditions.pkg
VBoxDarwinAdditi
VBoxLinuxAddition
VBoxSolarisAdditio
VBoxWindowsAddi
VBoxWindowsAddi
VBoxWindowsAddi


Set Up Your Existing Email Address
Set Up Your Existing Email Address
Use your current email address
Your name:
Achri Resha D Shira
Email address:
Your email address
Get a new email address...
Password:
Password
Remember password

Results:

The compiling from the source is studied and executed.

Video URL:

https://youtu.be/bYHNJsJPkro