

Ex 3

COMPILING FROM THE SOURCE

Date: 29.08.20

Aim:

To study and implement the compiling from the source.

Description:

tar Command :

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.

Syntax :

tar [options] [archive-file] [file or directory to be archived]

Options:

- 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
- v : Displays Verbose Information
- A : Concatenates the archive files
- z : zip, tells tar command that create tar file using gzip
- j : filter archive tar file using tbzip
- W : Verify a archive file
- r : update or add file or directory in already existed .tar file

zip Command :

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 used to compress the files to reduce file size and also used as file package utility. zip is available in many operating systems like unix, linux, windows etc.
- If you have a limited bandwidth between two servers and want to transfer the files faster, then zip the files and transfer.
- The zip program puts one or more compressed files into a single zip archive, along with information about the files (name, path, date, time of last modification, protection, and check information to verify file integrity). An entire directory structure can be packed into a zip archive with a single command.
- Compression ratios of 2:1 to 3:1 are common for text files. zip has one compression method (deflation) and can also store files without compression. zip automatically chooses the better of the two for each file to be compressed. The program is useful for packaging a set of files for distribution; for archiving files; and for saving disk space by temporarily compressing unused files or directories.

Syntax :

zip [options] zipfile files_list

Syntax for Creating a zip file:

\$zip myfile.zip filename.txt

Options :

- 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

gzip Command :

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.

Syntax :

gzip [Options] [filenames]

Options:

- 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 deb(Debian) package

```
akpkvk@akpkvk-VirtualBox:~/Downloads$ sudo apt install ./openttd-1.10.3-  
linux-ubuntu-bionic-amd64.deb  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
Note, selecting 'openttd' instead of './openttd-1.10.3-linux-ubuntu-bio  
nic-amd64.deb'  
Some packages could not be installed. This may mean that you have  
requested an impossible situation or if you are using the unstable  
distribution that some required packages have not yet been created  
or been moved out of Incoming.  
The following information may help to resolve the situation:  
  
The following packages have unmet dependencies:  
  openttd : Depends: libc6 (>= 2.28) but it is not installable  
            Depends: libc6 (>= 2.28) but it is not installable
```

Compiling the source of openttd

```
akpkvk@akpkvk-VirtualBox:~/Downloads$ sudo apt install ./openttd-1.10.3
-linux-ubuntu-bionic-amd64.deb
Reading package lists... Done
Building dependency tree
Reading state information... Done
Note, selecting 'openttd' instead of 'openttd-linux-ubuntu-bionic-amd64.deb'
Some packages could not be installed. You may want to run the command:
sudo apt --fix-broken install
The following information may be useful:
The following packages have unmet dependencies:
openttd : Depends: libc6 (>= 2.27) but it is not installable
          Depends: libc6 (>= 2.27) but it is not installable
E: Unable to correct problems, you have held the package.
akpkvk@akpkvk-VirtualBox:~/Downloads$ cd
akpkvk@akpkvk-VirtualBox:~$ openttd
```



2. Compile the source from JFrog package

Installing conan c++ package using deb(Debian) package

```
akpkvk@akpkvk-VirtualBox:~/Downloads$ sudo apt install ./conan-ubuntu-64_1_29_0.deb
Reading package lists... Done
Building dependency tree
Reading state information... Done
Note, selecting 'conan' instead of './conan-ubuntu-64_1_29_0.deb'
The following package was automatically installed and is no longer required:
  libfprint-2-tod1
Use 'sudo apt autoremove' to remove it.
The following NEW packages will be installed:
  conan
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
Need to get 0 B/16.4 MB of archives.
After this operation, 23.8 MB of additional disk space will be used.
Get:1 /home/akpkvk/Downloads/conan-ubuntu-64_1_29_0.deb conan amd64 1.29.0 [16.4 MB]
Selecting previously unselected package conan.
(Reading database ... 231724 files and directories currently installed.)
Preparing to unpack .../conan-ubuntu-64_1_29_0.deb ...
Unpacking conan (1.29.0) ...
Setting up conan (1.29.0) ...
akpkvk@akpkvk-VirtualBox:~/Downloads$
```

creating a sample package

```
akpkvk@akpkvk-VirtualBox:~$ cd MyLib
akpkvk@akpkvk-VirtualBox:~/MyLib$ conan new MyLib/0.1
File saved: conanfile.py
```



```
akpkvk@akpkvk-VirtualBox:~/MyLib$ mkdir src
akpkvk@akpkvk-VirtualBox:~/MyLib$ cd src
akpkvk@akpkvk-VirtualBox:~/MyLib/src$ touch MyLib.h
akpkvk@akpkvk-VirtualBox:~/MyLib/src$ touch MyLib.cpp
akpkvk@akpkvk-VirtualBox:~/MyLib/src$ nano MyLib.h
akpkvk@akpkvk-VirtualBox:~/MyLib/src$ nano MyLib.cpp
akpkvk@akpkvk-VirtualBox:~/MyLib/src$ touch CMakeLists.txt
akpkvk@akpkvk-VirtualBox:~/MyLib/src$ nano CMakeLists.txt
```

Making up the package

```
akpkvk@akpkvk-VirtualBox:~/MyLib/src$ cmake ../src/
-- The C compiler identification is GNU 9.3.0
-- The CXX compiler identification is GNU 9.3.0
-- Check for working C compiler: /usr/bin/cc
-- Check for working C compiler: /usr/bin/cc -- works
-- Detecting C compiler ABI info
-- Detecting C compiler ABI info - done
-- Detecting C compile features
-- Detecting C compile features - done
-- Check for working CXX compiler: /usr/bin/c++
-- Check for working CXX compiler: /usr/bin/c++ -- works
-- Detecting CXX compiler ABI info
-- Detecting CXX compiler ABI info - done
-- Detecting CXX compile features
-- Detecting CXX compile features - done
-- Configuring done
-- Generating done
-- Build files have been written to: /home/akpkvk/MyLib/src
```

Build package output


```
MyLib/0.1@myself/MyLib: A new conanfile.py version was exported
MyLib/0.1@myself/MyLib: Folder: /home/akpkvk/.conan/data/MyLib/0.1/myse
lf/MyLib/export
MyLib/0.1@myself/MyLib: Exported revision: 16dca50ec6a5fe3eec63e0f10bf6
2f82
Configuration:
[settings]
arch=x86_64
arch_build=x86_64
build_type=Release
compiler=gcc
compiler.libcxx=libstdc++
compiler.version=9
os=Linux
os_build=Linux
```

3. Compile the source from gcc

Checking the version of gcc

```
akpkvk@akpkvk-VirtualBox:~$ gcc --version
gcc (Ubuntu 9.3.0-10ubuntu2) 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 PURP
OSE.
```

Program :

```
#include<stdio.h>
int main(){
printf("open source lab exp 3\n");
}
```

Output :

```
akpkvk@akpkvk-VirtualBox:~$ gcc code.c
akpkvk@akpkvk-VirtualBox:~$ ./a.out
open source lab exp 3
akpkvk@akpkvk-VirtualBox:~$
```

4. Compile the source from any open source package

Installing ganache(open source package) using AppImage

```
akpkvk@akpkvk-VirtualBox:~/Downloads$ sudo chmod a+x ganache-2.4.0-linux-x86_64.AppImage
akpkvk@akpkvk-VirtualBox:~/Downloads$ ./ganache-2.4.0-linux-x86_64.AppImage
16:34:31.975 > Checking for update
16:34:32.059 > Generated new staging user ID: 7e0e6320-06d2-5e2a-8fdc-9d245feae9cb
16:34:36.272 > Update for version 2.4.0 is not available (latest version: 2.4.0, downgrade is disallowed).
akpkvk@akpkvk-VirtualBox:~/Downloads$
```

Compiling an open source package



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By enabling this feature, you provide the Truffle team with valuable metrics, allowing us to better analyze usage patterns and add new features and bug fixes faster.

Thanks for your help, and happy coding!

– The Truffle Team

WHAT WE TRACK

- A unique UUID generated upon first use
- Window width and height
- Ganache version
- Exception messages (without paths)
- Screens viewed during use

We do not collect addresses or private keys.

Result:

The compiling from the source is studied and executed.

Video link : <https://youtu.be/KmPpYr2ozNk>