

Linux Command
Line

Advanced Embedded Linux Development

with **Dan Walkes**



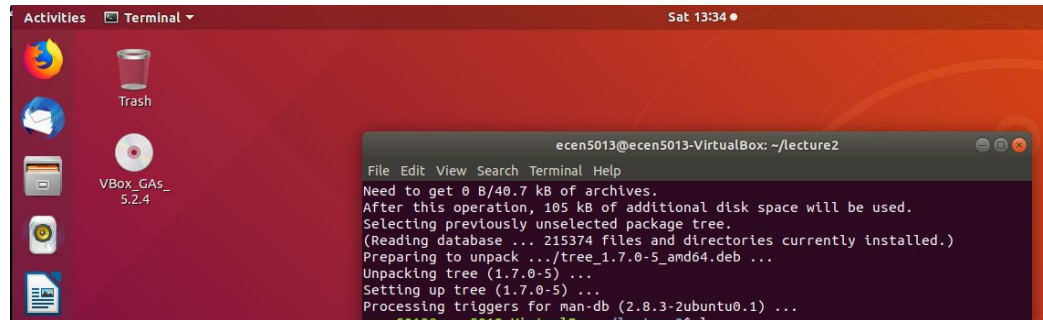
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Learning objectives:

**Overview of Linux Command Line
Common Linux Utilities**

Why use the command line?

- Ubuntu has a full graphical UI... can I use that?



- Absolutely!
- However, our assignments are going to focus on automation and scripting - which require the terminal

Why use the command line?

- The command line is the only thing <every> linux system has.
 - This includes your embedded device.
- It's often the only thing you have when troubleshooting problems.
- It's often the easiest, fastest, and most reliable way to remotely access a system.

Common Linux Utilities - I/O

- echo
 - echo a command to the terminal

```
ecen5013@ecen5013-VirtualBox:~/lecture2$ echo "Hello World!"  
Hello World!
```

- cat
 - concatenate (print out) a file to the terminal

```
ecen5013@ecen5013-VirtualBox:~/lecture2$ cat textfile.txt  
ECEN_5013_IS_AWESOME!
```

Common Linux Utilities - Directory Navigation

- pwd
 - Print Working Directory

```
ecen5013@ecen5013-VirtualBox:~$ pwd
/home/ecen5013
```

- ls
 - List contents of a directory

```
ecen5013@ecen5013-VirtualBox:~$ ls
aesd-assignments      Downloads             examples.desktop     Templates
assignments-complete-private  ecen5013-buildroot  Music                Videos
Desktop               ecen5013-source     Pictures
Documents             ecen5013-yocto       Public
```

Common Linux Utilities - Directory Navigation

- `cd`
 - Change directory

```
ecen5013@ecen5013-VirtualBox:~$ cd aese-assignments/  
ecen5013@ecen5013-VirtualBox:~/aese-assignments$ ls  
LICENSE  README.md  tester.sh
```

- `mkdir`
 - Make a new directory

Common Linux Utilities - Directory Navigation

- `mv`
 - Move files or directories to a new location
- `cp`
 - Copy files or directories to a new location
- `rm`
 - Remove a directory

Common Linux Utilities

- touch
 - Update a file's timestamp without editing if the file exists.
 - Create an empty file if the file does not exist.

Common Linux Utilities - man

- `man < program or command>`
 - “man pages” (short for manual pages)
 - Dates back to the Unix Programmer's Manual, 1971

```
CP(1)                                User Commands                                CP(1)

NAME
    cp - copy files and directories

SYNOPSIS
    cp [OPTION]... [-I] SOURCE DEST
    cp [OPTION]... SOURCE... DIRECTORY
    cp [OPTION]... -t DIRECTORY SOURCE...

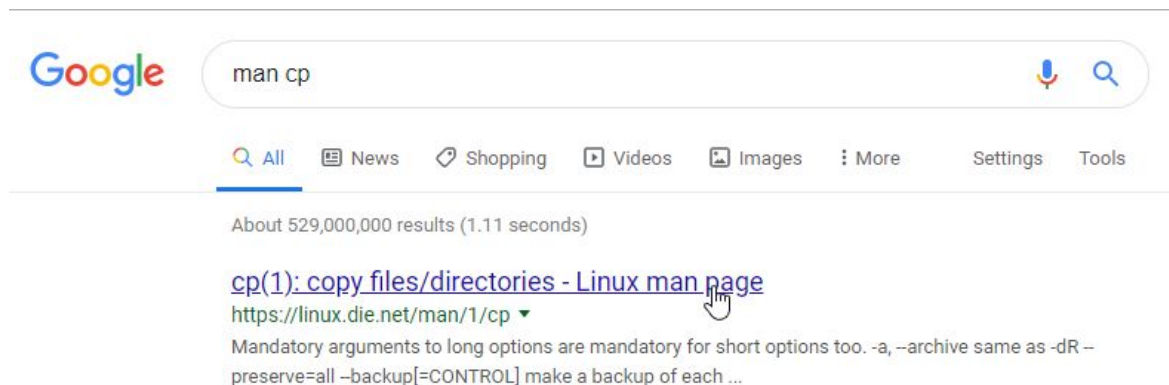
DESCRIPTION
    Copy SOURCE to DEST, or multiple SOURCE(s) to DIRECTORY.

    Mandatory arguments to long options are mandatory for short options
    too.

    -a, --archive
        same as -dR --preserve=all
```

Common Linux Utilities - man

- Google knows about man pages too!



Common Linux Utilities - man

- Example of common copy command issue

```
dan@DESKTOP-BQMVP69:~/CU/aesd-lectures/lecture2$ mkdir a_directory
dan@DESKTOP-BQMVP69:~/CU/aesd-lectures/lecture2$ mkdir a_directory/a_subdir
dan@DESKTOP-BQMVP69:~/CU/aesd-lectures/lecture2$ mkdir a_copy_target
dan@DESKTOP-BQMVP69:~/CU/aesd-lectures/lecture2$ cp a_directory/ a_copy_target/
cp: -r not specified; omitting directory 'a_directory/'
```

cp(1) - Linux man page

Name

cp - copy files and directories

-R, -r, --recursive
copy directories recursively

```
dan@DESKTOP-BQMVP69:~/CU/aesd-lectures/lecture2$ cp -r a_directory/ a_copy_target/
```

cp -r

- Fix to use cp -r, validate with tree

```
dan@DESKTOP-BQMVP69:~/CU/aesd-lectures/lecture2$ cp -r a_directory/ a_copy_target/
```

```
dan@DESKTOP-BQMVP69:~/CU/aesd-lectures/lecture2$ tree a_copy_target/  
a_copy_target/  
└── a_directory  
    └── a_subdir  
  
2 directories, 0 files  
dan@DESKTOP-BQMVP69:~/CU/aesd-lectures/lecture2$ tree a_directory/  
a_directory/  
└── a_subdir  
  
1 directory, 0 files
```