

# Lab 3 | Installing software and navigating the file system | Answers

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Assignment description [here](#)

## Question 1

1. Which command did you use to search for the themes and to install them?
  - For searching a theme is used the "apt search theme" command
  - For the installing the theme I used "sudo apt install" command with the name of the theme
2. Which commands did you use to find and install the web browser?
  - For searching a theme is used the "apt search web browser" command
  - For the installation I used "sudo apt install" and the name of the browser chosen
3. 3.1 What is the name of the package?
  - The package is called "xwelltris"
4. 3.2 What dependencies are needed in order to install the package? (you can either take a screenshot of the terminal or copy and paste from the terminal)

```
miguel@miguel-VirtualBox:~$ sudo apt install xwelltris
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  apport-symptoms guile-2.2-libs libevent-2.1-7 libgc1c2 libgnome-games-support-1-3
  libgnome-games-support-common libnatpmp1 libqqwing2v5 linux-headers-5.11.0-27-generic
  linux-hwe-5.11-headers-5.11.0-27 linux-image-5.11.0-27-generic linux-modules-5.11.0-27-generic
  linux-modules-extra-5.11.0-27-generic python3-systemd
Use 'sudo apt autoremove' to remove them.
The following NEW packages will be installed:
  xwelltris
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
Need to get 296 kB of archives.
After this operation, 424 kB of additional disk space will be used.
Get:1 http://us.archive.ubuntu.com/ubuntu focal/universe amd64 xwelltris amd64 1.0.1-17build1 [296 kB]
Fetched 296 kB in 0s (1,836 kB/s)
Selecting previously unselected package xwelltris.
(Reading database ... 259696 files and directories currently installed.)
Preparing to unpack .../xwelltris_1.0.1-17build1_amd64.deb ...
Unpacking xwelltris (1.0.1-17build1) ...
Setting up xwelltris (1.0.1-17build1) ...
Processing triggers for desktop-file-utils (0.24-1ubuntu3) ...
Processing triggers for mime-support (3.64ubuntu1) ...
Processing triggers for gnome-menus (3.36.0-1ubuntu1) ...
Processing triggers for man-db (2.9.1-1) ...
miguel@miguel-VirtualBox:~$
```

3.3 How much disk space will the package utilize after installation?

- The package will use 296 kb of storage

## Question 2

```
miguel@miguel-VirtualBox:~$ pwd
/home/miguel
miguel@miguel-VirtualBox:~$ cd /usr/share/themes
miguel@miguel-VirtualBox:/usr/share/themes$ pdw

Command 'pdw' not found, did you mean:

  command 'ptw' from snap ptw (1.0.0)
  command 'pfw' from deb pftools (3+dfsg-3)
  command 'cdw' from deb cdw (0.8.1-1build4)
  command 'psw' from deb wise (2.4.1-21)
  command 'paw' from deb paw-common (1:2.14.04.dfsg.2-9.1build4)
  command 'pda' from deb speech-tools (1:2.5.0-8build1)
  command 'pdl' from deb pdl (1:2.020-3)
  command 'pmw' from deb pmw (1:4.30-1)
  command 'pdd' from deb pdd (1.4-2)
  command 'pd' from deb puredata-core (0.50.2-3ubuntu0.1)
  command 'pwd' from deb coreutils (8.30-3ubuntu2)

See 'snap info <snapname>' for additional versions.

miguel@miguel-VirtualBox:/usr/share/themes$ pwd
/usr/share/themes
miguel@miguel-VirtualBox:/usr/share/themes$ cd
miguel@miguel-VirtualBox:~$ cd /root/
bash: cd: /root/: Permission denied
miguel@miguel-VirtualBox:~$ sudo cd /root/
[sudo] password for miguel:
sudo: cd: command not found
miguel@miguel-VirtualBox:~$ cd /root/etc/firefox/pref
bash: cd: /root/etc/firefox/pref: Permission denied
miguel@miguel-VirtualBox:~$ cd
miguel@miguel-VirtualBox:~$ cd /etc/firefox/pref
miguel@miguel-VirtualBox:/etc/firefox/pref$
```

```
]+l miguel@miguel-Virt

miguel@miguel-VirtualBox:~$ pwd
/home/miguel
miguel@miguel-VirtualBox:~$ cd Downloads/
miguel@miguel-VirtualBox:~/Downloads$ cd
miguel@miguel-VirtualBox:~$ cd Documents/
miguel@miguel-VirtualBox:~/Documents$
```

### Question 3

```
miguel@miguel-VirtualBox:~$ pwd
/home/miguel
miguel@miguel-VirtualBox:~$ ls -a Downloads/
.  ..  cat.jpeg  dog.jpg  ps5.jpg
miguel@miguel-VirtualBox:~$ ls -a Downloads/+
ls: cannot access 'Downloads/+': No such file or directory
miguel@miguel-VirtualBox:~$ ls -a Downloads/
.  ..  cat.jpeg  dog.jpg  ps5.jpg
miguel@miguel-VirtualBox:~$ ls -al Downloads/
total 536
drwxr-xr-x  2 miguel miguel  4096 Oct  6 16:51 .
drwxr-xr-x 20 miguel miguel  4096 Oct  6 15:13 ..
-rw-rw-r--  1 miguel miguel  5429 Oct  6 16:51 cat.jpeg
-rw-rw-r--  1 miguel miguel 526866 Oct  6 16:51 dog.jpg
-rw-rw-r--  1 miguel miguel   3349 Oct  6 16:51 ps5.jpg
miguel@miguel-VirtualBox:~$ ls -alh Downloads/
total 536K
drwxr-xr-x  2 miguel miguel  4.0K Oct  6 16:51 .
drwxr-xr-x 20 miguel miguel  4.0K Oct  6 15:13 ..
-rw-rw-r--  1 miguel miguel  5.4K Oct  6 16:51 cat.jpeg
-rw-rw-r--  1 miguel miguel 515K Oct  6 16:51 dog.jpg
-rw-rw-r--  1 miguel miguel  3.3K Oct  6 16:51 ps5.jpg
miguel@miguel-VirtualBox:~$ ls -alhg Downloads/
total 536K
drwxr-xr-x  2 miguel 4.0K Oct  6 16:51 .
drwxr-xr-x 20 miguel 4.0K Oct  6 15:13 ..
-rw-rw-r--  1 miguel 5.4K Oct  6 16:51 cat.jpeg
-rw-rw-r--  1 miguel 515K Oct  6 16:51 dog.jpg
-rw-rw-r--  1 miguel 3.3K Oct  6 16:51 ps5.jpg
miguel@miguel-VirtualBox:~$ ls -lhgG Downloads/
total 528K
-rw-rw-r--  1 5.4K Oct  6 16:51 cat.jpeg
-rw-rw-r--  1 515K Oct  6 16:51 dog.jpg
-rw-rw-r--  1 3.3K Oct  6 16:51 ps5.jpg
miguel@miguel-VirtualBox:~$
```

## Question 4

```
miguel@miguel-VirtualBox:~$ tree ~/Downloads/
/home/miguel/Downloads/
├── cat.jpeg
├── dog.jpg
└── ps5.jpg

0 directories, 3 files
miguel@miguel-VirtualBox:~$ tree -pug ~/Downloads/
/home/miguel/Downloads/
├── [-rw-rw-r-- miguel miguel ] cat.jpeg
├── [-rw-rw-r-- miguel miguel ] dog.jpg
└── [-rw-rw-r-- miguel miguel ] ps5.jpg

0 directories, 3 files
miguel@miguel-VirtualBox:~$ tree -pugh ~/Downloads/
/home/miguel/Downloads/
├── [-rw-rw-r-- miguel miguel 5.3K] cat.jpeg
├── [-rw-rw-r-- miguel miguel 515K] dog.jpg
└── [-rw-rw-r-- miguel miguel 3.3K] ps5.jpg

0 directories, 3 files
miguel@miguel-VirtualBox:~$ tree -pughtD ~/Downloads/
/home/miguel/Downloads/
├── [-rw-rw-r-- miguel miguel 3.3K Oct 6 16:51] ps5.jpg
├── [-rw-rw-r-- miguel miguel 5.3K Oct 6 16:51] cat.jpeg
└── [-rw-rw-r-- miguel miguel 515K Oct 6 16:51] dog.jpg
```

```
miguel@miguel-VirtualBox:~$ tree -H Downloads/
<!DOCTYPE html>
<html>
<head>
  <meta http-equiv="Content-Type" content="text/html; charset=UTF-8">
  <meta name="Author" content="Made by 'tree'">
  <meta name="GENERATOR" content="$Version: $ tree v1.8.0 (c) 1996 - 2018 by Steve Baker, Thomas Moore, Francisco
  ancesc Rocher, Florian Sessler, Kyosuke Tokoro $">
  <title>Directory Tree</title>
  <style type="text/css">
    <!--
    BODY { font-family : ariel, monospace, sans-serif; }
    P { font-weight: normal; font-family : ariel, monospace, sans-serif; color: black; background-color: tr
    ansparent;}
    B { font-weight: normal; color: black; background-color: transparent;}
    A:visited { font-weight : normal; text-decoration : none; background-color : transparent; margin : 0px
    0px 0px 0px; padding : 0px 0px 0px 0px; display: inline; }
    A:link { font-weight : normal; text-decoration : none; margin : 0px 0px 0px 0px; padding : 0px 0px 0
    px 0px; display: inline; }
    A:hover { color : #000000; font-weight : normal; text-decoration : underline; background-color : yell
    ow; margin : 0px 0px 0px 0px; padding : 0px 0px 0px 0px; display: inline; }
    A:active { color : #000000; font-weight: normal; background-color : transparent; margin : 0px 0px 0px
    0px; padding : 0px 0px 0px 0px; display: inline; }
    .VERSION { font-size: small; font-family : arial, sans-serif; }
    .NORM { color: black; background-color: transparent;}
    .FIFO { color: purple; background-color: transparent;}
    .CHAR { color: yellow; background-color: transparent;}
    .DIR { color: blue; background-color: transparent;}
    .BLOCK { color: yellow; background-color: transparent;}
    .LINK { color: aqua; background-color: transparent;}
    .SOCK { color: fuchsia; background-color: transparent;}
    .EXEC { color: green; background-color: transparent;}
    -->
```

```

</style>
</head>
<body>
  <h1>Directory Tree</h1><p>
    <a href="Downloads/">Downloads</a><br>
    |
    |<a href="Downloads//CIS106/">CIS106</a><br>
    |<a href="Downloads//CIS106/imgs/">imgs</a><br>
    |<a href="Downloads//CIS106/imgs/img1.png">img1.png</a><br>
    |<a href="Downloads//CIS106/imgs/img2.png">img2.png</a><br>
    |<a href="Downloads//CIS106/imgs/img3.png">img3.png</a><br>
    |<a href="Downloads//CIS106/imgs/lab3img2.png">lab3img2.png</a><br>
    |<a href="Downloads//CIS106/imgs/lab3img3.png">lab3img3.png</a><br>
    |<a href="Downloads//CIS106/imgs/lab3img4.png">lab3img4.png</a><br>
    |<a href="Downloads//CIS106/imgs/lab3img.png">lab3img.png</a><br>
    |<a href="Downloads//CIS106/imgs/Question2.png">Question2.png</a><br>
    |<a href="Downloads//CIS106/imgs/Question3.png">Question3.png</a><br>
    |<a href="Downloads//CIS106/imgs/Question4.png">Question4.png</a><br>
    |<a href="Downloads//CIS106/imgs/Question5.png">Question5.png</a><br>
    |<a href="Downloads//CIS106/Labs/">Labs</a><br>
    |<a href="Downloads//CIS106/Labs/Lab1.md">Lab1.md</a><br>
    |<a href="Downloads//CIS106/Labs/Lab2.md">Lab2.md</a><br>
    |<a href="Downloads//CIS106/Labs/Lab3.md">Lab3.md</a><br>
    |<a href="Downloads//CIS106/Notes/">Notes</a><br>
    |<a href="Downloads//CIS106/Notes/Notes1.md">Notes1.md</a><br>
    |<a href="Downloads//CIS106/Notes/Notes2.md">Notes2.md</a><br>
    |<a href="Downloads//CIS106/Notes/Notes3.md">Notes3.md</a><br>
    |<a href="Downloads//CIS106/README.md">README.md</a><br>
    |<a href="Downloads//Desktop/">Desktop</a><br>
    |<a href="Downloads//Documents/">Documents</a><br>
    |<a href="Downloads//Downloads/">Downloads</a><br>
    |<a href="Downloads//Downloads/cat.jpeg">cat.jpeg</a><br>
    |<a href="Downloads//Downloads/dog.jpg">dog.jpg</a><br>
    |<a href="Downloads//Downloads/ps5.jpg">ps5.jpg</a><br>
    |<a href="Downloads//Music/">Music</a><br>
    |<a href="Downloads//Pictures/">Pictures</a><br>
    |<a href="Downloads//Pictures/lab3img2.png">lab3img2.png</a><br>
    |<a href="Downloads//Pictures/lab3img3.png">lab3img3.png</a><br>
    |<a href="Downloads//Pictures/lab3img4.png">lab3img4.png</a><br>
    |<a href="Downloads//Pictures/terminal%20screenshot.png">terminal screenshot.png</a><br>
    |<a href="Downloads//Public/">Public</a><br>
    |<a href="Downloads//snap/">snap</a><br>
    |<a href="Downloads//snap/code/">code</a><br>
    |<a href="Downloads//snap/code/75/">75</a><br>
    |<a href="Downloads//snap/code/common/">common</a><br>
    |<a href="Downloads//snap/code/current/">current</a><br>
    |<a href="Downloads//Templates/">Templates</a><br>

```

```

    <a href="Downloads//snap/code/common/">common</a><br>
    <a href="Downloads//snap/code/current/">current</a><br>
    <a href="Downloads//Templates/">Templates</a><br>
    <a href="Downloads//Videos/">Videos</a><br>
  <br><br>
</p>
<p>
  17 directories, 25 files
  <br><br>
</p>
<hr>
<p class="VERSION">
  tree v1.8.0 © 1996 - 2018 by Steve Baker and Thomas Moore <br>
  HTML output hacked and copyleft © 1998 by Francesc Rocher <br>
  JSON output hacked and copyleft © 2014 by Florian Sesser <br>
  Charsets / OS/2 support © 2001 by Kyosuke Tokoro
</p>
</body>
</html>
miguel@miguel-VirtualBox:~$

```



The screenshot shows a terminal window on the left and a web browser on the right. The terminal window displays the output of the `tree` command, showing a directory structure with 7 directories and 25 files. The web browser shows the `file:///home/miguel/Website.html` file, which displays a **Directory Tree** of the same structure.

```
miguel@miguel-VirtualBox: ~$ tree -Ho Downloads/ Website.html
tree v1.8.0 © 1996 - 2018 by Steve Baker and Thomas Moore
HTML output hacked and copyleft © 1998 by Francisc Rocher
JSON output hacked and copyleft © 2014 by Florian Sesser
Charsets / OS/2 support © 2001 by Kyosuke Tokoro

7 directories, 25 files
<br>
</p>
</hr>
<p class="VERSION">
  tree v1.8.0 © 1996 - 2018 by Steve Baker and Thomas Moore
  HTML output hacked and copyleft © 1998 by Francisc Rocher
  JSON output hacked and copyleft © 2014 by Florian Sesser
  Charsets / OS/2 support © 2001 by Kyosuke Tokoro
</p>
</body>
</html>

miguel@miguel-VirtualBox:~$ ls
Downloads Desktop Documents Public snap Templates Videos Website.html
miguel@miguel-VirtualBox:~$ xdg-open Website.html
miguel@miguel-VirtualBox:~$
```

The web browser displays the following **Directory Tree**:

- Downloads/
  - CIS106
    - img1.png
    - img2.png
    - img3.png
    - lab3img2.png
    - lab3img3.png
    - lab3img4.png
    - lab3img5.png
    - lab3img6.png
    - lab3img7.png
    - lab3img8.png
    - lab3img.png
    - Question2.png
    - Question3.png
    - Question4.png
    - Question5.png
  - Labs
    - Lab1.md
    - Lab2.md
    - Lab3.md
  - Notes
    - Notes1.md
    - Notes2.md
    - Notes3.md
  - README.md
- Desktop
- Documents
- Downloads
  - cat.jpeg
  - dog.jpg
  - ps5.jpg
- Music
  - lab3img2.png
  - lab3img3.png
  - lab3img4.png
  - lab3img5.png
  - lab3img6.png
- Pictures

## Question 5

```
miguel@miguel-VirtualBox:~$ exa --help
Usage:
  exa [options] [files...]

  -?, --help          show list of command-line options
  -v, --version        show version of exa

DISPLAY OPTIONS
  -1, --oneline        display one entry per line
  -l, --long           display extended file metadata as a table
  -G, --grid           display entries as a grid (default)
  -X, --across         sort the grid across, rather than downwards
  -R, --recurse        recurse into directories
  -T, --tree           recurse into directories as a tree
  -F, --classify       display type indicator by file names
  --colo[u]r=WHEN      when to use terminal colours (always, auto, never)
  --colo[u]r-scale     highlight levels of file sizes distinctly

FILTERING AND SORTING OPTIONS
  -a, --all            show hidden and 'dot' files
  -d, --list-dirs      list directories like regular files
  -L, --level DEPTH   limit the depth of recursion
  -r, --reverse        reverse the sort order
  -s, --sort SORT_FIELD which field to sort by
  --group-directories-first list directories before other files
  -D, --only-dirs      list only directories
  -I, --ignore-glob GLOBS glob patterns (pipe-separated) of files to ignore
  --git-ignore         Ignore files mentioned in '.gitignore'
Valid sort fields:     name, Name, extension, Extension, size, type,
                        modified, accessed, created, inode, and none.
                        date, time, old, and new all refer to modified.

LONG VIEW OPTIONS
  -b, --binary         list file sizes with binary prefixes
  -B, --bytes          list file sizes in bytes, without any prefixes
  -g, --group          list each file's group
  -h, --header         add a header row to each column
  -H, --links          list each file's number of hard links
  -i, --inode          list each file's inode number
  -m, --modified       use the modified timestamp field
  -S, --blocks         show number of file system blocks
  -t, --time FIELD     which timestamp field to list (modified, accessed, created)
  -u, --accessed       use the accessed timestamp field
  -U, --created        use the created timestamp field
  --time-style         how to format timestamps (default, iso, long-iso, full-iso)

miguel@miguel-VirtualBox:~$
```

```
miguel@miguel-VirtualBox:~$ exa Downloads/  
cat.jpeg dog.jpg ps5.jpg  
miguel@miguel-VirtualBox:~$ exa -l Downloads/  
.rw-rw-r-- 5.4k miguel 6 Oct 16:51 cat.jpeg  
.rw-rw-r-- 526k miguel 6 Oct 16:51 dog.jpg  
.rw-rw-r-- 3.3k miguel 6 Oct 16:51 ps5.jpg  
miguel@miguel-VirtualBox:~$ exa -lmh Downloads/  
Permissions Size User Date Modified Name  
.rw-rw-r-- 5.4k miguel 6 Oct 16:51 cat.jpeg  
.rw-rw-r-- 526k miguel 6 Oct 16:51 dog.jpg  
.rw-rw-r-- 3.3k miguel 6 Oct 16:51 ps5.jpg  
miguel@miguel-VirtualBox:~$
```