COMP311 Liux Lab

جامعة بيرزيت
BIRZEIT UNIVERSITY

Project No. 1

Comp311 (Summer 2023): Linux OS Laboratory

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1 | First Project Objectives

The following are the objectives of the first project:

- Demonstrate your ability to manipulate files in a Linux file system
- Demonstrate our ability to use the vi editor to modify the contents of a text file.
- Demonstrate your ability to use the manual pages in Linux to understand an use any new command.

2 | Project Guidelines

On your virtual machine, do the following:

- Create a sub-directory under your home directory called youruserid_proj1 (e.g. **u11342145_proj1**), ***Please stick closely with the naming conventions!!***.
- Every created file must contain your full name and registration ID on the top of the first page. ***(ALL files)***.
- Answer the questions using relative paths only.
- You should write all the commands used in this project inside the **commands.txt** file, except for question 3, the answer should be written inside the mentioned files (tar.txt, cp.txt, mv.txt, and cat.txt).

  Note: Use the template provided below for the **ecommands.txt** file. ***Submissions that do not include the commands.txt file using the following template will be rejected:***

```
-------------------------------------------
Full Name: [Your Full Name]
Registration ID: [Your Registration ID]

Q1: Commands used
-------------------------------------------
Q2: Commands used and explain the difference.
-------------------------------------------
Q4: commands used and explanation of the usage
-------------------------------------------
Q5: commands used
-------------------------------------------
Q6: three valid masks
-------------------------------------------
Q7: commands used.
-------------------------------------------
```

3 | Questions

Q1: Constructing File Structure with Relative Paths

In this question, your task is to construct a file structure utilizing the concept of relative paths. Start from the directory **youruserid_proj1**, within your home directory, and create the file structure illustrated in Figure 2.1. It is important to note that using the **cd** command is prohibited for the execution of this task. Your ability to accurately navigate and create directories within the specified structure will be evaluated.

Q2: Creating Directory and file Links and Exploring Differences

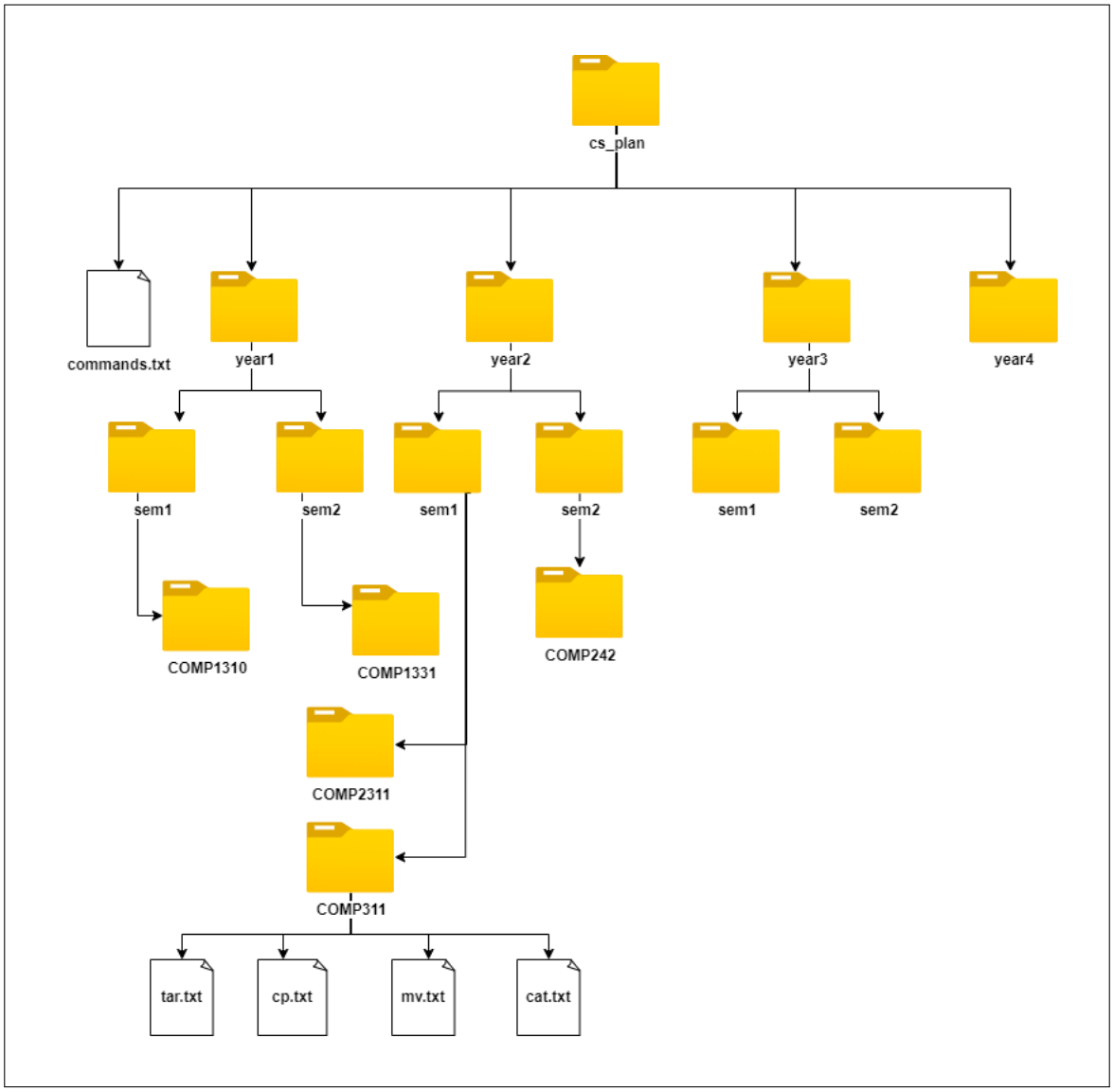

Figure 2.1: Computer Science Department File Structure

In this challenge, your goal is to create a link named **commands_link.txt** to the file **commands.txt**, in the following path **/cs_plan/year3/sem1**. Ensure that the link accurately points to the specified file.

Create a hierarchical linking structure between courses based on their prerequisites. Implement the following assumptions:

- **COMP1310** is a prerequisite for **COMP1331**. A link called **COMP1310_link** should be created inside **COMP1331** and points to **COMP1310**.
- **COMP1331** is a prerequisite for **COMP311**. A link called **COMP1331_link** should be created inside **COMP311** and points to **COMP1331**.

> **Please, don't forget to write the commands used in the commands.txt file, using the template defined in the guideline section.**

Q3: Utilizing the vi Editor for Command Documentation

In this exercise, you will use the vi editor along with the man command to comprehend various commands within the **COMP311** Directory. Each file corresponds to a distinct Linux command. Your task is to use the man command to understand each command's utility and then employ the vi editor to document specific details for each command:

- Start each file with your full name and registration ID.
- Provide a brief description of the command's purpose and usage.
- Explain the command's structure and discuss two of its options.
- Offer an example showcasing the command's proper application, using your own words based on the man pages.

Follow this process for every command within the **COMP311** Directory.
Note: Use the template provided below for documenting each command:

```
-------------------------------------
Full Name: [Your Full Name]
Registration ID: [Your Registration ID]
Command Name: [Command]

Description:
[Provide a concise description of the command's purpose and usage.]

Command Structure:
[Explain the arrangement of the command, emphasizing its key components.]

Options:
1. [First option]: [Brief description]
2. [Second option]: [Brief description]

Example Usage:
[Provide a practical illustration of how the command can be used.]

-------------------------------------
```

> **Please, don't forget to write the answer in the files tar.txt, cp.txt, mv.txt and cat.txt, using the template defined above.**

Q4: Applying Documented Commands from Q3

For this task, you will apply the commands that you have documented in **Q3** to perform the following operations:

1. Use the `tar` command on the main directory named **youruserid_proj1**. Describe the outcome of this operation in the `commands.txt` file, and justify the **options** used alone with the tar command.
2. Utilize the `mv` command in two different ways within the created file structure. Begin by creating two files under the pathname **/cs_plan/year3/sem1**. Then apply the `mv` command based on your understanding of its usage. For each method, provide the exact command used and a brief explanation of its purpose in the `commands.txt` file.
3. Utilize the `cat` command in two distinct ways on the file structure. Apply the command to the previously created files in the path **/cs_plan/year3/sem1**. For each variation, provide the exact command used and explain the output produced by the command in the `commands.txt` file.
4. Utilize the `cp` command in two distinct ways on the file structure:
   - [a] Copy the files created under **cs_plan/year3/sem1** to **cs_plan/year3/sem2**.
   - [b] Copy the directories and their contents of **cs_plan/year3** to **cs_plan/year4**.

   For each variation, provide the exact command used and explain the output produced by the command in the `commands.txt` file.

> **Please ensure that you accurately document each operation and its respective outcome in the designated `commands.txt` file.**

Q5: Modifying Directory Permissions

Change the permissions of the directory **year4** to the following permission using different methods (absolute and relative) **user=read, write, and execute, others only read and remove the permissions from the group**.

> **Please, don't forget to write the permissions in two different methods in the commands.txt file, using the template defined in the guideline section.**

Q6: File Permission Modification and Masks

Suppose you wish to modify the permission of the **projects** file to `rw-rw--w-`. Provide at least three valid permission masks that can be used to achieve this specific permission configuration.

> **Please, don't forget to write three masks in the commands.txt file, using the template defined in the guideline section.**

Q7: Displaying File Permission Change Time

Write a command that displays the timestamp when the permission of the file **commands.txt** was last modified.

> **Please, don't forget to write the command used in the commands.txt file, using the template defined in the guideline section.**

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4 | Deliverable

> **The project submission deadline is Wednesday, August 16, 2023. All project submissions are expected to be completed using the Linux server 172.16.2.90.**

Please turn in the file **youruserid_proj1.tar** by putting it in your home directory by the due date and time.

Note:

- You should do all the work above completely on your own.
- No projects will be accepted after the due date (16/08/2023).
- *We want to emphasize that cheating in any form is strictly prohibited. If any student is found to have engaged in cheating, whether from external sources or otherwise, appropriate actions will be taken according to our established policies.*

Good luck!

Adds an appendix entry

5 | Appendix A: Submission Guidelines

6 | Connecting to Server IP 172.16.2.90 Using FileZilla

To establish a connection to the server with IP address `172.16.2.90` using FileZilla from within Ubuntu, follow these steps:

6.1 | Download and Install FileZilla

1. Open the **Ubuntu Software** application from the applications menu.
2. In the search bar, type **FileZilla**.
3. Locate **FileZilla Client** in the search results and click on it.
4. Click the **Install** button to download and install FileZilla on your Ubuntu system (Get the download link).
5. Once installation is complete, you can launch FileZilla from your applications menu.

6.2 | Connecting to the Server

1. Launch **FileZilla** from your applications menu.
2. In the **Host** field, enter the server's IP address: `172.16.2.90`.
3. Enter your **Username** and **Password** credentials you used in the lab to login to the server.
4. Set the **Port** to 22.
5. Click the **Connect** button to establish the connection to the server.
6. Once connected, you will see the server's file directory on the right-hand side of the **FileZilla** interface.

You are now connected to the server with IP address `172.16.2.90` using FileZilla from your Ubuntu system. You can now manage and transfer files between your local machine and the server.