**BYOD 1: Linux CLI & File/Directory Management**

**Total Marks**: 30

**Objective**  
To evaluate learners’ ability to:

* Navigate and utilize the Linux CLI for basic operations.
* Create, delete, rename, and move files/directories.
* Manage file permissions and ownership.
* Work with both symbolic and hard links.
* Compress and archive files using tar and gzip.

**Instructions**

1. **Deadline**: All tasks must be completed and uploaded to the UMS before 12:00 PM. Submissions after this time will receive zero marks.
2. **Unified Workflow**: Perform the tasks in a single, seamless sequence so that each step naturally builds upon the previous.
3. **Documentation**: Capture terminal screenshots for each major step or output and include them in a single PDF or document.
4. **Submission**:
   * Upload your screenshots and any required text files in a compressed folder or single PDF to the UMS.
   * Ensure your submission is made before the deadline.

**Task 1: Exploring the Linux Terminal Environment (5 Marks)**

1. **Initialize**: Open your terminal and note the shell you are using.
2. **System Info**: Use at least two methods to display information about your Linux distribution.
3. **Help & Manual**: Demonstrate how to access help for a command.
4. **Screenshot**: Capture a screenshot showing the commands and their outputs.

**Deliverables**:

* Terminal screenshot(s) demonstrating the system information and help methods.

**Task 2: Basic File and Directory Operations (10 Marks)**

1. **Create Directories**:
   * Create a directory named linux\_practice.
   * Inside linux\_practice, create two subdirectories: scripts and data.
2. **File Creation & Editing**:
   * Within scripts, create a file named hello.sh containing a simple echo statement.
   * In data, create an empty file named info.txt.
3. **Renaming and Moving**:
   * Rename info.txt to details.txt.
   * Move hello.sh to the data directory.
4. **Deleting**:
   * Create a temporary file named temp.txt in data and then delete it.
5. **Verification**:
   * Verify the final directory structure to confirm that all changes have been applied correctly.

**Deliverables**:

* Terminal screenshot(s) showing the creation, renaming, moving, and deletion steps.
* A final listing of the directory structure confirming all changes.

**Task 3: Permissions and Ownership (5 Marks)**

1. **Check Permissions**:
   * In linux\_practice/data, view the permissions of hello.sh and details.txt.
2. **Modify Permissions**:
   * Adjust permissions on hello.sh so that only the owner can execute it.
   * Set details.txt to be readable and writable by the owner and group, but not by others.
3. **Ownership**:
   * Change the owner of hello.sh to another user or group if applicable.
4. **Verification**:
   * Confirm the changes in permissions and ownership.

**Deliverables**:

* Terminal screenshot(s) showing the original and updated permissions.
* A brief explanation in a text file named permissions\_explanation.txt describing how permissions and ownership were modified.

**Task 4: Symbolic and Hard Links (5 Marks)**

1. **Create a Symbolic Link**:
   * In the linux\_practice directory, create a symbolic link to hello.sh and name it hello\_link.sh.
2. **Verify the Symbolic Link**:
   * Confirm that hello\_link.sh is a symbolic link.
   * Execute the link to ensure it points correctly to the original script.
3. **Create a Hard Link**:
   * In the linux\_practice directory, create a hard link to hello.sh and name it hello\_hardlink.sh.
4. **Verify the Hard Link**:
   * Check that both hello.sh and hello\_hardlink.sh share the same inode number.
   * Demonstrate that modifying one file reflects in the other.
5. **Explanation**:
   * Provide a brief explanation in a text file (e.g., links\_explanation.txt) describing the differences between symbolic and hard links.

**Deliverables**:

* Terminal screenshot(s) showing the creation and verification of both the symbolic and hard links.
* The links\_explanation.txt file containing your explanation of the differences between the two link types.

**Task 5: File Compression and Archiving (5 Marks)**

1. **Archive**:
   * From the parent directory of linux\_practice, create an archive containing the entire linux\_practice directory.
2. **Compress**:
   * Compress the archive to create a compressed file.
3. **Verify**:
   * Check the contents of the compressed archive without extracting it.

**Deliverables**:

* Terminal screenshot(s) showing the creation of the archive, its compression, and the verification of its contents.

**Submission Guidelines**

1. **Final Documentation**:
   * Combine all terminal screenshots into a single PDF or document.
   * Include any text files (such as permissions\_explanation.txt and links\_explanation.txt) created during the tasks.
2. **File Naming Convention**:
   * Use a consistent naming convention for all submitted files.
3. **Deadline**:
   * Submit your final PDF and any required files to the UMS by 12:00 PM.
4. **Late Submissions**:
   * Zero marks will be awarded to submissions after 12:00 PM.