Linux Commands Assignment

Scenario: Web Development Team Management

You're working as a **System Administrator** for a company that hosts web applications. Your task is to manage files, users, permissions, and system resources for a development team working on a project called **"ProjectX"**.

Assignment Structure

- **Objective:**

Perform the following tasks using basic Linux commands while simulating a real-world scenario.

Task 1: Basic Linux Commands

Scenario:

Developers need a workspace set up for **ProjectX**.

Steps & Commands:

1. **Create project directory and navigate into it:**

```
mkdir /var/www/ProjectX
cd /var/www/ProjectX
```

2. **Create files for frontend and backend:**

```
touch index.html app.py README.md
```

3. **Check current working directory:**

```
pwd
# Output: /var/www/ProjectX
```

4. **List files with detailed information:**

```
ls -l
# Output:
# -rw-r--r-- 1 root root 0 Apr 26 10:00 app.py
# -rw-r--r-- 1 root root 0 Apr 26 10:00 index.html
# -rw-r--r-- 1 root root 0 Apr 26 10:00 README.md
```

5. **Display system disk usage:**

```
df -h
```

6. **View file content:**

```
echo "Welcome to ProjectX" > README.md
cat README.md
```

Task 2: User and Group Permission Management

Scenario:

Create a user group for developers and assign permissions accordingly.

Steps & Commands:

1. **Create a developer group and users:**

```
groupadd devteam
useradd bhatti
useradd malik
usermod -aG devteam bhatti
usermod -aG devteam malik
```

2. **Assign the group ownership of the project directory:**

```
chgrp -R devteam /var/www/ProjectX
```

3. **Set appropriate directory permissions (developers can read/write, others can only read):**

```
chmod -R 770 /var/www/ProjectX
```

4. **Verify permissions:**

```
ls -ld /var/www/ProjectX
```

Output:

```
drwxrwx--- 2 root devteam 4096 Apr 26 10:00 ProjectX
```

5. **Check user group memberships:**

```
groups bhatti
```

Output:

```
bhatti : bhatti devteam
```

Task 3: Change Ownership

Scenario:

The lead developer (**bhatti**) should be the owner of the project files.

Steps & Commands:

1. **Change ownership of the directory to `bhatti` and group `devteam`:**

```
chown -R bhatti:devteam /var/www/ProjectX
```

2. **Verify ownership changes:**

```
ls -l /var/www/ProjectX
```

Output:

```
-rw-rw---- 1 bhatti devteam 0 Apr 26 10:00 app.py
-rw-rw---- 1 bhatti devteam 0 Apr 26 10:00 index.html
-rw-rw---- 1 bhatti devteam 0 Apr 26 10:00 README.md
```

3. **Switch to user `bhatti` and create a new file:**

```
su - bhatti
cd /var/www/ProjectX
touch config.yaml
ls -l
```

Task 4: System-Level Commands

Scenario:

Monitor system performance and manage services for the web application.

Steps & Commands:

1. **Check system resource usage (CPU, memory):**

   ```
   top
   ```

2. **Check running processes for `ProjectX`:**

   ```
   ps aux | grep ProjectX
   ```

3. **View system logs for troubleshooting:**

   ```
   tail -n 50 /var/log/syslog
   ```

Expected Output Example:

For each command, provide:

- **Command used**
- **Output**
- **Explanation of what the command does**

Submission Guidelines:

1. Create a document with:
   - Task breakdown and command usage.
   - Screenshots of outputs (if possible).
   - Explanations for each step.
2. Submit the assignment by uploading it to your Github profile

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