Task 1: File and Folder Management

- **Objective:** Create a directory structure for a new project.
- **Instructions:**
  - Use Linux commands to create the following directory structure:
    - `project/`
      - `src/`
        - `main.py`
      - `docs/`
        - `README.md`
      - `tests/`
        - `test_main.py`
  - Write a brief description of the project in `README.md` (can be fictional).

Task 2: Basic OS Configuration

- **Objective:** Configure the hostname of the Linux machine.
- **Instructions:**
  - Change the hostname of the Linux machine to `devops-student` and verify the change.

Task 3: Basic Networking

- **Objective:** Retrieve and display the current IP address of the machine.
- **Instructions:**
  - Use a Linux command to find and display the current IP address of the machine.

Task 4: SQL Server Setup

- **Objective:** Install and configure a basic SQL server.
- **Instructions:**
  - Install MySQL or MSSQL.
  - Create a new database named `student_db`.
  - Add a user `student_user` with password `student_pass`.
  - Grant all privileges to this user on the `student_db` database.

Task 5: Backup and Restore

- **Objective:** Perform a backup and restore of the SQL database.
- **Instructions:**
  - Create a backup of the `student_db` database and save it to a file named `student_db_backup.sql`.
  - Restore the database from this backup file.

Task 6: Basic Scripting

- **Objective:** Automate a simple task using a bash script.
- **Instructions:**
    - Write a script named `backup.sh` that creates a backup of a given directory and saves it to a specified location.
    - The script should take two arguments: the source directory and the destination directory for the backup.

Task 7: Advanced OS Configuration

- **Objective:** Set up a scheduled task using cron.
- **Instructions:**
    - Schedule the `backup.sh` script to run every day at midnight.
    - Verify that the cron job has been set up correctly.

Task 8: Security Configuration

- **Objective:** Enhance the security of the SQL server.
- **Instructions:**
    - Configure the SQL server to only accept connections from localhost.
    - Ensure that the `student_user` has a strong password policy in place.

Task 9: Monitoring and Logging

- **Objective:** Set up basic system monitoring.
- **Instructions:**
    - Install and configure a monitoring tool (e.g., `htop` or `glances`).
    - Set up logging for the SQL server and ensure that the logs are rotated regularly.

Task 10: Implement Security Best Practices

- **Objective:** Apply security best practices on the Linux server.
- **Instructions:**
    - Implement at least three security best practices to enhance the security of the Linux server or SQL server.
    - Document each best practice, including the steps taken to implement it and the rationale behind it.
    - Provide verification that these security measures have been successfully applied.

Deliverables

- **Task 1:** A screenshot or text output of the created directory structure.

- **Task 2:** A screenshot or command output verifying the hostname change.
- **Task 3:** A screenshot or command output showing the current IP address.
- **Task 4:** Documentation of the SQL server installation steps, and a screenshot or command output showing the creation of the `student_db` and user.
- **Task 5:** The `student_db_backup.sql` file and the restored database verification.
- **Task 6:** The `backup.sh` script.
- **Task 7:** A screenshot or text output of the cron job setup.
- **Task 8:** Documentation of the security configurations applied to the SQL server.
- **Task 9:** A screenshot or text output of the monitoring tool setup and the log rotation configuration.
- **Task 10:** Documentation of the security best practices implemented, including steps, rationale, and verification.

Notes

- Ensure that all tasks are well-documented, with step-by-step instructions and any necessary commands or scripts.
- Emphasize security best practices, especially for the SQL server setup and configurations.
- **All tasks must be completed using the Linux command line, not GUI tools.**