Systems Administration
Project Brief

Module Leader:	Fiona Redmond
Assessment Title:	Systems Integration Project
Assessment Type:	Practical
Individual/Group:	Individual
Assessment Weighting:	60%
Hand-out Date:	13th November 2024
Hand-in Date:	13th December 2024, 11:59pm
Mode of Submission:	Documentation (including link to screencast) submitted via Blackboard. **Virtual Machines must not be accessed or modified after the deadline.*

This project assesses your proficiency in key tasks performed by Systems Administrators, focusing on integrating core services and automating common administrative tasks across a heterogeneous environment using Linux and Windows virtual machines. Key areas include user management, file sharing, secure remote access, and task automation.

Requirements:

1. Service Setup and Configuration:

Using the virtual machines provided during the module, setup and integrate the following services:

- **Samba:** Enable file sharing between a Linux Server and Windows Client
- **SSH:** Establish secure remote access between Linux Server, Linux Client and Windows Client
- **BASH Shell Script:** Develop a script to automate specific tasks

You are expected to troubleshoot and resolve any issues independently.

2. Documentation:

Complete the provided Project Document, ensuring it includes:

- **Screenshots of ALL configuration files** (in full) that you edited or added to configure the services. If configuration files are long, provide multiple screenshots or capture the key sections you modified.
- **Screenshots demonstrating each service working**, with clear evidence of functionality.
- **Screenshot(s) of your entire BASH script**
- **Screenshot(s) demonstrating your scripts functionality**
- **A link to your screencast** - it is your responsibility to make sure the link is accessible.

3. Screencast

Record a screencast using a tool of your choice (e.g., OBS Studio, Zoom, Camtasia, Screencastify, Screenpal). The screencast must demonstrate the functionality of the following:

- **Samba**: Show file sharing between the Linux Server and Windows Client, explaining your configuration.
- **SSH**: Demonstrate secure remote access between Linux and Windows machines, with a focus on authentication methods.
- **BASH Script**: Explain your script's purpose and demonstrate it in action.

Ensure your screencast does not exceed 10 minutes. It must be included for the project to be accepted.

4. Submission

Submit the project document (in PDF format) via Blackboard by the specified deadline. Include the screencast link within the document. If multiple files are needed, compress them into a ZIP file. Late submissions will incur a 5% penalty per day, unless otherwise agreed upon with the module lecturer.

Service and Script Requirements:

Samba (File Sharing):

Configuration requirements:

- Enable file sharing between a Linux Server and Windows Client.
- Setup a shared directory called `allusers`, ensuring it is accessible and writable from both Linux and Windows environments.
- Implement user authentication for secure file access. Create at least one user account and add it to the Samba user database. Use this account for authentication to access the `allusers` share.

Submission requirements:

- **Document**: Include screenshots of Samba configuration files and evidence of file sharing functionality.
- **Screencast**: Demonstrate the file sharing between Linux and Windows and explain your configuration.

SSH (Secure Remote Access):

Configuration requirements:

- Establish secure remote access between:
  - Windows Client -> Linux Server
  - Linux Client -> Linux Server
- Implement key-based authentication for enhanced security.

Submission requirements:

- **Document**: Include screenshots of SSH configuration files and evidence of successful connections.
- **Screencast**: Demonstrate the SSH connection setup and highlight the authentication method used.

BASH Shell Script (Task Automation):

Configuration requirements:

- Develop a BASH Shell Script to automate a specific system administration task (e.g., setting up a secure environment, user management, or data backups).
- Ensure the script is well-documented, efficient, and user-friendly, using environment variables and commands where appropriate.
- Include comments explaining the script's purpose and functionality.
- The use of generative AI is not permitted.

Submission requirements:

- **Document**: Include a screenshot of the entire script and screenshots showing it in action.
- **Screencast**: Demonstrate the script's execution and explain its functionality.

Assessment Criteria:

Marks will be awarded based on the setup and configuration of services, your documentation and screencast, as well as the clarity, accuracy, and independence of your work. Partial credit will be given for well-documented attempts even if a service is not fully operational.

Breakdown	Mark
Samba	25
SSH	20
BASH Shell Script	25
Screencast Demonstrating Services	15
Documentation	15
TOTAL	**100**

Plagiarism and Academic Integrity:
Your submission must be your own work and written in your own words. The assignment is subject to SETU's policy on plagiarism. Any suspected cases of plagiarism will be investigated according to the Academic Policies and Procedures.

The Institutes policy is clearly laid out in Part 10 of the Academic Policies and Procedures available here: http://www.itcarlow.ie/public/userfiles/files/ITCarlow-Academic-Policies-Procedures.pdf

It is your responsibility to refer to the university's guidelines for students on the use of Generative Artificial Intelligence (Gen AI). As stated in this

> ***The use of any form of AI for your coursework, assessments, or research without acknowledgement is regarded as academic misconduct. Any use must be as permitted by the assignment brief and module lecturer.**