**Task 6: Bash Scripting and Cron**

Conditional Logic

* Using if statements in Bash to perform conditional operations.
* Testing for file existence with [ -f "filename" ].
* Implementing else statements to handle alternate scenarios.
* Using fi to mark the end of conditional blocks.

Error Logging

* Redirecting error messages to an error log file using >> to append.
* Creating log files dynamically if they do not exist.

Email Automation

* Sending emails with attachments using the mail command.
* Customising email subjects and bodies.
* Piping output from commands (e.g., echo) to the mail command.

Scheduling Tasks with Cron

* Understanding and using the crontab utility to schedule jobs.
* Listing existing crontab jobs using crontab -l.
* Creating and editing crontab jobs using crontab -e.
* Understanding the crontab scheduling format:
  + Minute (M): 0-59.
  + Hour (H): 0-23.
  + Day of the Month (DOM): 1-31.
  + Month (MON): 1-12.
  + Day of the Week (DOW): 0-7.
* Using \* (wildcard) to specify "all" in a scheduling field.
* Setting jobs for specific times (e.g., 2 AM daily).
* Removing all scheduled crontab jobs with crontab -r.

Predefined Cron Shortcuts

* Using predefined strings for easier scheduling:
  + @reboot: Run jobs at system startup.
  + @hourly: Run jobs hourly.
  + @daily or @midnight: Run jobs daily.
  + @weekly: Run jobs weekly.
  + @monthly: Run jobs monthly.
  + @annually or @yearly: Run jobs yearly.

Script Debugging and Testing

* Verifying script functionality by testing outputs.
* Checking if backup files are created correctly before scheduling them.

Task Automation

* Automating file backups with Bash scripts and crontab.
* Appending timestamps to backup files for organisation and identification.

Bash Utilities

* Using echo to output messages or provide input to other commands via pipes.
* Combining multiple commands into scripts for automation.

System Integration

* Using cron to automate repetitive tasks like backups and email notifications.
* Applying system-level tools to enhance Bash scripting capabilities.