CDAC Mumbai
PG-DAC August 24 Batch
Module 1: Concepts Of Operating System

Time: 75 Mins **Marks: 20**

Section 1

Instructions:

1. Attempt all questions in sequence.
2. Write down the exact command(s) used for each problem.
3. All questions are interconnected; complete them in order.
4. Submit Word/PDF file with answers & screenshots of outputs.
5. Ensure your screenshots are clear and include the terminal prompt.

Problem Statement: You are working on a project that involves analysing a large log file and organizing the results. The log file is located at /home/[username]/project/access.log. The file contains the following data (**Use this data**)

192.168.1.10 - - [28/Aug/2024:10:00:01] "GET /index.html HTTP/1.1" 200 1024

192.168.1.11 - - [28/Aug/2024:10:01:15] "POST /login.php HTTP/1.1" 200 2048

192.168.1.12 - - [28/Aug/2024:10:02:23] "GET /home.html HTTP/1.1" 200 1536

192.168.1.10 - - [28/Aug/2024:10:00:01] "GET /index.html HTTP/1.1" 200 1024

192.168.1.13 - - [28/Aug/2024:10:03:42] "GET /about.html HTTP/1.1" 404 512

192.168.1.15 - - [28/Aug/2024:10:05:30] "POST /submit.php HTTP/1.1" 500 2048

192.168.1.16 - - [28/Aug/2024:10:06:11] "GET /contact.html HTTP/1.1" 200 768

192.168.1.15 - - [28/Aug/2024:10:05:30] "POST /submit.php HTTP/1.1" 500 2048

192.168.1.18 - - [28/Aug/2024:10:08:12] "GET /index.html HTTP/1.1" 403 1024

192.168.1.11 - - [28/Aug/2024:10:01:15] "POST /login.php HTTP/1.1" 200 2048

192.168.1.19 - - [28/Aug/2024:10:09:27] "GET /index.html HTTP/1.1" 200 1024

192.168.1.20 - - [28/Aug/2024:10:10:33] "GET /error.html HTTP/1.1" 404 512

Question 1: (1 Mark)
Inspect the content of the **access.log** file. Display the first 10 lines of the file.

Question 2: (1 Mark)
Sort the file and remove duplicate entries, saving the result in a new file called **sorted_access.log** in the same directory.

Question 3: (1 Mark)
Extract the **unique** IP addresses from **sorted_access.log** and save them in a file called **unique_ips.txt.**

Question 4: (1 Mark)
Count how many unique IP addresses are listed in the **unique_ips.txt** file.

Question 5: (1 Mark)
Extract the last 5 lines from **sorted_access.log** and save them to a file called **recent_access.log**.

Question 6: (1 Mark)
Search for any log entries in **recent_access.log** that contain the word **"error"** (case-insensitive) and save the matching lines to a file called **errors.log.**

Question 7: (1 Mark)
Display the first 5 lines of the **errors.log** file.

Question 8: (1 Mark)
Change the permissions of the **errors.log** file so that everyone can read and write to it.

Question 9: (1 Mark)
Copy the **errors.log** and **unique_ips.txt** files into a new directory called **backup**, inside /home/[username]/project/. Create the directory if it doesn't exist.

Question 10: (1 Mark)
Move the backup directory to /home//[username]/archives/ to archive your work.

Section 2

Instructions:

1. Attempt both questions.
2. Write the complete shell script for each question.
3. Submit Word/PDF file with answers & screenshots of outputs.
4. Ensure your screenshots are clear and include the terminal prompt.

Question 1: Integer Addition and Even/Odd Determination (5 Marks)

Write a shell script that performs the following tasks:

1. Prompt the user to enter two integers.
2. Compute the sum of these two integers.
3. Check if the computed sum is even or odd.
4. Output the result of the addition and indicate whether the sum is "Even" or "Odd."

Input (Command Line):
Enter first integer: 7
Enter second integer: 3

Expected Output (Command Line):

- Sum: 10
- The sum is Even

Question 2: Armstrong Number Check with User Input (5 Marks)

Write a shell script that performs the following tasks:

1. Prompt the user to enter a three-digit integer.
2. Check if the entered number is an Armstrong number.
3. Output whether the entered number is an "Armstrong Number" or "Not an Armstrong Number."

Input (Command Line):
Enter a three-digit integer: 153
Enter a three-digit integer: 123

Expected Output (Command Line):
153 is an Armstrong Number
123 is Not an Armstrong Number