Log File Analysis with Bash Script

Objective:
The task is to analyze a given log file using a Bash script and generate the following statistics and insights. This will help you understand the pattern of requests, identify potential issues, and suggest improvements based on the analysis.

Requirements:
1. Request Counts:
   - Count the total number of requests.
   - Count how many of those are GET requests.
   - Count how many of those are POST requests.

2. Unique IP Addresses:
   - Count the total number of unique IP addresses.
   - For each unique IP, count how many GET and POST requests were made by that IP.

3. Failure Requests:
   - Count how many requests failed (e.g., 4xx or 5xx status codes).
   - Identify the percentage of failed requests relative to the total number of requests.

4. Top User:
   - Find which IP address is the most active (i.e., the one that made the most requests).

5. Daily Request Averages:
   - Calculate the average number of requests made per day.

6. Failure Analysis:
   - Identify which days had the highest number of failure requests.

Additionally:
- Request by Hour:
  - Calculate the number of requests made each hour of the day.
- Request Trends:
  - Identify trends in the data, such as whether requests increase or decrease at certain times.
- Status Codes Breakdown:
  - Provide a breakdown of status codes (e.g., 200, 404, 500) and their frequency.
- Most Active User by Method:
  - Identify which IP used GET or POST requests the most.
- Patterns in Failure Requests:
  - Identify if there are patterns in the failures, such as specific hours or days where failures occur most often.

Analysis Suggestions:
After completing the analysis, Provide suggestions based on your findings findings. These could include:
- What can be done to reduce the number of failures?
- Which days or times need attention based on the request patterns and failure trends?
- Any security concerns or anomalies (e.g., multiple requests from the same IP within a short time span).
- Suggestions for improving the system or service based on the analysis.

Deadline:
- The project must be submitted by Saturday, May 10th, at 11:59 PM.
- Submit the report as a PDF file and the Bash script via GitHub.