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Subject: Big Data Assignment 2

Log Files:

1. What is a Log File?

A **log file** is a plain text file that automatically records events, processes, or messages generated by software, operating systems, servers, or applications. These records are known as **logs**, and they typically include data such as **timestamps**, **user actions**, **errors**, **warnings**, or **system events**.These files are typically stored in **plain text format (.log or .txt)** and are automatically created and updated in real-time.

Example: A web server log may show which user accessed which webpage, at what time, and what their IP address was.

Where Log Files Are Found:

Windows: Event Viewer logs (e.g., `System`, `Application`, `Security`)
Linux/Unix: Stored in `/var/log/` directory (e.g., `syslog`, `auth.log`)
Web Servers: Apache (`access.log`, `error.log`), Nginx logs
Applications: Custom log files depending on the software

2. Who Uses Log Files and Why Are They Important?

Who Uses Log Files?

- System Administrators
- Developers
- Cybersecurity Analysts
- IT Support Teams
- Data Analysts
- Auditors

Why Are Log Files Important?

1) **Troubleshooting & Debugging**: Help identify issues, bugs, or crashes in systems or software.

2) **Security Monitoring**: Detect unauthorized access, suspicious activities, or malware attacks.

3) **Performance Monitoring**: Track server response times, uptime, and user behavior.

4) **Auditing & Compliance**: Ensure that systems meet regulatory standards by tracking user actions.

5) **System Automation**: Enable alerts and triggers based on log activity.

3. What Are the Different Types of Log Files?

- **System Logs**
  Record events from the operating system, such as startup, shutdown, and errors.

- **Application Logs**
  Capture specific events from software applications, like errors or transactions.

- **Security Logs**
  Track login attempts, user permissions, and access violations.

- **Event Logs**
  (Windows-specific) Store events categorized as Information, Warning, or Error.

- **Web Server Logs**
  Log HTTP requests, status codes, URLs accessed, and IP addresses.

- **Database Logs**
  Keep track of database queries, errors, and transactions.

- **Audit Logs**
  Used to monitor and review user activities for compliance purposes.

- **Access Logs**
  Record who accessed what system or resource and when.

Log files are essential tools for ensuring the health, performance, and security of systems and applications. They serve as a digital footprint of activities, allowing teams to monitor, analyze, and respond to events efficiently.