**Name: Musoni Aimee Kevine**

**ID: 24734**

**Best Programming Practices**

**1. What is Logging?**

**Logging** is the process of recording events, actions, or messages generated by a computer program. These records, known as logs, provide a historical account of the program’s operation and can include information such as errors, warnings, and general status updates. Logs help developers, administrators, and support teams to monitor the behavior of applications and systems, diagnose issues, and understand how software is used.

**2. Why Logging is Important?**

Logging is crucial for several reasons:

* **Troubleshooting**: Logs help identify and diagnose problems or errors that occur in applications or systems. They provide insight into what went wrong and where.
* **Monitoring**: Logs enable ongoing monitoring of systems and applications, allowing teams to spot issues before they become critical.
* **Performance Analysis**: By examining logs, you can understand performance bottlenecks and optimize applications.
* **Audit Trail**: Logs can serve as an audit trail for security and compliance purposes, tracking user actions and system changes.
* **Understanding Usage**: They provide valuable information about how software is used, which can inform future development and improvements.

**3. Understanding Logging Levels**

Logging levels indicate the severity or importance of log messages. They help categorize and filter logs according to their relevance. Common logging levels include:

* **DEBUG**: Detailed information, typically used for diagnosing issues. This level is the most verbose and is usually turned on during development.
* **INFO**: General information about the system’s operation. Useful for tracking the application's progress and understanding normal operations.
* **WARN**: Indicates a potential problem or an unusual situation that might need attention but does not necessarily cause immediate issues.
* **ERROR**: Indicates a problem that has caused an error or failure in the application, requiring immediate attention.
* **FATAL**: A severe error that causes the application to terminate. This is the most critical level and signifies that something has gone seriously wrong.

Each level helps you filter and prioritize log messages based on their importance, making it easier to focus on relevant information during debugging or monitoring.

**Thank you!!**