Real-Time Monitoring of Lab System Resources

Objective:

Develop a web application for real-time monitoring of IT lab system resources, including CPU, memory, and disk space utilization.

Steps:

1. Develop a Python Program:

- Write a Python script to capture system resource utilization (CPU, memory, and disk usage) at regular intervals.
- Store the collected data in a MongoDB database.
- Ensure the time interval for data collection is configurable.

2. Deploy the Monitoring Agent:

- The Python program (referred to as the *agent*) should run on all machines within the lab.

3. Create a Web Application:

- Develop a web interface to fetch system utilization data from the database.
- Display the data in both a table and a graphical dashboard.
- Provide users (e.g., Network Administrators or IT Heads) with the ability to view utilization data for a single system or the entire lab.
- Implement useful filtering options to enhance data analysis.

4. Enhancements & Scalability:

- After validating the core functionalities, consider expanding the agent to collect additional system information.
- Deploy the agent across labs in different departments to enable centralized monitoring of system resources.

Sample Document Format:

```
{
    "lab_name": "IT Lab",
    "system_name": "system1",
    "cpu_utilization": "80%",
    "memory_utilization": "512MB",
    "disk_space_utilization": "120GB"
}
```

Conclusion:

This implementation will help IT administrators efficiently track system performance and optimize resource usage across multiple labs.