Arab Academy for Science, Technology & Maritime Transport
College of Computing and Information Technology

Project 12th

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Project Overview

Objective: Develop a comprehensive system monitoring solution that collects, analyzes, and reports hardware and software performance metrics.

1. Detailed Project Specification

1.1. Technical Components

Monitoring Targets

- CPU performance and temperature
- GPU utilization and health
- Disk usage and SMART status
- Memory consumption
- Network interface statistics
- System load metrics

1.2. Technical Requirements

Programming Languages

- Bash scripting
- Python for advanced processing (optional)

Technologies

- Docker containerization
- Zenity/Dialog for GUI
- InfluxDB for data storage (if applicable)
- Markdown/HTML reporting

1.3. Team Roles

- Member 1: System metrics collection scripts
- Member 2: Docker infrastructure setup
- Member 3: Dashboard development using dialog/whiptail

1.4. Key Components

- Resource monitoring scripts
- Alert system for critical events
- Interactive dashboard
- Historical data tracking

2. Project Deliverables

1. Bash Monitoring Script
2. Docker Compose Configuration
3. Comprehensive Reporting System
4. Installation and User Documentation

3. Project Stages

Stage 1: System Information Collection

- Develop scripts to gather system metrics
- Implement error handling
- Create logging mechanisms

Stage 2: Containerization

- Create Docker containers for:
  - Data collection
  - Reporting
  - Web visualization

Stage 3: Reporting and Visualization

- Generate markdown/HTML reports
- Create interactive GUI
- Implement report storage and retrieval

4. Project Grading Rubric

Evaluation Category	Points	Weight
Bash Monitoring Script	2	20%
Docker Containerization	2	20%
Reporting System	2	20%
Error Handling	1	10%
Code Quality	1	10%
Documentation	1	10%
Project Presentation	1	10%
Total	**10**	**100%**

5. Student Learning Outcomes

- Advanced Bash scripting
- Docker containerization
- System monitoring techniques
- GUI development
- Infrastructure as Code (IaC) concepts

6. Recommended Tools

- Visual Studio Code
- Docker Desktop
- GitHub/GitLab for version control
- Virtual machines for testing

7. Professional Skills Developed

- Teamwork
- Problem-solving
- Technical documentation
- System design
- Performance analysis

Important Notes

- **No plagiarism is allowed.** All work must be original and not derived from other teams or previously submitted projects.
- **Project Deadline:** November 13th (if you didnot make discussion with TA project will be graded zero).