


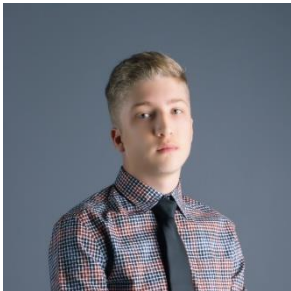



12: GCPS Live Bus Monitoring System

CS 4850 - Section 01 – Fall 2024

Aug 27, 2024

		
Sam Bostian (Team Leader)	Michael Rizig (Developer)	
		
Charlie McLarty (Developer)	Allen Roman (Developer)	Brian Pruitt (Documentation)

Team Members:

Name	Role	Cell Phone / Alt Email
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Charlie McLarty	Developer/QA	470.303.9544 cmclarty21@gmail.com
Brian Pruitt	Documentation	404.207.6548 bpruitt9@students.kennesaw.edu
Allen Roman	Developer	470.249.0421 aroman14@students.kennesaw.edu

1. Project Overview / Abstract (Research):

The project aims to enhance the efficiency and safety of school bus operations for Gwinnett County Public Schools (GCPS) by transitioning from the current Samsara API polling method to a Kafka-based event streaming solution. Currently, GCPS uses Samsara APIs to poll data on school buses, including locations, speeds, and vehicle health, every 5 seconds. However, this method introduces latency and potential bottlenecks. To address these issues, the project involves developing a stand-alone application on a Linux (Ubuntu) environment that consumes events from the Kafka server, modeled similarly to the Samsara Kafka Connector. The application will process these events, perform data validation, and insert valid records into an SQL server database, where they can be accessed by various applications. Additionally, the solution will be containerized for consistent deployment, with optional monitoring functionality to track performance and manage backlogs.

2. Project website:

Team3-GwinnettBus.github.io

GitHub Pages Deployment (not yet public)

3. Deliverables:

The project deliverables expected, and their respective due dates are listed below.

3.1: Project Plan (this document).

The project plan contains a general outline of the project concept, deliverables, website, milestone events/deadlines, and more.

September 1st, 2024.

3.2: Software Requirements Specifications (SRS).

The Software Requirements Specifications (SRS) document contains a high-level description of the project, as well as specific requirements for platforms, language, and other aspects of the project.

September 1st, 2024.

3.3: Software Design Documentation (SDD).

Document detailing the design approach for this project.

September 1st, 2024.

3.4: Prototype Presentation.

Slide show presentation and demo of the project's main functionality.

October 15th, 2024

3.5 Development Document.

General documentation concerning development, notes on progress, bug reports, etc.

TBD.

3.6 Software Test Plan (STP).

A plan to thoroughly test and QA this project to find and eliminate bugs before deployment.

TBD.

3.7 Review Draft of Final Report.

Final draft of project report and all supporting documentation.

TBD.

3.8 Final Report Package.

Final report package including project source code, presentations, documentation, etc.

December 2nd, 2024

4. Milestone Events:

The below milestones serve as pacers and give the team a realistic idea of where they should be during each stage of development.

4.1: Initial Development:

Initial Development of Kafka Consumer, Producer, and Data Processing.

September 16th, 2024.

4.2: Database and Event Logging:

Development of database interaction and event logging.

October 14th, 2024

4.3: Containerization:

Containerization via Docker and deployment.

October 28th, 2024

4.4: Final Deliverable:

Fully functional and tested application with optional monitoring.

December 2nd, 2024

5. Meeting Schedule Date/Time:

Meetings are an essential part of communication and are required for information distribution and status updates.

5.1: Platform: Microsoft Teams:

Microsoft Teams is the primary communication platform for team-sponsor communication and meetings.

5.2: Project Sponsor Weekly Meeting Schedule:

Monday 4:45 pm - 5:45 pm

6. Collaboration and Communication Plan:

The plan for communication scheduling and meeting platforms are below.

6.1: Intra-team meetings:

Intrateam meetings are scheduled on a weekly basis, depending on factors such as team availability, project due dates, and milestones. Multiple meetings may occur within the span of any given week.

A weekly 'Status Update' meeting with the capstone coordinator will occur.

6.2: Communication Platforms:

6.2.1: Discord

Discord is the primary communication platform for intra-team communication and meetings.

6.2.2: Microsoft Teams / Outlook

Microsoft Teams is the primary communication platform for communication with the project coordinator. Outlook will also be employed for direct messaging.

7. Project Schedule and Task Planning

GCPS Bus Monitoring System

Sam Bostian, Michael Rizig, Charlie McLarty, Brian Pruitt

Project Start					August		September			October			November			December								
					Plan		M1			M2	M3		M4			M5								
TASK	ASSIGNED TO	PROGRESS	START	END	18	25	1	8	16	23	30	7	14	21	28	1	8	19	22	2	9	11	12	
Planning																								
Define goals and project scope	ALL	100%	8/12/2024	8/15/2024	2																			
Define timeline	Michael Rizig	100%	8/15/2024	8/17/2024	2	2																		
Set Milestone Dates	Sam Bostain	100%	8/17/2024	8/21/2024		2	2																	
Define Resources Required	Charlie McLarty	100%	8/21/2024	8/24/2024		2	3																	
Complete Project Plan	Michael Rizig	100%	8/18/2024	9/1/2024			4																	
Design																								
Define Dependencies	Sam Bostian	0%	8/12/2024	8/31/2024	2	2																		
Create SDD Document	Brian Pruitt	0%	8/12/2024	8/28/2024	2	2	2																	
Create SRS Documents	ALL	0%	8/12/2024	8/31/2024	2	3	2																	
Define Design Elements	ALL	0%	8/12/2024	8/31/2024	2	3	3																	
Compare/Analyze designs	Sam,Michael,Brian	0%	8/12/2024	9/2/2024		3	3																	
Complete SDD	Sam,Charlie,Brian	0%	8/12/2024	9/2/2024		4	4																	
Complete SRS	ALL	0%	8/12/2024	9/2/2024		4	4																	
Execution																								
Create Development Document	Michael Rizig	0%	9/10/2024	9/30/2024				3	2	2														
Build Backend	Sam Bostian	0%	9/10/2024	9/30/2024				3	2	2	2													
Establish Database	Charlie McLarty	0%	9/15/2024	9/30/2024							2	2	2	2										
Containerization	Sam,Michael	0%	10/8/2024	10/29/2024										2	4									
Create Presentation and Demo	Brian Pruitt	0%	10/8/2024	10/29/2024										3	3	4								
Test, evaluate, and debug	Charlie McLarty	0%	9/20/2024	10/29/2024										3	3	4								
Evaluation																								
Create Software Test Plan	Charlie McLarty	0%	9/23/2024	11/27/2024													2	2	2					
Clean up Prototype	Sam,Michael,Brian	0%	9/28/2024	11/27/2024													2	2	2	2			2	
Final debugging	Sam, Charlie	0%	9/28/2024	11/27/2024													2	2	2		2	2	2	
Complete Testing Documentation	Michael, Charlie	0%	9/29/2024	11/27/2024																	2	2	2	
Complete Final report	ALL	0%	9/17/2024	12/2/2024													2	2	2	2	2	2	2	

Milestone	Description	Due Date	Completion
Plan	Project Plan Document	9/1/2024	<input type="checkbox"/>
M1	Initial Development	9/16/2024	<input type="checkbox"/>
M2	Database and Event Lo	10/14/2024	<input type="checkbox"/>
M3	Containerization	10/28/2024	<input type="checkbox"/>
M4	C-Day	11/19/2024	<input type="checkbox"/>
M5	Final Deliverable	12/2/2024	<input type="checkbox"/>

8. Version Control Plan

Platform:  Github

Repository Link: <https://github.com/Team3-GwinnettBus/Gwinnett-Bus>