12-T3: GCPS REAL-TIME BUS MONITORING SYSTEM

SOFTWARE TEST PLAN & REPORT
CS 4850 - SECTION 01 – FALL 2024
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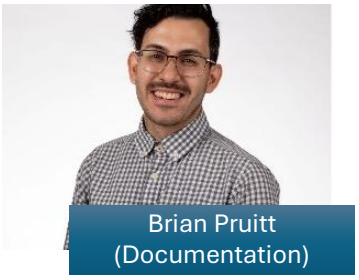
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SOFTWARE TEST PLAN

Requirement	Description	Pass	Fail	Severity
Test Requirement	This is a Test Requirement to serve as an example	✓	✗	Low
Real-time data ingestion through Kafka	Verify that the Kafka producer sends data in real time	✓		High
Data validation rules	Check that invalid GPS data is flagged and logged	✓		High
Data storage in SQL Server	Confirm that validated data is stored accurately	✓		High
Error handling for invalid data	Verify that invalid data is stored in separate table	✓		Medium
Container initialization	Check if all containers start without errors	✓		High
Inter-container communication	Confirm Kafka-to-SQL data flow in pod environment	✓		High
Pod shutdown and cleanup	Ensure stop_pod.sh script removes all containers/pods	✓		Medium
Monitoring setup (optional feature)	Verify monitoring tool displays container status	✓		Low
Scalability test with 2,000 bus data points	Check system performance under high data volume	✓		High

System latency under load	Measure if latency remains within acceptable range	✓		**High**
Data retrieval from SQL Server	Verify that bus location data is retrievable	✓		**High**
Consistent container deployment across environments	Test pod deployment on different environments	✓		**Medium**