Lab 2 Section 3.2

Database: (Odean Maye)

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| **Category ID** | **Description** | **Test Case** | **Description** | **Objective** |
| 1 | Database | 1.1 | Formats | Visually examine the entries for date (YYYYMMDD) and time (HHMMSS) formats. |
| 1.2 | Read/Write Procedures | Test create, read, update, and delete stored procedures on the database. |
| 1.3 | Refresh Times | Test updateable views for functionality and response/refresh time. |
| 1.4 | Read/Write Triggers | Test triggers for proper functionality on various create, read, and delete commands. |
| 1.5 | Schema Efficiency | Test tables for proper schema, functionality, and efficiency and ease of use, and for proper data values. |

Decision Engine: (Nathan Lutz)

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| **Category** | **Description** | **Test Case** | **Description** | **Objective** | **Requirements Referenced** |
| Integration | Decision Engine –  DB Interface | 2.1 | Database Connectivity | Test Current ITS database connection | 3.1.2.1.iv |
| 2.2 | Select Ability | Test ability to query the database and necessary tables | 3.1.2.1.v.a, 3.1.2.1.vi.a, 3.1.2.1.vi.d, 3.1.2.1.vi.g, 3.1.2.2.iii, 3.1.2.2.iv, 3.1.2.2.v, 3.1.2.2.vii, 3.1.2.3.iii, 3.1.2.3.iv |
| Unit | Decision Engine –  Ridership Trend Analysis | 2.3 | Input Validation | Validate Input of date, time range, stop id | 3.1.2.1.i,  3.1.2.1.ii |
| 2.4 | Interval Validation | Test future/past date determination | 3.1.2.1.iii |
| 2.5 | Average Function Test | Test average of embark/disembark for past 15 days | 3.1.2.1.vi.b |
| 2.6 | Past Event Test | Test past Event Detection | 3.1.2.1.vi.c |
| 2.7 | Future Event Test | Test future Event Detection | 3.1.2.1.vi.f |
| 2.8 | Ridership Variance Function Test | Test accuracy of variance between established disembark/embark averages and past event values | 3.1.2.1.vi.h |
| Integration | 2.9 | Ridership  Output Validation | Test output of embark/disembark to Ridership Trend Report function | 3.1.2.1.vii |
| Unit | Decision Engine –  Delay Impact Calculator | 2.10 | Input Validation | Validate input of GPS coordinates and dates | 3.1.2.2.i.  3.1.2.2.ii |
| 2.11 | Train Activity Test | Test ability to determine if a train is active or not | 3.1.2.2.iii |
| 2.12 | Delay Average Calculation Test | Test accuracy of average variance from the schedule | 3.1.2.2.vi |
| 2.13 | Alert Detection Test | Test ability to correctly identify active alerts | 3.1.2.2.vii, |
| 2.14 | Alert Delay Interval Application Test | Test accuracy of alert severity level delay interval on variance average | 3.1.2.2.viii |
| 2.15 | Total Calculated Delay Test | Test accuracy of comparison between calculated expected time-of-arrival and schedule | 3.1.2.2.ix |
| Integration | 2.16 | Delay Estimate Output Validation | Test output of delay time to Train Data Report Module |  |
| Unit | Decision Engine – Ontime Performance Reporting | 2.17 | Input Validation | Validate input of Date range and Stop ID | 3.1.2.3.i,  3.1.2.3.ii |
| 2.18 | Ontime Accuracy Test | Test accuracy of variance between past arrival times and schedule times | 3.1.2.3.v |
| Integration | 2.19 | Ontime Performance Output Validation | Test output of variance from the schedule to the Train Data Report Module | 3.1.2.4.vi |

Test Harness: (Akeem Edwards)

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| **Categories** | **Sub Category** | **Test Case** | **Name** | **Description** |
| Test Harness | GPS Data tester | 3.1 | GPS stop tester | Verify each virtual stop has an associated GPS coordinate. |
|  |  | 3.2 | GPS format test | Verify GPS coordinate is in the correct format |
| 3.3 | GPS route test | Verify the GPS route list contains a proper GPS coordinates |
| 3.4 | GPS train test | Verify a train’s coordinate is updated and valid. |
| Ridership Data Control tester | 3.5 | Ridership Data generation test | Test virtual rider generation for each stop |
| Ridership Data Control tester | 3.6 | Ridership Data test | Ensure realistic proportions of riders are generated conforming to variable thresholds which can be changed by the user |
| Train control tester | 3.7 | Train GPS test | Verify each active train return assigned GPS coordinate |
| 3.8 | Train sensor failure test | Verify each train has the ability to simulate sensor failure |
| 3.9 | Train outage failure | Verify the ability for a train to no return a GPS coordinate. |
| 3.10 | Ridership test | Verify each train has the ability to return the current amount of riders on board |
| Business ad control tester | 3.11 | End date test | Verify access to each advertisement’s end date |
| 3.12 | Start date test | Verify access to each advertisement’s start date |
|  | 3.13 | Advertisement stop test | Verify Ability to assign and view advertisements assigned at each stop |
|  | 3.14 | Advertisement start time | Verify access to each advertisement’s start time |
| 3.15 | Advertisement end time | Verify access to each advertisement’s end time |
| Test harness Interface | 3.16 | Train property GUI | Verify interface has the ability to display each trains properties |
| 3.17 | Train settings test | Verify interface has the ability to edit different train settings |
| 3.18 | Stop property test | Verify interface has the ability to display ridership at each stop |
| 3.19 | Stop Property edit test | Verify interface has the ability to edit different ridership numbers at each stop. |

Web Modules: (Chris Coykendall)

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| **Category ID** | **Description** | **Test Case** | **Description** | **Objective** |
| 1 | Alert Module | 1.1 | Manage Alerts | Verify an alert can be created/modified/closed within the HRT GUI |
| 1.2 | View Alerts | Demonstrate alerts are viewable in module |
| 2 | Feedback Module | 1.1 | Submit Feedback | Verify a rider or business user can submit feedback via web form |
| 3 | System Overview Module | 1.1 | Retrieve Stop Information | Verify DB interface provides results for stops & vehicles in operation |
| 1.2 | Map Overlay | Demonstrate stop & vehicle information is displayed on a dynamic map |
| 4 | Google Maps Web Form | 1.1 | Google Maps Web Redirection | Verify Google Maps search is performed for direction request |
| 5 | Calendar Event Module | 1.1 | View Events | Demonstrate Events are viewable within the module |
| 1.2 | Manage Events | Verify that Events can be added, edited or removed within the Business & HRT GUI |

Web Modules & GUI Frameworks: (Brian Dunn)

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| **Category ID** | **Description** | **Test Case** | **Name** | **Description** |
| x. | Business Ad Campaign Module | x.1 | List Advertisements | Verify listing of advertisements. |
| x.2 | Create Advertisement | Verify submission of advertisement input fields. |
| x.3 | Edit Advertisement | Verify modification of advertisement input fields. |
| x.4 | Database Interface | Verify interface with database for data input/output. |
| x. | Ridership Trend Report | x.1 | Display Default Report | Verify display of default ridership trend report. |
| x.2 | Display Detailed Report | Verify display of custom ridership trend report. |
| x.3 | Request Custom Report | Verify input fields for custom report query. |
| x.4 | Decision Engine Interface | Verify interface with Decision Engine for data retrieval. |
| x. | Train Data Report | x.1 | Display Default Report | Verify display of default train data report. |
| x.2 | Display Detailed Report | Verify display of custom |
| x.3 | Request Custom Report | Verify input fields for custom report query. |
| x.4 | Decision Engine Interface | Verify interface with Decision Engine for data retrieval. |
| x. | Graphical User Interface Framework | x.1 | Display Rider Modules | Verify display of modules on Rider GUI. |
| x.2 | Display Business Modules | Verify display of modules on Business GUI. |
| x.3 | Display HRT Modules | Verify display of modules on HRT GUI. |
| x.4 | Module Interface | Verify interface with all Web Application Engine modules. |