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| **EVENT** | **TRIGGER** | **SOURCE** | **USE CASE** | **RESPONSE** | **DESTINATION** |
| **User logged in to their account** | **Login** | **Logged in Passenger** | **Logging in of accounts** | **Validate the credentials of the account.** | **Administrator** |
| **User wants to know the status of operation of the BGC buses** | **View operation status** | **Logged in Passenger** | **Updating and reporting news about the status of the bus and if it experienced breakdown** | **Display operation status of the BGC Bus and updates from the BGC Bus company** | **Administrator** |
| **User wants to know the BGC Bus route from an origin to a destination** | **Guide Travel by detailed itinerary** | **Logged in Passenger** | **Showing detailed itinerary** | **Display map indicating the route from origin to destination, nearest bus stop from the origin, and nearest bus stop to the destination. Include detailed itinerary, estimated travel time, and bus fare.** | **Administrator** |
| **User wants to know the number of minutes until the nearest bus arrives or departs at a bus stop** | **Real-time status** | **Logged in Passenger** | **Checking of departure and arrival time of every bus on different bus stops.** | **Display the number of minutes to arrival of the nearest bus and the next bus at the selected bus stop. Display the number of minutes to departure of bus currently at the selected bus stop.** | **Administrator** |
| **User wants to know the remaining balance of their beep card** | **Beep card balance inquiry** | **Logged in Passenger** | **Reading the remaining balance in the beep card** | **Display the remaining balance of the beep card.** | **System** |
| **Administrators forecast about the congestion** | **Report on passenger congestion** | **Administrator** | **Evaluate and store the congestion status of the passengers on bus stops** |  | **Administrator** |
| **Informing the public about congestion status; Congestion status at bus stops and congestion inside the bus** | **Congestion prediction** | **Administrator** | **Informing about congestion status and congestion prediction** | **Display congestion prediction. And the congestion status on bus stops and buses.** | **Logged in Passenger** |
| **Updates the system regarding all news, itineraries and store it in databases** | **Storing itineraries** | **Administrator** | **Storing all updates, news, maps, and needed reports that would be presented to the user.** | **Display what the user intends to view** | **Administrator** |

1. Full Use Case Description

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| Use Case Name: | **Logging of accounts** | |
| Scenario: | **Logging of existing accounts** | |
| Triggering Event: | **logging in of accounts** | |
| Brief Description: | **When users log-in to their account, the response is that validations of the credentials of their account by the administrator.** | |
| Actors: | **Logged in Passenger** | |
| Related Use Case: |  | |
| Stakeholders: | **Database Manager: to regulate the data dictionary.**  **Administrator: to overlook the entire system flow.**  **Users: to experience primary benefits of the system.** | |
| Preconditions: | **Users must have an existing account.** | |
| Postconditions: | **Users has their own individual authenticated accounts.**  **Administrator had validated the credentials of the accounts.** | |
| Flow of Activities: | Actor | System |
| 1. **User log-in** | * 1. **Validate information input.**   **1.2 Information are validated.**   * 1. **Authentication process.**   2. **Acknowledgment received.**   3. **Account Login** |
| Exception Conditions: | 1. **If the app is not installed, install the app** 2. **If user doesn’t have account, they will be redirected to sign-up interface.** 3. **If user had entered a mistaken account, they are given multiple chance to log-in again.** | |

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| Use Case Name: | **Updates/reports status of the bus** | |
| Scenario: | **Users receives updates of operation status.** | |
| Triggering Event: | **Users has an overview of for operation status.** | |
| Brief Description: | **When users view the operation status, the system will display operation status of the BGC Bus and updates from the BGC Bus Company.** | |
| Actors: | **Logged in Passenger** | |
| Related Use Case: | **Logging of accounts** | |
| Stakeholders: | **Users: to receive updates/reports from the BGC Bus Company.** | |
| Preconditions: | **Users shall be able to view updates/reports.** | |
| Postconditions: | **Users will receive true and brief updates/reports.** | |
| Flow of Activities: | Actor | System |
| 1. **User wants to know the status of operation of the BGC buses.** 2. **User wants to see more about operation status like operating schedule and all routes.** | * 1. **Inquiry process**   2. **System would grant the inquiry**   3. **Show to the user all information about operating status**   **2.1 If the user wants more information, system will display about operating schedule for the day and all BGC Bus routes.** |
| Exception Conditions: |  | |

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| Use Case Name: | **Showing Detailed Itinerary** | |
| Scenario: | **Show detailed itinerary from origin to destination** | |
| Triggering Event: | **Guide the user by detailed itinerary** | |
| Brief Description: | **When user requested to be guided with their trip, the administrator must be able to locate their current position** | |
| Actors: | **Logged in Passenger** | |
| Related Use Case: |  | |
| Stakeholders: | **User: To provide the current location**  **Administrator/Management – To verify the information that is going to be shared publicly** | |
| Preconditions: | **The user must have internet connection**  **The user must have logged in successfully**  **The user must provide necessary information like location through their mobile phone’s feature.** | |
| Postconditions: | **Detailed itinerary must show up including:**   * **Map from origin to destination** * **Must be able to suggest the nearest stop** * **Estimated travel time** * **Fare for the trip** | |
| Flow of Activities: | Actor | System |
| 1. **User requests itinerary regarding the trip** 2. **User provides their current position** | * 1. **The system would validate the credentials of the user.**   **2.1 The system would check the user’s location**  **2.2 After checking, information regarding the user’s trip will show up** |
| Exception Conditions: | 1. **Internet Connection is required** 2. **If the system can’t find the location of the user, itinerary would not show up.** 3. **User must be registered into an account** | |

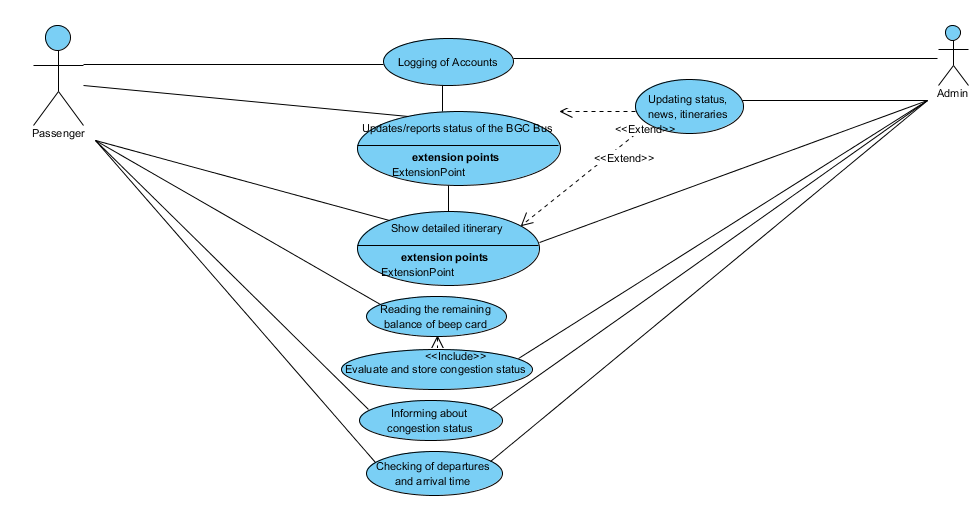
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| Use Case Name: | **Checking of departure and arrival time** | |
| Scenario: | **Provide real-time status update** | |
| Triggering Event: | **Report about real-time statuses.** | |
| Brief Description: | **When user wants to know the departure and arrival time of buses on bus stops, they need the map to view the details on the nearest bus stop.** | |
| Actors: | **Logged in Passenger** | |
| Related Use Case: | **Viewing of detailed itinerary** | |
| Stakeholders: | **User: Choosing a bus stop**  **Administrator/Management: Checking the condition of a preferred stop.** | |
| Preconditions: | **User must have internet connection**  **User must be able to use location feature** | |
| Postconditions: | **Must be able to view the arrival and departure times of buses on the nearest stop bases on user’s location**  **Must also be able to inform the user regarding bus arrival and departure time on other bus stop** | |
| Flow of Activities: | Actor | System |
| 1. **Provide current location** 2. **Wants to view other bus stops** | * 1. **User must connect to the internet so that the system would check their location**   2. **Show details about bus arrival and departure times bases on the nearest bus stop of the user**   3. **Let the user select other bus stop if they want.**   4. **Show again details about the user preferred bus stop about the arrival and departure of buses** |
| Exception Conditions: | 1. **Internet connection as well as location is required** | |

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| Use Case Name: | **Reading the remaining balance of beep card** | |
| Scenario: | **Checking the remaining balance of user’s beep card** | |
| Triggering Event: | **Beep card balance inquiry** | |
| Brief Description: | **If a user does not know the remaining balance of their beep card, the system has the functionality to check the balance but only for NFC-enabled Android devices only.** | |
| Actors: | **Logged in Passenger** | |
| Related Use Case: |  | |
| Stakeholders: | **User – Owner of the beep card** | |
| Preconditions: | **User must have their own respective card**  **User’s phone must be NFC enable to fully use this functionality** | |
| Postconditions: | **Message will appear regarding the card’s remaining balance**  **If the remaining balance was not sufficient to ride the bus, message would appear as if the user is task to load their card**  **Save transaction** | |
| Flow of Activities: | Actor | System |
| 1. **User wants to check their card’s remaining balance** 2. **User taps the beep card into the NFC section of their phones** | * 1. **The system shall work on all NFC enabled android devices**   2. **Message will appear regarding the card’s remaining balance**   3. **If the balance is sufficient to ride the bus, system must be able to notify the user to load the card**   4. **After tapping the card, transaction should be save for history purposes** |
| Exception Conditions: | 1. **The functionality would only work on NFC enabled android devices** 2. **User must have their own beep cards** | |

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| Use Case Name: | **Evaluate and store congestion status** | |
| Scenario: | **Administrator gathers data and use it for forecasting** | |
| Triggering Event: | **Generate report on passenger congestion** | |
| Brief Description: | **Forecasting the number of passengers of BGC Bus at a specified time and day. Predicting the Congestion status for knowing how many buses needs to be deployed on a given time and situation.** | |
| Actors: | **Management** | |
| Related Use Case: |  | |
| Stakeholders: | **Administrator – collects the data** | |
| Preconditions: | **Data or historical data is required** | |
| Postconditions: | **Ability to forecast and generate the result that would be given to the user.** | |
| Flow of Activities: | Actor | System |
| 1. **Data gathering – knowing the amount of passengers that BGC Bus has every day** 2. **check the congestion at different time of the day.** | **1. Generate a forecasting method and predict the congestion status for the given day. By doing so, the management would be ready for the large volume of passenger that the BGC bus have especially on holidays** |
| Exception Conditions: |  | |

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| Use Case Name: | **Informing about congestion status** | |
| Scenario: | **Based on reports and prediction users want to know the status for a given time.** | |
| Triggering Event: | **Congestion Prediction** | |
| Brief Description: | **Sharing of congestion status to users** | |
| Actors: | **Logged in Passenger** | |
| Related Use Case: | **Evaluate and store congestion status** | |
| Stakeholders: | **Administrator – holds the data** | |
| Preconditions: | **Data must be recorded on the system’s database** | |
| Postconditions: | **Forecasted data should be made** | |
| Flow of Activities: | Actor | System |
| **1. User wants to know the congestion status for a specified date and time** | **1.1 System retrieves data from the database**  **1.2 System generates forecast**  **1.3 System computes for the number of passengers on a bus stop on a specified time based on historical facts**  **1.4 After predicting, share the result to the user** |
| Exception Conditions: |  | |

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| Use Case Name: | **Updating status, news, itineraries** | |
| Scenario: | **Provide status updates, news to the passengers** | |
| Triggering Event: | **Storing Itineraries** | |
| Brief Description: | **There are news, or changes in the status or stored itineraries** | |
| Actors: | **Administrator** | |
| Related Use Case: | **Updates/reports report the status of the bus;**  **Show detailed itinerary;** | |
| Stakeholders: | **Administrator – updates the data** | |
| Preconditions: | **Administrator must be logged in.** | |
| Postconditions: | **Passengers are notified of the news, changes in operation status and itineraries** | |
| Flow of Activities: | Actor | System |
| 1. **Administrator will record all information like map, detailed itinerary, operation schedule, and status** | 1. **Save what the administrator records** 2. **Display what the user intends to view.** |
| Exception Conditions: |  | |

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