**Project BusTag**

The BusTag project basically has four distinct modules. From the given four modules, three are software modules, while the fourth module belongs to the hardware. Every module in the project has a distinct task and are completely dependent on each other.

The first module of the project is the Desktop application. Using the Desktop application, the employees of the bus company can manage many tasks. This module further consists of two submodules. First submodule is for the admin who can decide the fare routes and buses of the company. The second submodule is for the employees sitting at the bus junctions. These employees can register, delete and edit the details of a user.

The second module is the NFC cards. These cards will be a user identification method for the company. The conductor will tap the card on the phone to process the payment of the generated ticket.

The third module is the android application. This module will be with the bus conductor. The conductor just needs to add the entry point and dropdown point of the customer. After entering the details, a ticket will be generated, and money will be deducted from users' E-Wallet.

The fourth module is the website which is for the commuters to top-up their Virtual E-Wallet using any mode of payment. Credit cards, Debit cards as well as UPI mode can be used to top-up the E-Wallet.

**The Modules**

**Desktop Application for Admin:**

The desktop application will perform all the operations on the bus route and number as well as on all the users. On clicking the query buttons on the UI, the system will run the requested query in the backend.

The data is sent in string and integer format which is further understood by the database API. This string and integer data types are further converted to database readable types.

**Website for top-up:**

The website will contain a form that will enable the user to add the credentials of the user to top-up the E-Wallet. While taking input from the form the user will take the data in HTML understandable form.

These forms are string and integer data types at the required places. This data is further sent to python flask which converts the data into database format like varchar that is understood by the database.

The gateway will be an API to the HTML document which will just map the website to the payment gateway page.

**Android application for conductor:**

The android application fetches the data from the database into all the dropdowns. For this it takes the data in varchar type and then acts on it in the form of string and integer. After generating the ticket, the textual data is again changed from string to varchar for better understanding of the data.

**Hardware and Software Prerequisites**

**Desktop Application for Admin:**

Software Prerequisites:

* Front-End Software: TKinter (which is a package of Python)
* Back-end Software: MySQL, Python

Hardware Prerequisites

* Can be accessed only on Windows.
* Needs Internet Connection (needs LAN Card/NIC Card).

**Website for top-up:**

Software Prerequisites:

* Front-End Software: Angular, HTML5, CSS3, JavaScript, BootStrap, JQuery, Ajax
* Back-end Software: HTML, SMTP, MySQL, JavaScript, Python (Flask)

Hardware Prerequisites

* Can be accessed on Windows, Linux, MacOS, Android and iOS.
* A browser which supports HTML, CSS, Django, Angular and JavaScript.

**Android application for conductor:**

Software Prerequisites:

* Front-End Software: Java, XML
* Back-end Software: MySQL, Java, Gradle

Hardware Prerequisites

* Needs to be using Android OS 10 or later.
* Needs an active internet connection.
* Device should be NFC Enabled