Summer Training Report

Ishant Sehrawat
03620802719
Bhagwan Parshuram Institute of technology
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Acknowledgement

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Delhi Metro Rail Corporation Ltd.

The Delhi Metro has been instrumental in ushering in a new era in the sphere of mass urban transportation in India. The swanky and modern Metro system introduced comfortable, air conditioned and eco-friendly services for the first time in India and completely revolutionized the mass transportation scenario not only in the National Capital Region but the entire country.

Having constructed a massive network of about 389 Km with 285 stations (including NOIDA-Greater NOIDA Corridor and Rapid Metro, Gurugram) in record time in Delhi, NCR, the DMRC today stands out as a shining example of how a mammoth technically complex infrastructure project can be completed before time and within budgeted cost by a Government agency.

The Delhi Metro has also contributed tremendously on the environment front by becoming the first ever railway project in the world to claim carbon credits for regenerative braking. DMRC has also been certified by the United Nations (UN) as the first Metro Rail and Rail based system in the world to get Carbon Credits for reducing GreenHouse gas emissions as it has helped to reduce pollution levels in the city by 6.3 lakh tons every year thus helping in reducing global warming.

Apart from providing Delhites with a comfortable public transport option, the Delhi Metro is also contributing significantly towards controlling pollution as well as reducing vehicular congestion on the roads.

AFC Central System

Introduction:

Automatic Fare Collection System (AFCS) is meant for automated collection/computation of fare in electronic form and is based on contactless technology.

It automates the ticket selling, operation and accounting process.

AFC System Architecture:

The AFC system is divided into Hierarchy of 5 different layers.

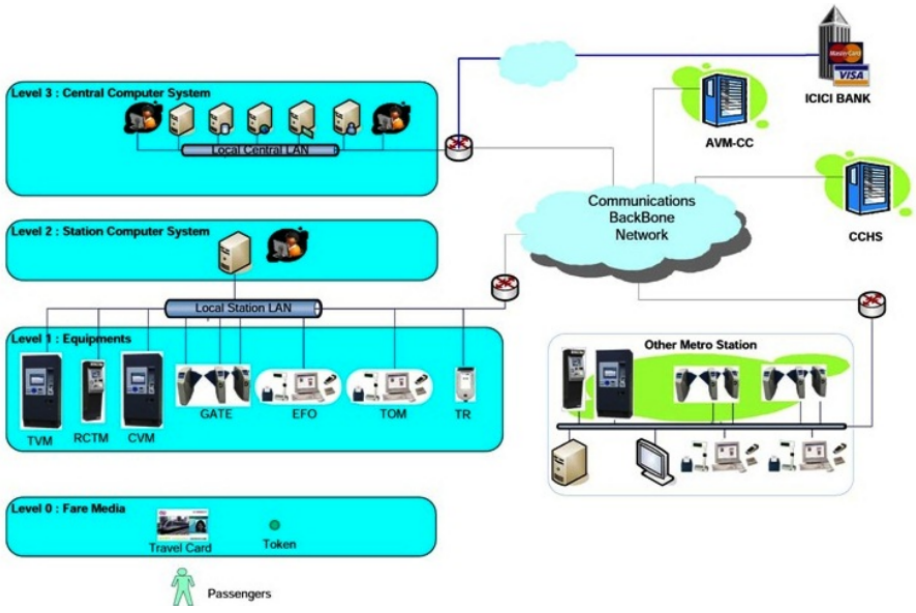
Layer 0: Media (CSC, CST)

Layer1: Equipment (TOM, Gate etc.)

Layer2:Station Computer (SC)

Layer3: Central Back office(CC)

Layer4:CCHS(Central Clearing Housing System)



Purpose of Central System:

Centralized communication with all AFC equipment for Data Collection, monitoring, supervision, troubleshooting and failure analysis of whole AFC system.

Centralized storage and processing of the transactions, cut-off and event data to efficiently perform back end activities of AFC central system like financial accounting, apportionment, reconciliation and processing outstanding liability of revenue collected by DMRC.

Configuration, Generation and uniform distribution the DMRC equipment operating data (EOD) which includes System parameters, Fare table, Agent list, blacklisting parameters to the AFC equipment via the SC.

To implement uniform security mechanism, equipment management to secure AFC system as well as AFC equipment.

To provide the necessary services and back end infrastructure to maintain digital payment, online recharging and ticketing facilities like add value through AVM, POS terminals and gate auto top up etc.

Centralized system management: Application software versions, time synchronization, abnormal working or behaviour of AFC system or AFC equipment, bug reporting and fixing etc.

Single point interface with other service providers for inter-compatibility and to track the utilization of the DMRC's smart card as a common e-purse among multiple service providers.

Generation and analysis of revenue, ridership, and traffic related several reports for efficient traffic management & crowd management and smoothness of operation.

File Sharing System

Introduction:

The new File Sharing System is a light webapp which provides an archive of files which can be accessed by anywhere in the central system where any user can upload, read and use files from any node of the server.

This system needs no permission and space in the system so that it can be used by any system with simple access to the Central System.

This system tried to replace FileZilla sharing app. And is better at so many levels with the space and time management of the product.

Tools and Packages Used:

- Nodejs, Express js have been used for creating the application server.
- Ejs has been used for frontend.
- Nodemon is used to monitor the server.
- FileList for listing all the files present in the server.
- Serve-Index serves files and folder which helps in visualisation.
- Express-fileupload is used to upload files to the server.

APIs:

- Saving files (USE): http://localhost:5000/upload
- Setting view engine (SET): http://localhost:5000/upload
- Setting frontend page (GET): http://localhost:5000/upload

- Setting file names (POST): http://localhost:5000/upload
- Using new page to serve (USE): http://localhost:5000/download/
- Setting port (LISTEN): http://localhost:5000/download/

Commands:

- Running the application: npm run start

Approach followed:

- To create a webapp which easy to use and access anywhere from server
- Easy to use
    - Main page has only 2 button
        - Upload: led to upload page
        - Archive: led to server page
    - Upload:
        - Choose file: allows user to open middleware window to select files
        - Name: allows user to see the name or number of files to be uploaded to the server
        - Upload: after last check the user can click this button to upload files to the server for every other user to see
    - Archive:
        - Tabular representation
        - Use of Icons for better visualization of different types of files
        - Relative path from the server
        - Search button
        - Automatically download to users node
- Easily accessible
    - User can easily go around the pages with simple URLs

    - No internal permission or installation required

Problems Faced:

- Unable to download image files
- Different styling bugs
- Unknown error on upload multiple files
- Multiple Delays in project completion

Conclusion

This training helped me learn not only technologies but also non-technical skills like time management, stress management, workload management and I think that there still are many areas of improvement and I'm going to work hard to be close to perfect.

During the development I have to study and research and in this process I learn reading library documentations and errors which later on boost the development of the product.

During this project I've worked with FTP servers, FileZilla and some new node libraries such as formidable, serve-index, express-fileupload, multer etc.

I'm not going to stop developing this product, I see some areas of improvement and to develop that I still lack the knowledge required.

I'm going to work of version 2.0 of same product on my own to:-

- Remove current bugs
- Add a custom file name and choose the folder in the server to upload files.
- Give a custom alert to let the user know that the files have been uploaded.
- User Authentication