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SVCE BENGALURU

SRI VENKATESHWARA COLLEGE OF ENGINEERING

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SRI VENKATESHWARA COLLEGE OF ENGINEERING

DEPARTMENT OF MECHATRONICS

"Smart LPG Cylinder Management System Using Cloud Computing"

PROJECT PRESENTATION

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- Objectives
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Introduction

- **LPG cylinders are delivered to commercial places like hotels and restaurants.**
- **The flaw with this system is that the enterprises that supply these cylinders have very less control over the delivery itself.**
- **Hope that the delivery agent is doing their role well and have no habits that might hurt the enterprises' business.**
- **The system provides account management by automatically tallying and recording sales without the need for human intervention at the time of cylinder sales.**

- **System uses OTPs to provide customer authentication in order to eliminate any fraudulent sales.**
- **The system also includes Geo-location tracking feature for delivery vehicles.**

Literature Survey

PAPER 1: *Mr. Simon Eismann , Mr. Joel Scheuner, Mr. Erwin van Eyk, Mr. Maximilian Schwinger, Mr. Johannes Grohmann, Ms. Cristina L. Abad, Mr. Nikolas Herbst, Mr. Alexandru Iosup, proposed a IEEE paper on "Serverless Applications: Why, When, and How?". [2021]*

- One of the most in-demand services in the world is door-to-door delivery.
- "EASE-OF-USE" and "EFFICIENCY" are two of the most desirable properties of software services.
- "EASE-OF-USE" entices more people to try the services and allows more to continue using them.

- **“EFFICIENCY” allows increased and longer operation of the service.**

PAPER 2: ***Mr. Emir Erdem, Mr. Mehmet Tahir Sandıkkaya, proposed a IEEE paper on “OTPaaS—One Time Password as a Service”. [2019]***

- **To outsource the second factor of authentication, this paper provides an architecture for building a secure, privacy-friendly OTP provider in the cloud.**
- **OTP service provision saves inexperienced small to medium enterprises from spending extra costs for OTP provisioning hardware, software and employers**

- **The phases of cloud user registration with an OTP provider, service provider activation, and authentication are all examined.**

PAPER 3: ***Mr. Holger Billhardt, Mr. Alberto Fernández, Mr. Lissette Lemus, Mr. Marin Lujak, Mr. Nardine Osman, Ms. Sascha Ossowski, Ms. Carles Sierra, proposed a IEEE paper on "Dynamic Coordination in Fleet Management Systems: Toward Smart Cyber Fleets". [2014]***

- **Fleet management system is used for different fleet-related applications in the fields of transportation, distribution, and logistics.**
- **FMSs have as an objective to reduce risk, increase quality of service, and improve a fleet's operational efficiency while minimizing its costs.**

- The technological advances in sensors, communication and networking technologies, and geographic information systems enables fleet operators to be informed about unexpected changes in fleet operation almost at the time that they occur.

PAPER 4: *Mr. Xiaojun Jing, Mr. Peng Tang, proposed a IEEE paper on "Research and Design of The Intelligent Inventory Management System Based on RFID". [2014]*

- Analyzing the data flow of intelligent inventory system from the perspective of business and function.

- Focuses on elaborating the design and implementation process of the intelligent inventory system.

- **The system realizes full control and management of all products, faster in/out warehouse and dynamic inventory, utilizes warehouse efficiently and improve the capacity of warehouse by effective combining with the ERP (Enterprise Resource Planning) system in enterprise.**

Problem Statement

- **In the current system for delivering commercial LPG cylinders, there is no common place where all the data on sales and the customer details are stored and easily accessible.**
- **The agent should be trusted to deliver the cylinders to the right customers with requested quantity and promptly hand over the amount to the enterprise.**
- **All accounting is recorded on books, which can be easily manipulated by anyone and human errors are possible.**
- **Accidentally misplacing the books is also a possibility.This results in significant losses for the company.**

Objectives

- Create centralized storage for enterprise operations on cloud.
- Develop remote inventory management feature.
- Provide fleet management service for delivery agent tracking using IoT.
- Provide automatic accounting feature for sales and purchases.
- Create customer authentication model.

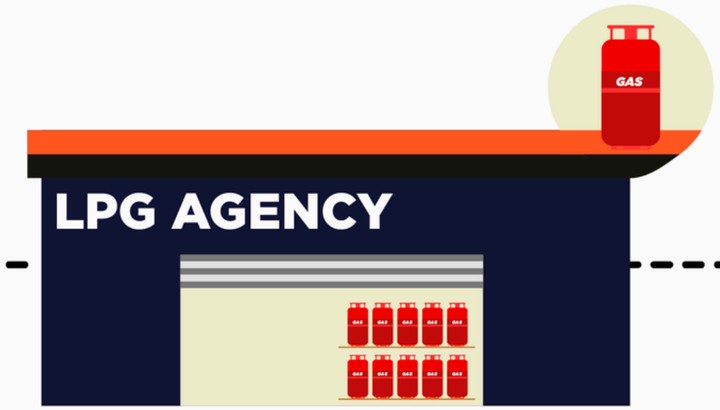
Methodology

The distribution cycle

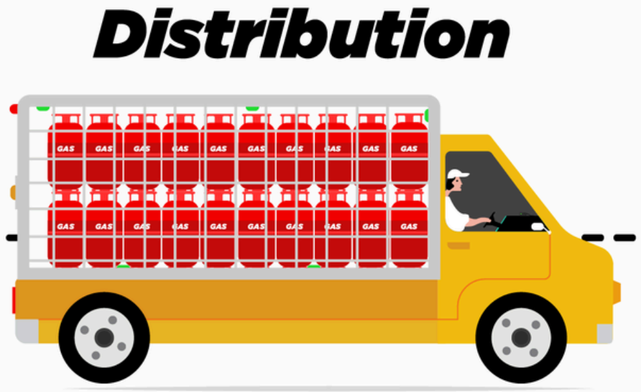
LPG Distribution Cycle

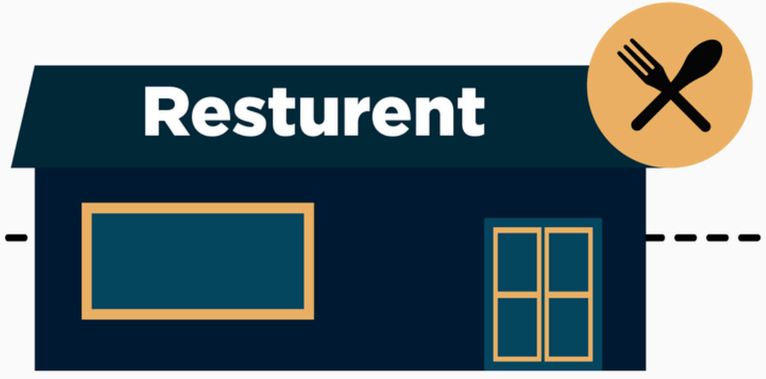


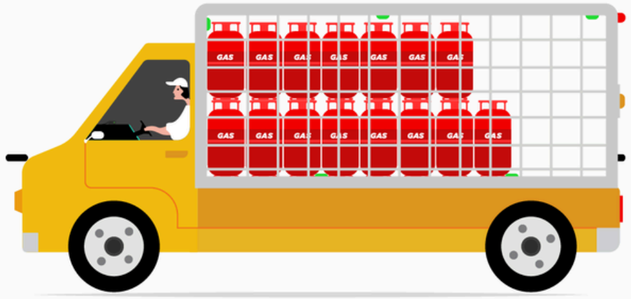
B2B



B2C



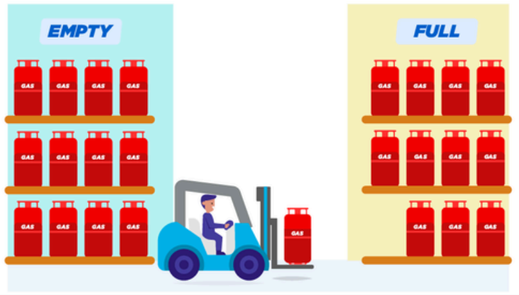




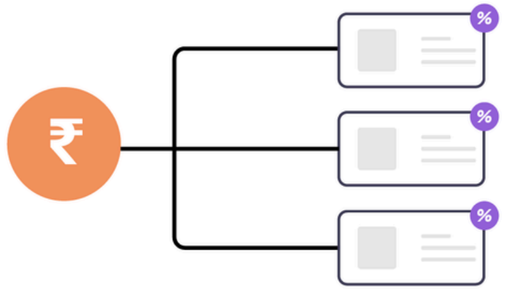


Admin interface using ReactJS

Inventory Management



Price Customization



Financial Reprots



Fleet Management



CLOUD

customer Records





Inventory management and data storage using Firebase

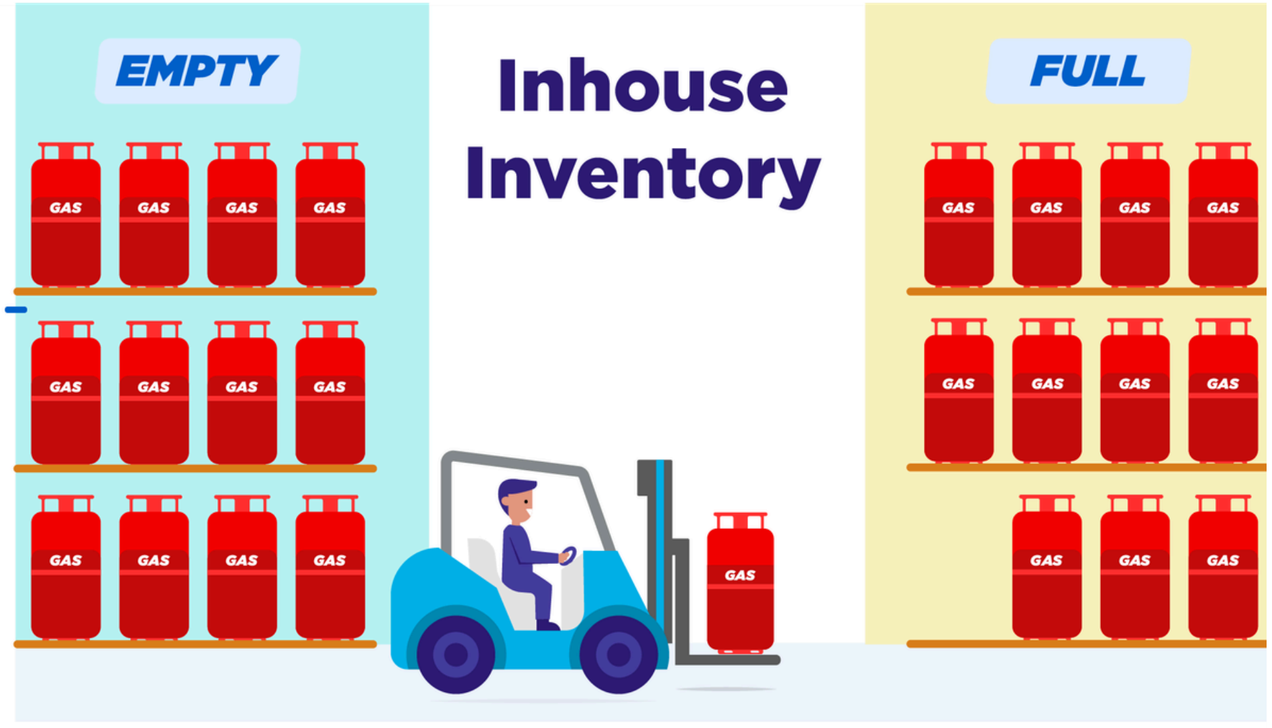
LPG Manufacturing & Distribution

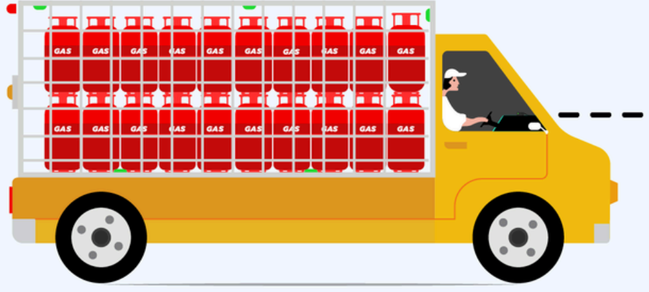


EMPTY

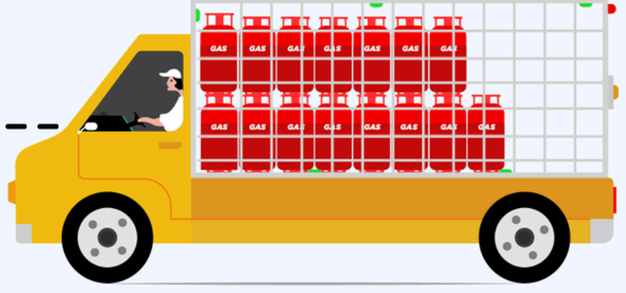
FULL

Inhouse Inventory





Distribution



Pick Up



Inventory managment

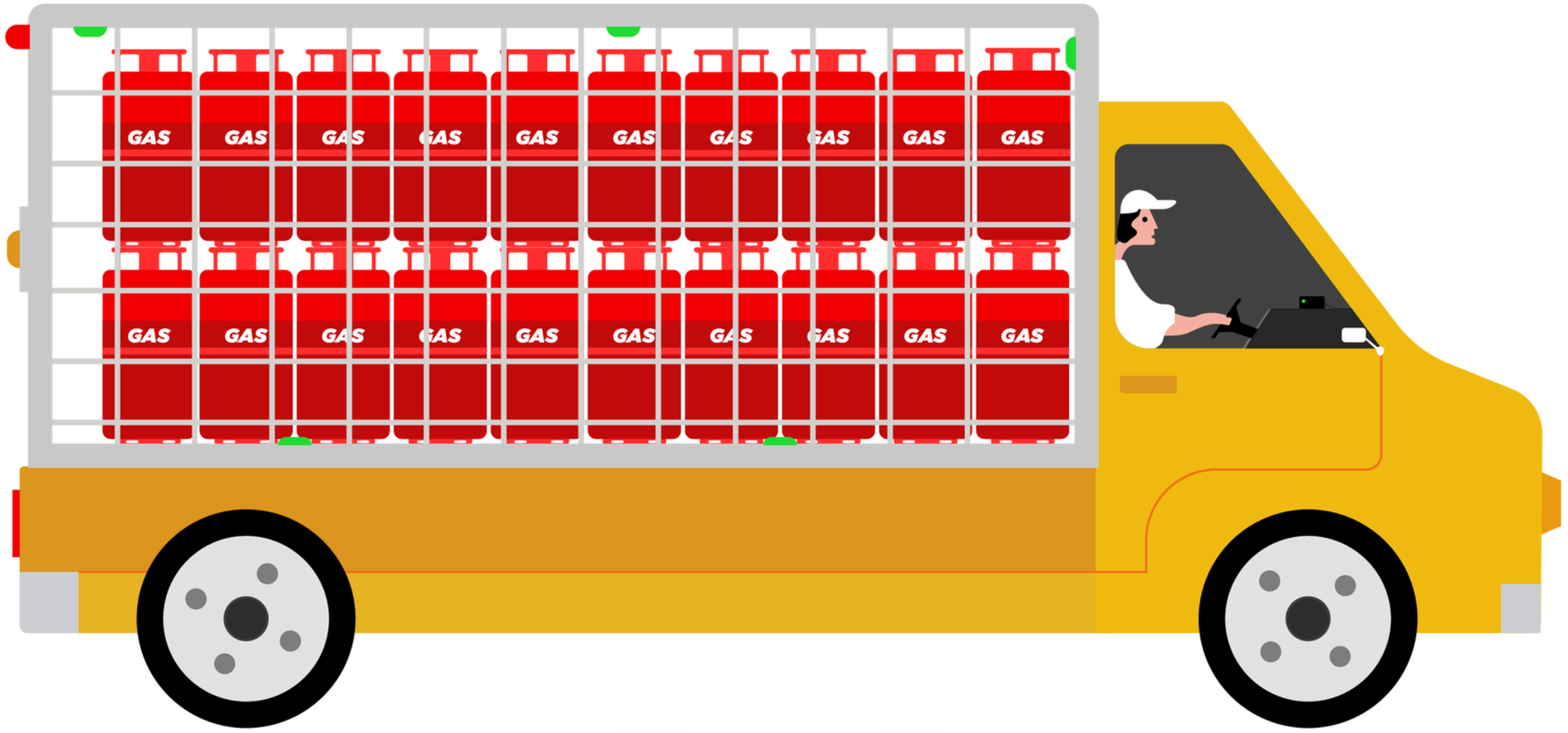
Fleet management

Driver Information

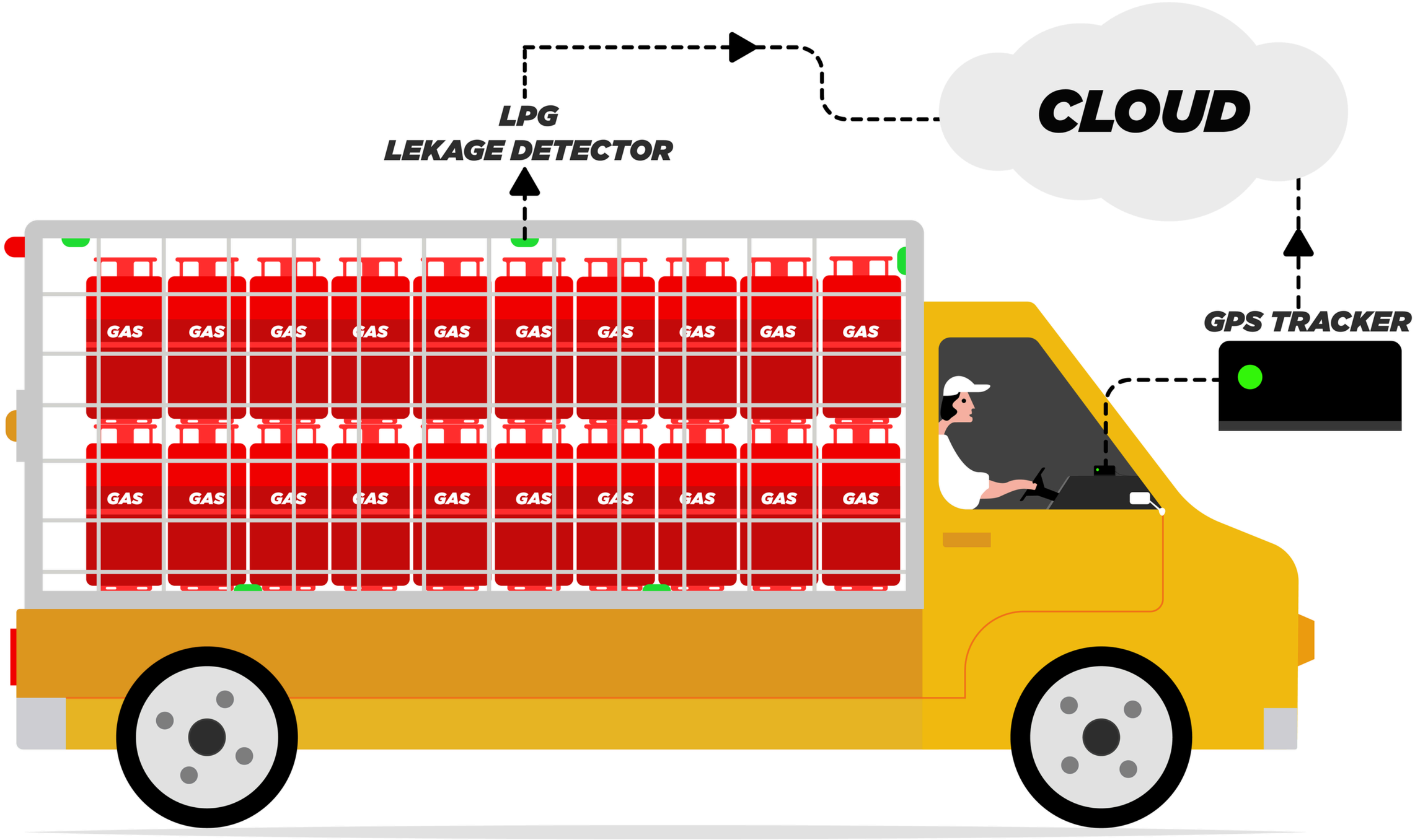
Location & tracking

Current Speed

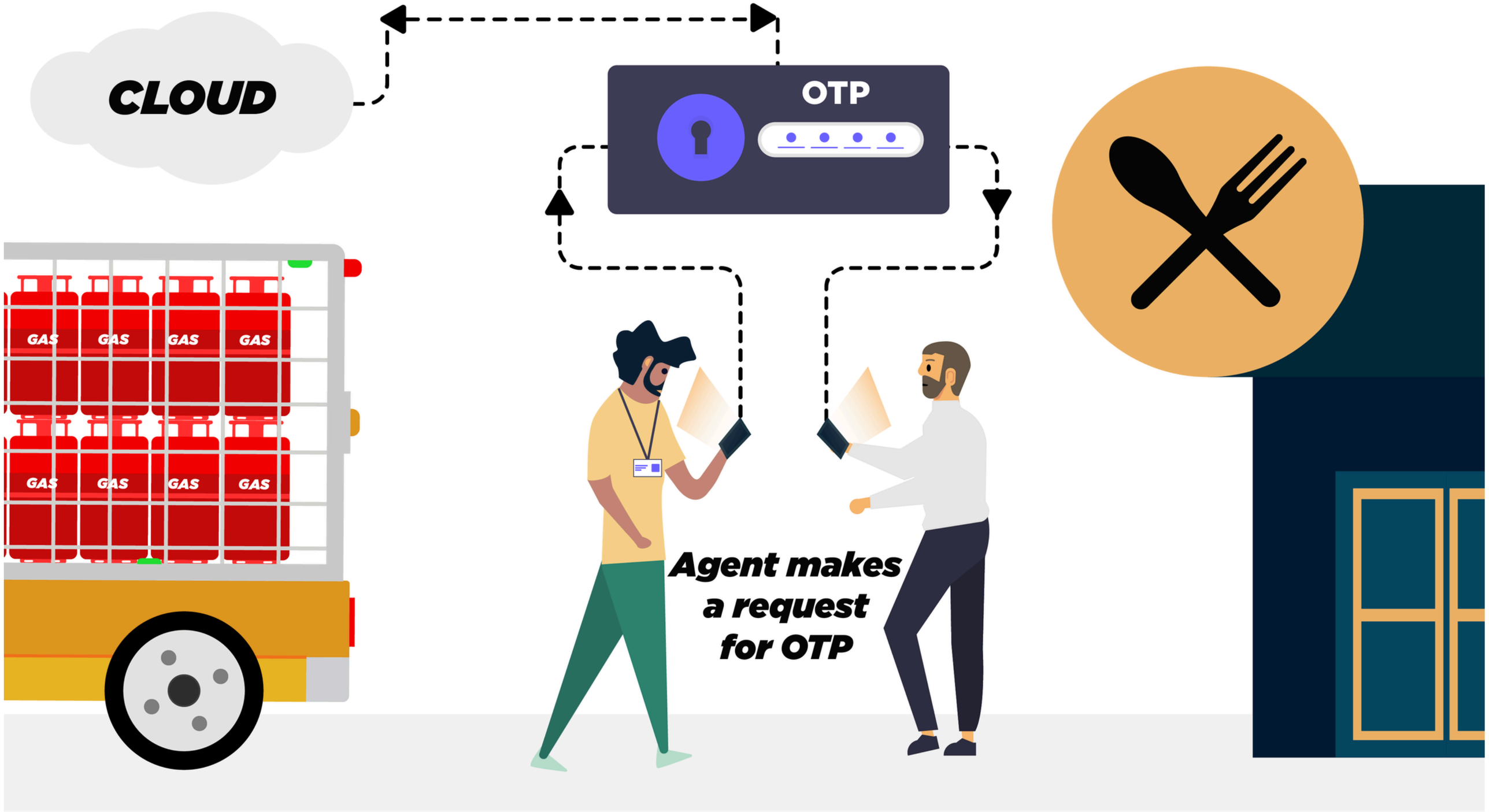
Fuel Consumed



IoT For Fleet Mangament


CLOUD
LPG
LEKAGE DETECTOR
GPS TRACKER
GAS

Customer authentication system


CLOUD
OTP
GAS
GAS
GAS
GAS
GAS
GAS
GAS
GAS
Agent makes a request for OTP

Applications

- Micro management of business
- Inventory management
- Auto accounting
- Vehicular tracking
- Customer authentication

Hardware & Software used

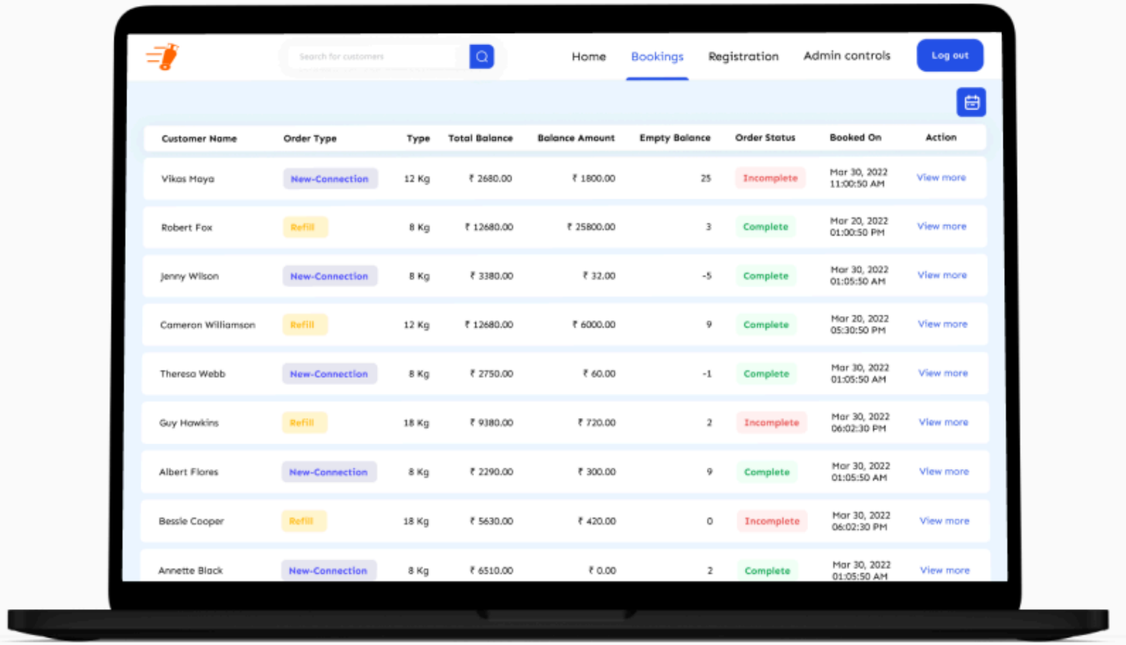
Hardware	Software
ESP8266 Nodemcu	Arduino IDE
SIM28M GPS module	ReactJS
MQ gas sensor	VS code
Led and wires	Firebase
Pc	Figma

Result

LOGIN

Welcome to **Gaz on Wheelz**

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Recent Bookings

Customer Name	Order Type	Type	Total Balance	Balance Amount	Empty Balance	Order Status	Booked On	Action
Vikas Maya	New-Connection	12 Kg	₹ 2680.00	₹ 1800.00	25	Incomplete	Mar 30, 2022 11:00:50 AM	View more
Robert Fox	Refill	8 Kg	₹ 12680.00	₹ 25800.00	3	Complete	Mar 20, 2022 01:00:50 PM	View more
Jenny Wilson	New-Connection	8 Kg	₹ 3380.00	₹ 32.00	-5	Complete	Mar 30, 2022 01:05:50 AM	View more
Cameron Williamson	Refill	12 Kg	₹ 12680.00	₹ 6000.00	9	Complete	Mar 20, 2022 05:30:50 PM	View more
Theresa Webb	New-Connection	8 Kg	₹ 2750.00	₹ 60.00	-1	Complete	Mar 30, 2022 01:05:50 AM	View more
Guy Hawkins	Refill	18 Kg	₹ 9380.00	₹ 720.00	2	Incomplete	Mar 30, 2022 06:02:30 PM	View more
Albert Flores	New-Connection	8 Kg	₹ 2290.00	₹ 300.00	9	Complete	Mar 30, 2022 01:05:50 AM	View more
Bessie Cooper	Refill	18 Kg	₹ 5630.00	₹ 420.00	0	Incomplete	Mar 30, 2022	View more

Recent Bookings

Booking Details

Mar 30, 2022 01:05:50 AM

Customer Name Or Company Name

Vikas M

Mobile Number

9123456789

Address Details

Address

City State/Province/Region

Zip / Postal code Country

Note

Order Status & Type

Complete Refill

Pricing Details

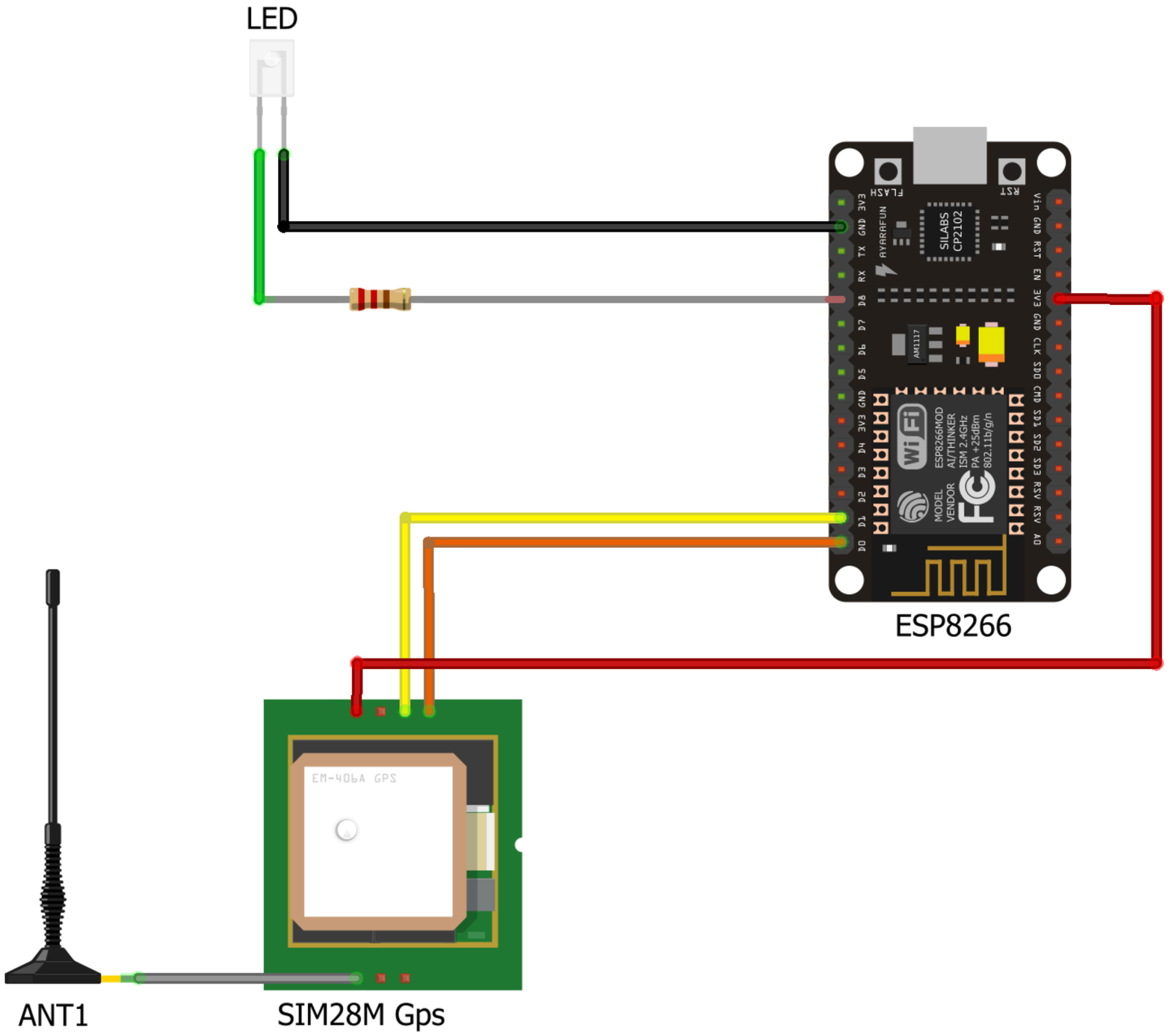
New Connection Price	Refill Price
₹ 1630.00	₹ 0.00

Cylinder Details

Type	Qty	Empty Recieved	Empty Pending	Total Price
12Kg	04	02	-03	₹ 26530.00
17Kg	02	01	01	₹ 13,061.20
19Kg	03	01	-02	₹ 26530.00

Transaction Details

Total Amount Recieved Amount Balance Amount


LED
ESP8266
ANT1
SIM28M Gps
EM-406A GPS

Fleet Managament



Total Distance Driven	Total Average Speed	Total Fuel Consumed	Total Operation Time	Total Waiting Time	Warnings
12.5 Km	45.98 Km/h	10.00 Ltrs	05:12:36 Hrs	00:12:36 Hrs	0

Project Outcomes

- The system helps to maintain the records of the customer.
- Agency may verify how many cylinders are in the inventory and manage them accordingly using inventory management service.
- Accounting is automated on day to-day basis.
- Delivery vehicle can be monitored using fleet management services which is integrated in system.
- The delivery chain is more transparent to the enterprise.

References

- Mr. Simon Eismann , Mr. Joel Scheuner, Mr. Erwin van Eyk, Mr. Maximilian Schwinger, Mr. Johannes Grohmann, Ms. Cristina L. Abad, Mr. Nikolas Herbst, Mr. Alexandru Iosup, Serverless Applications: Why, When, and How?, IEEE, 2021. Accessed on: Dec. 10, 2021.[Online]. Available: https://ieeexplore.ieee.org/document/9190031
- Mr. Emir Erdem, Mr. Mehmet Tahir Sandıkkaya, OTPaaS—One Time Password as a Service, IEEE, 2019. Accessed on: Dec. 9, 2021.[Online]. Available: https://ieeexplore.ieee.org/document/8439007
- Mr. Holger Billhardt, Mr. Alberto Fernández, Mr. Lissette Lemus, Mr. Marin Lujak, Mr. Nardine Osman, Ms. Sascha Ossowski, Ms. Carles Sierra, Dynamic Coordination in Fleet Management Systems: Toward Smart Cyber Fleets, IEEE, 2014. Accessed on: Dec. 9, 2021.[Online]. Available: https://ieeexplore.ieee.org/document/6871706
- Mr. Xiaojun Jing, Mr. Peng Tang,Research and Design of The Intelligent Inventory Management System Based on RFID, IEEE, 2014. Accessed on: Dec. 9, 2021.[Online]. Available: https://ieeexplore.ieee.org/document/6804816

THANK YOU

