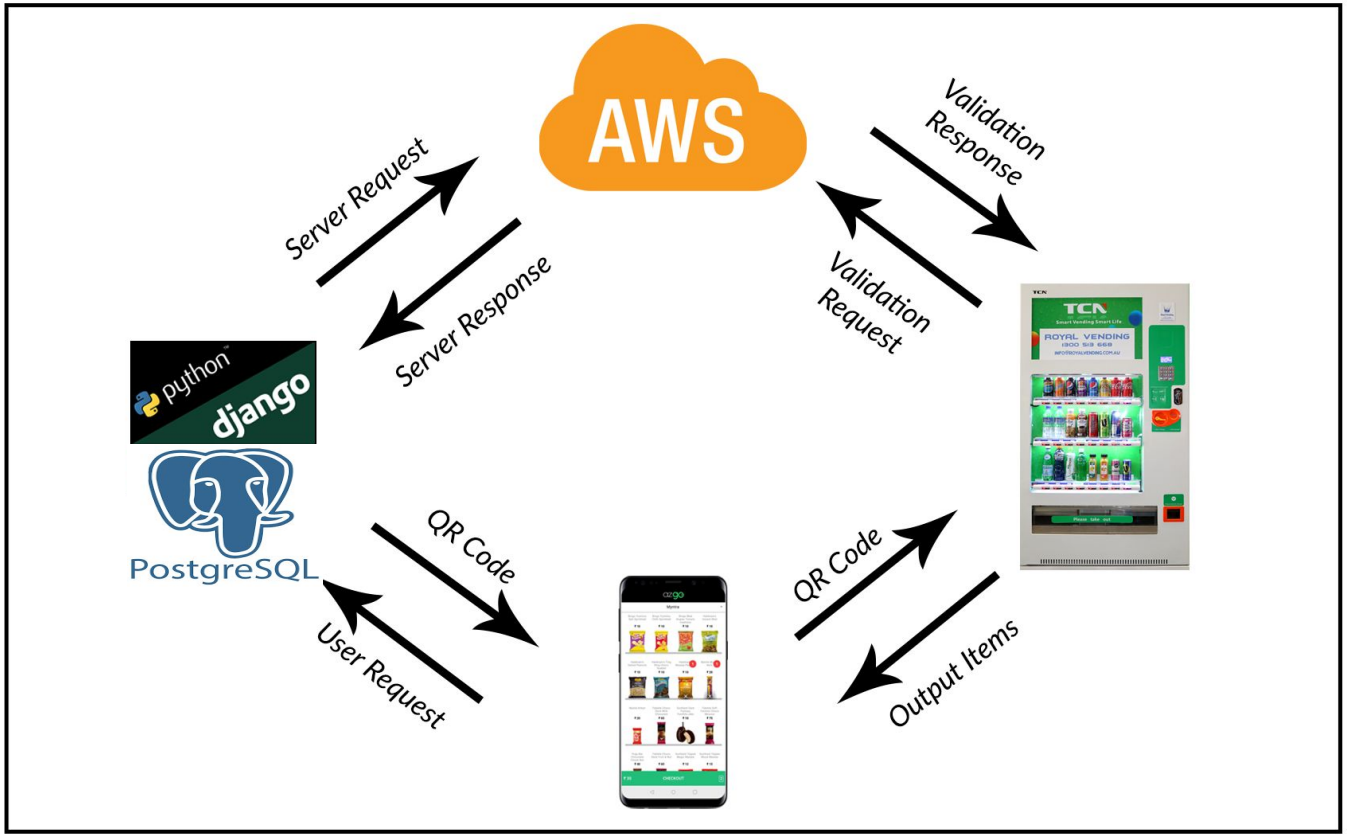
Smart Vending Machine

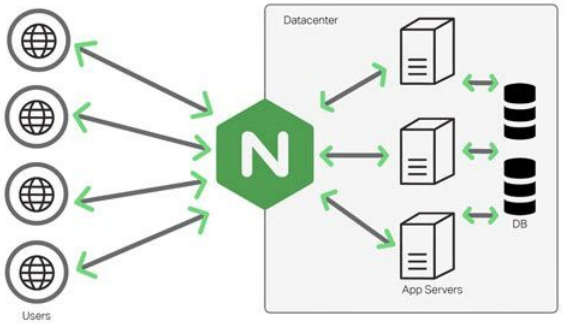
Milestone 4

Solution Overview



Till Now..

- Front End
- Back End
- Rest API
- Hardware Design

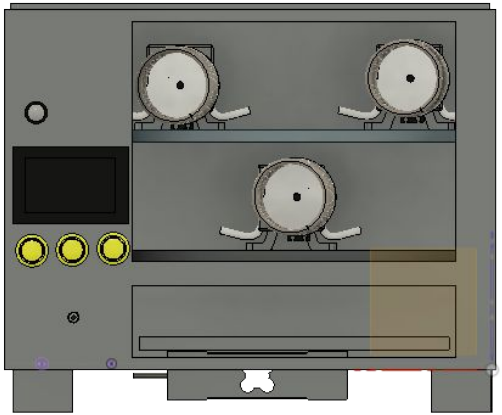


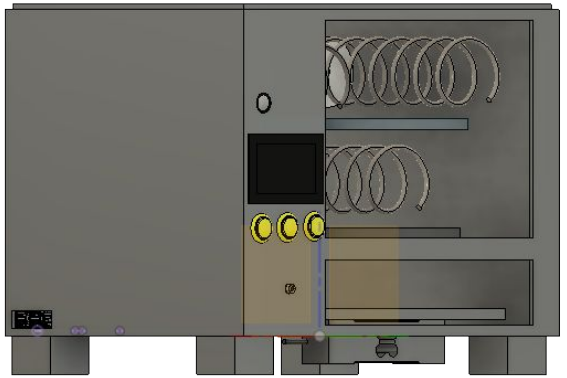
Visit our website

http://ec2-54-87-72-111.compute-1.amazonaws.com

https://smart-happyvending.herokuapp.com

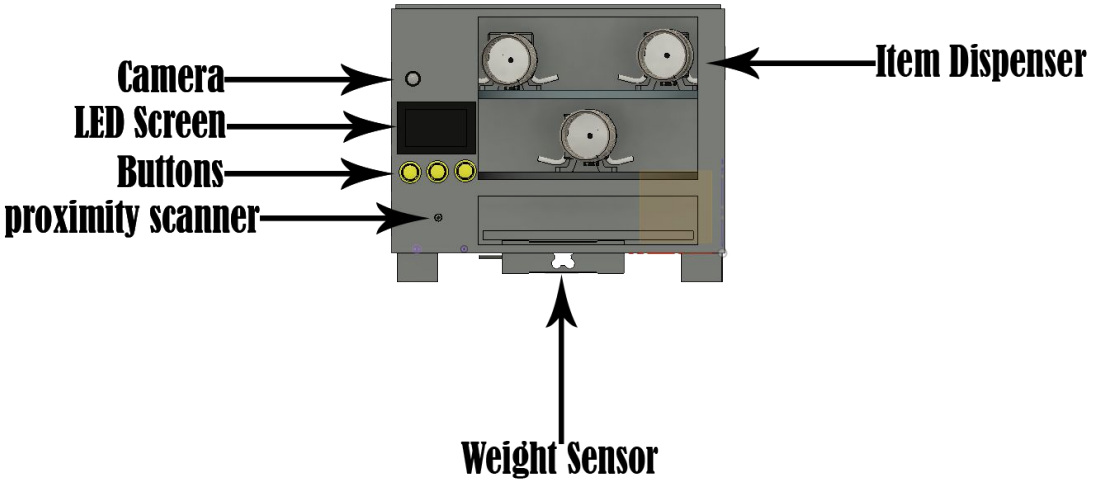
Overall Design





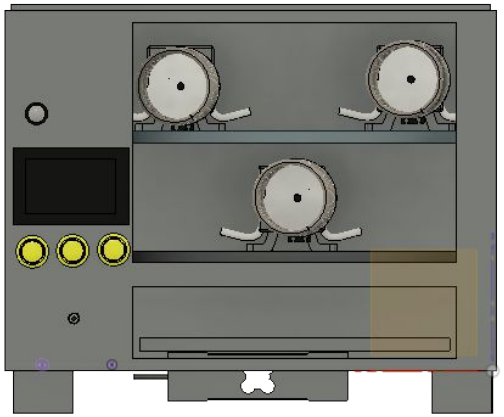
Device Design

- Full Closed Structure
- Rigid Wood body
- PIR controlled Power distribution
- LED Display



User Experience

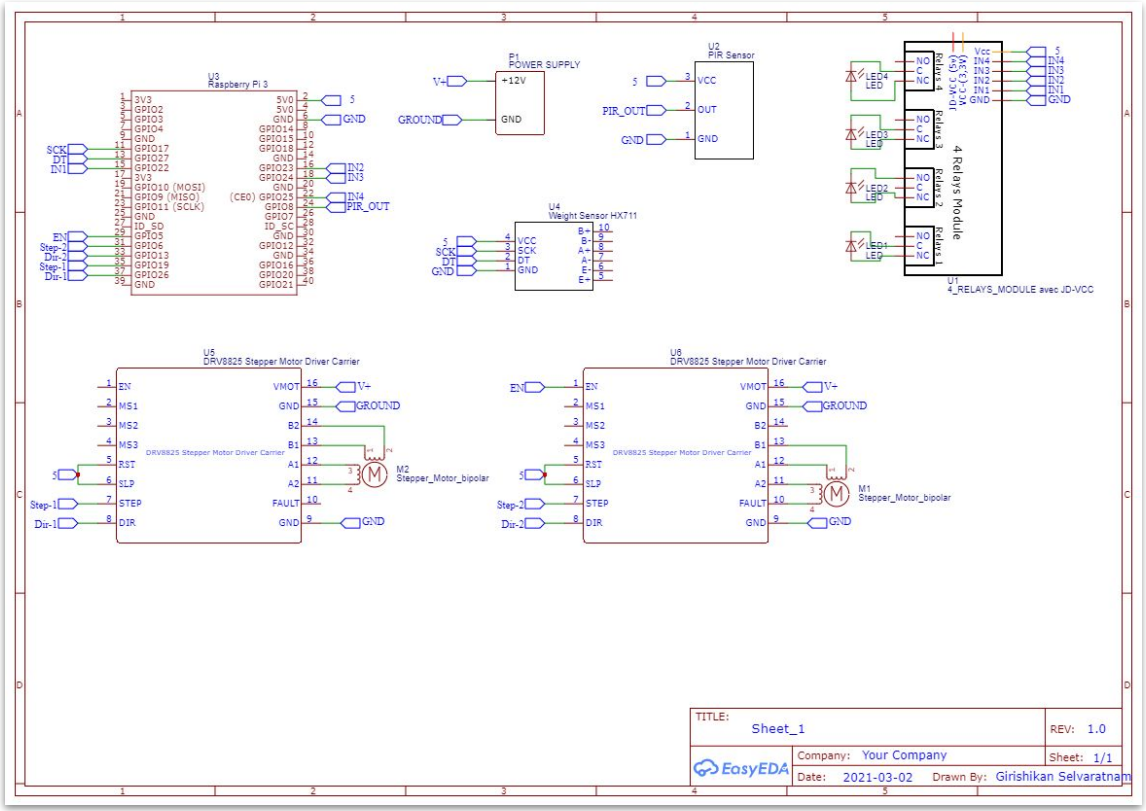
- LED Display to interact
- Easy Set up Just have to interact with phone
- 24hrs service
- Easy Cancellation at any time
- LED strips inside to make sure the items are visible



Hardware design Aspects

- Scalability
  - Multiple Devices Single server
  -
- Reliability
  - Weight Sensor to make sure the dispensing of an item
  - Stepper motor to make sure the Quantity of the item
- Security
  - 6 pin number security to the door of the vending machine
  - Rigid wooden body(demonstration)/real vending machine is metal body

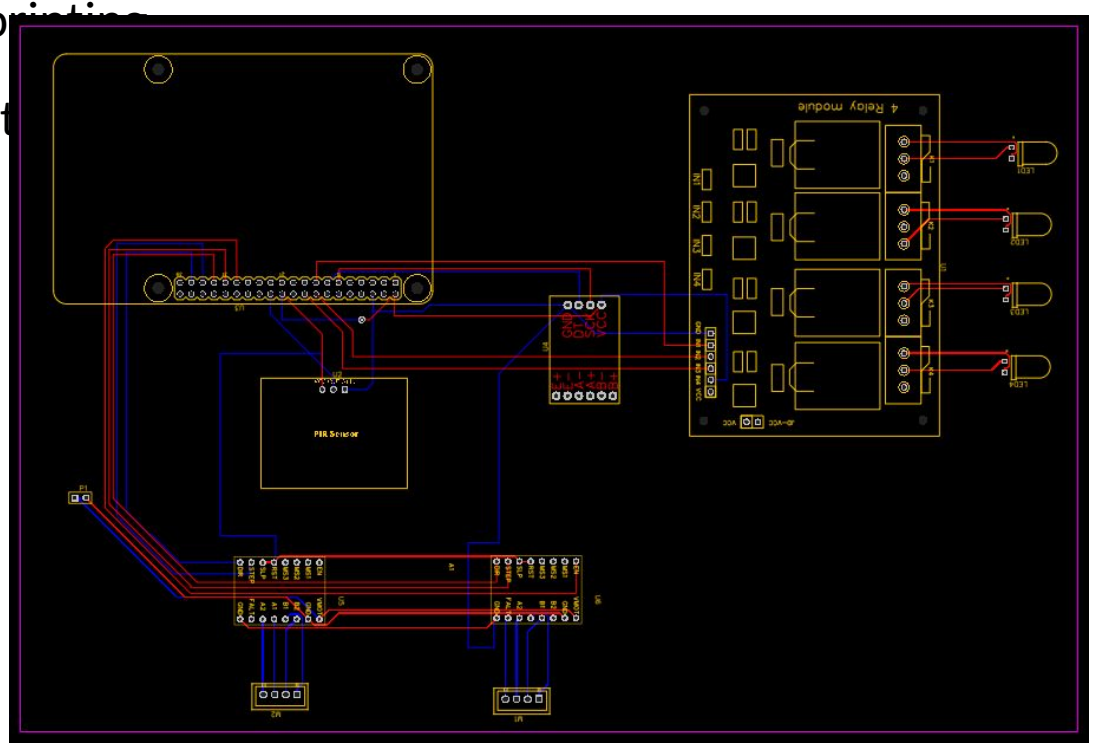
HardWare Design



PCB Design

Double Side printing

Use PCB Print



Hardware Testing

What we have To Test?

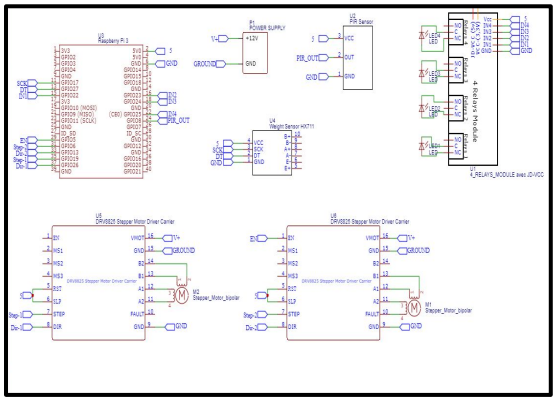
- Every Hardware Components
- Raspberry Pi 3 and Components

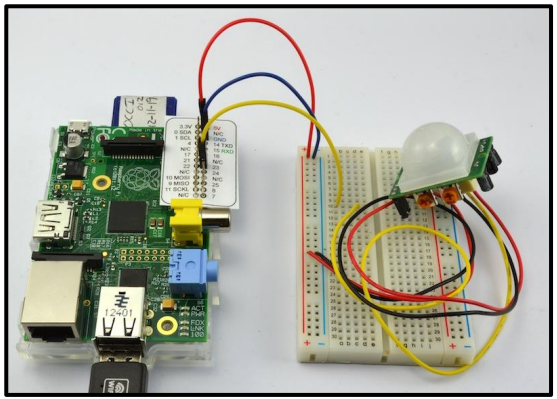
Why this Hardware testing is needed?

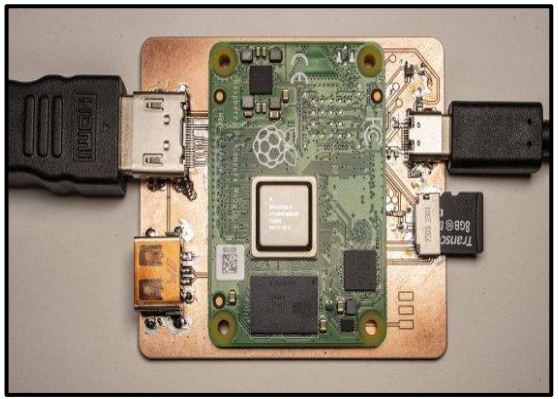
- High Risks involved
- Product will loose the market

Hardware Testing

Before Testing We have to check the circuit correctly working or not by with breadboards.



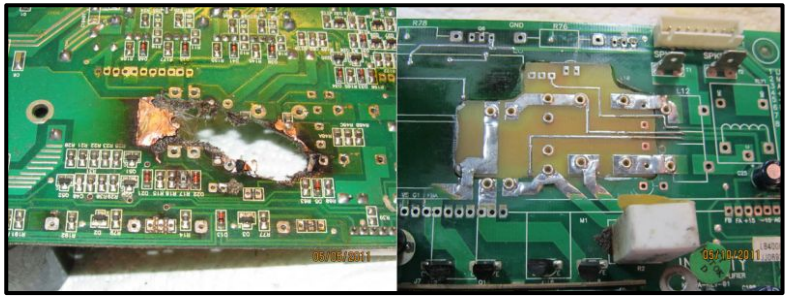




Hardware Testing

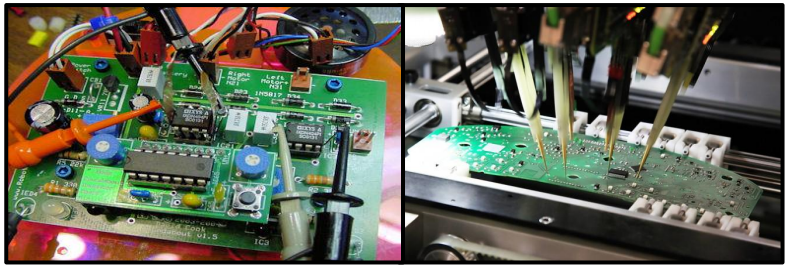
What we have To Test?

- **Board Testing**



❖ Why Need this testing?
- Board got burned due to power failure
- Require voltages are not coming

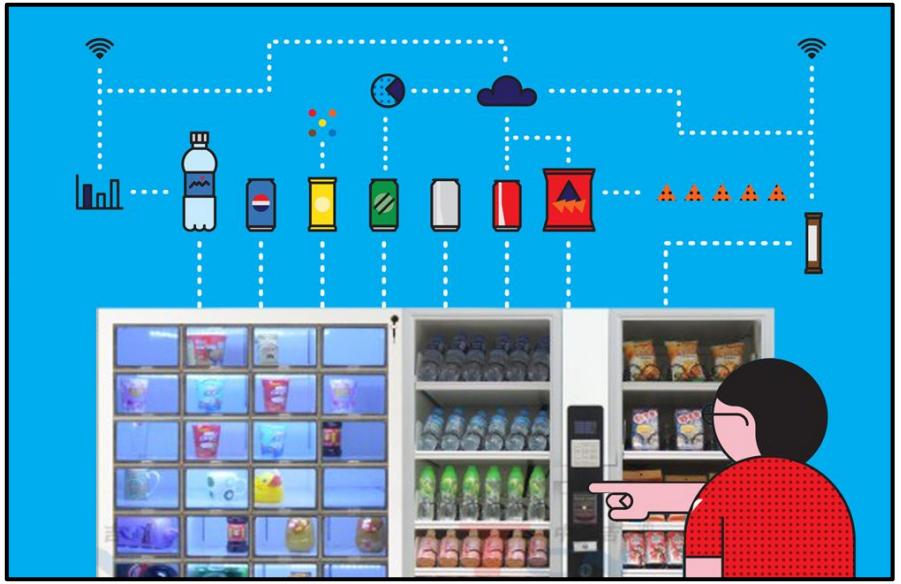
❖ Testing Methods
- Check the power sections using Multimeter
- Check the Connectivity by Blinking LED



Hardware Testing

- **Performance Testing**
  - Server side
  - Client Side

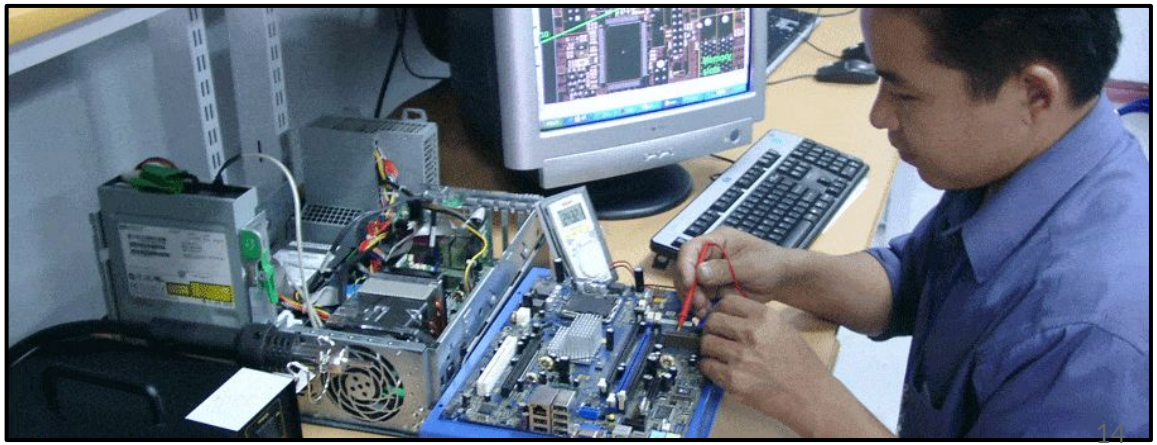
- **Embedded System Testing**
  - System Unit Testing
  - System Integration Testing
  - System Validation Testing



Testing Challenges

Difficulties we may Face through this Testing:-

- Hardware Dependency
- Software and hardware defects
- Reproducible Defects
- Continuous Software updates
- Defect Retest Difficulties
- Open Source Software



Software Aspects

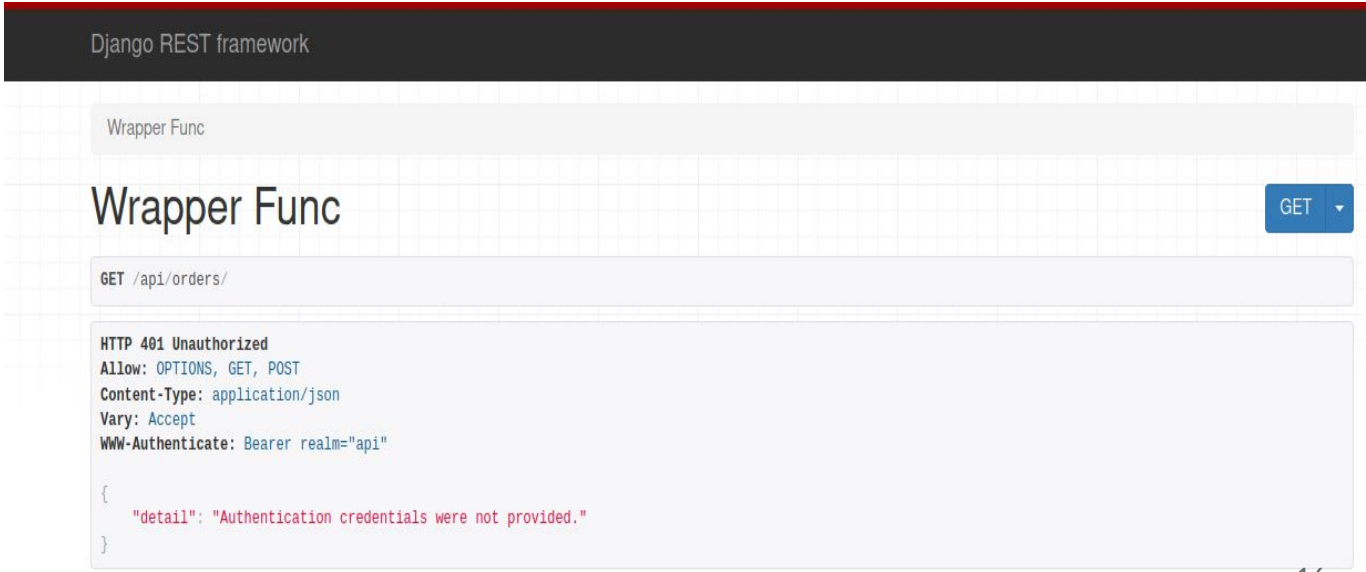
- Scalability
  - Multiple user access to the server
  - Pagination for the products
- Reliability
  - Email Authentication
  - Reset forgot Password
  - Paypal Payments

Rest API

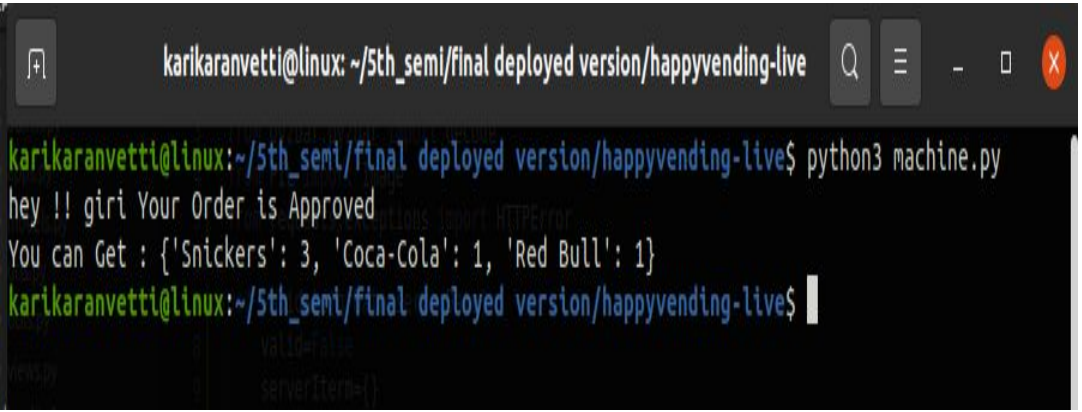
JWT(json web token) authentication

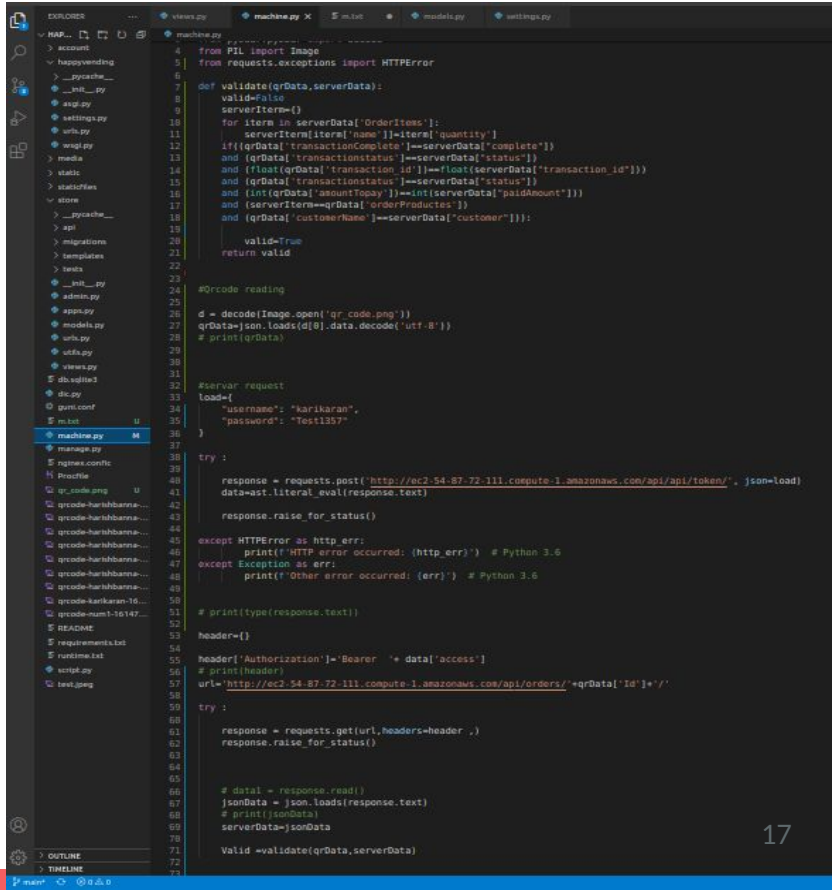
CURD operations available

With Rate limit



QR Code and Scanning Process





Demonstration Plan

Web Application to Browse the products

To check the Payment systems we have created a Paypal sandbox

A sample Vending machine to interact with

3 different Items to dispense

And refilling the items

Q & A