

Clean and Green



Architecture and Design Documentation

Web Based Application

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Functionalities Description:

User Stories/Personas:

- As a client, I want to register for an account so that whenever I make a pick-up request, the request has my address and name.
- As a client, I want to send a request to pick-up trash so that I can recycle them.
- As a client, I want to get notification when a driver picks up my trash so that I know when my request gets processed.
- As a client, I want to see my profile info in dashboard so that I can make sure the information is right.
- As a client, I want to send a new request once a pending request has been processed, so that I can send more requests over time.
- As a driver, I want to register for an account so that whenever I process a pick-up request, the request gets attached to my account.
- As a driver, I want to process a pick-up request made by a client, so that I can process it.
- As a driver, I want to see notification once I have processed a pick-up request, so that I know which requests are pending and which are not.
- As a driver, I want to see my profile info in dashboard so that I can make sure the information is right.

Functionalities:

SL No.	Name	Description	Value to the system
1	User Registration	New users will register by entering their first name, last name, email address, and password in a registration form. The form will check whether the entered value is valid or not.	Each drop-off and pick up request will be per user basis. So users will only be able to submit a request upon creating an account.
2	User Signing in	Registered users will sign in to the app by providing email address and password specified at registration.	After signing in, users will be able to send a request. If a user tries to sign in with wrong credential, he/she will be redirected to homepage and prompted to sign up.
3	User Profile	User information will be displayed in Profile page. Here, they will be able to add/modify their name, password, image, email address etc.	The app will maintain user information in the database and show user credentials in profile template. Also, since each request is per user basis, they will be able to see the status of their request in their profile.
4	User logout of the app	Users will be able to log out of the app by clicking a button	By logging a user out, the app will remove any generated cookies associated to the user and prevent any data leak.

SL No.	Name	Description	Value to the system
5	Submit a 'Pick-up' request	Users will send a 'pick-up' request in need of trash removal.	Users will provide actual address, types of recyclables, and number of containers to send a 'pick-up' request. This request is per user basis, meaning a user will be able to keep track of their request.
6	Google map API	Upon entering the address, google map API will ping the location.	Google map API will allow users to pick a particular location and it will show suggestions of locations.
7	Seperate Template for two types of Users	Two types of users are: Client and Driver. Clients will only be able to send a pickup request, and Drivers will only be able to see a list of request made by 'Clients' and process to pick up.	The system does not allow a client to see requests made by other clients and Drivers are only able to see a list of request made by any client.
8	Clients are able to send a new request only if they don't have any request pending	Attempt to send a pickup request where one request is not processed yet, will show an error message.	This functionality makes sure that clients have only one request to be processed at a time.
9	Processing a request	Drivers will select a pickup request from sidebar, and clicking button "Process" will process a request.	This functionality changes a status of a pickup request as processed.
10	Removing old processed request	Added a timer so that an old processed requests get removed from client and driver view	This functionality makes sure that the map does not get cluttered with old pickup requests.

SL No.	Name	Description	Value to the system
11	Showing markers on appropriate location on map	Custom pointers are rendered to the view and clicking the pointers will show the address associated to the pointer.	The map of client and driver side shows custom pointers on specific location showing the address.

Technology/Structure:

Backend technology: Node.js (a JavaScript runtime environment)

Backend web framework: Express.js

Frontend technology: HTML, CSS, JavaScript

Frontend web framework: Bootstrap

Web platform: Google Cloud Platform (GCP)

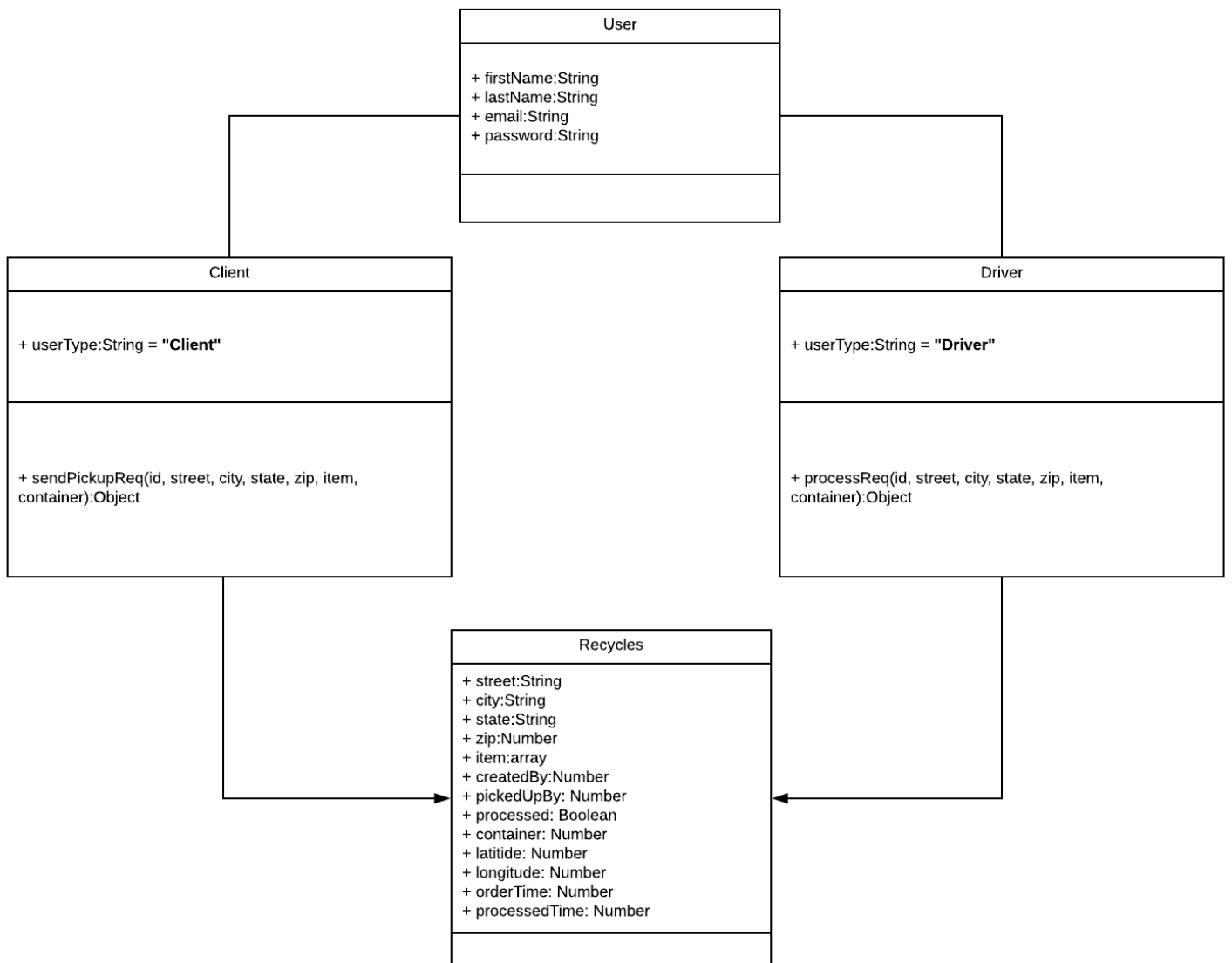
Database: Google Datastore

Other libraries and modules we'll be using:

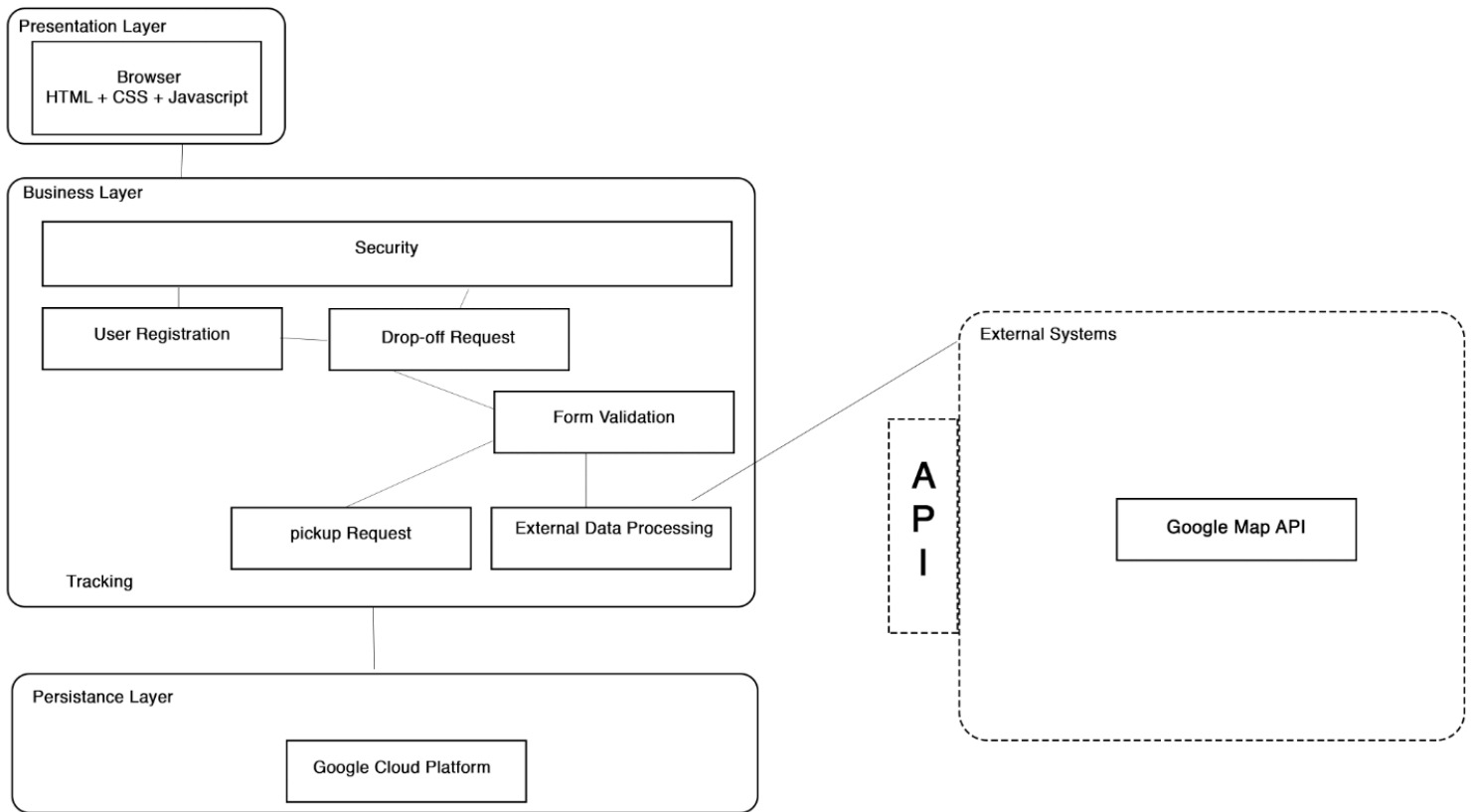
Sl. No.	Name	Functionalities
1	pug	Templating engine for Node.js
2	passport	Library for authenticating users
3	passport-local	Creating local strategy for user authentication using passport
4	express-session	Creating session for users
5	cookie-parser	Setting up a cookie that keeps track of user data
6	body-parser	Library for getting form data in a JSON format
7	express-validator	Library for validating form input before submission
8	mocha	Library for automated testing
9	chai	Library for writing unit tests
10	gulp	Library for automating building app components

UML Diagram

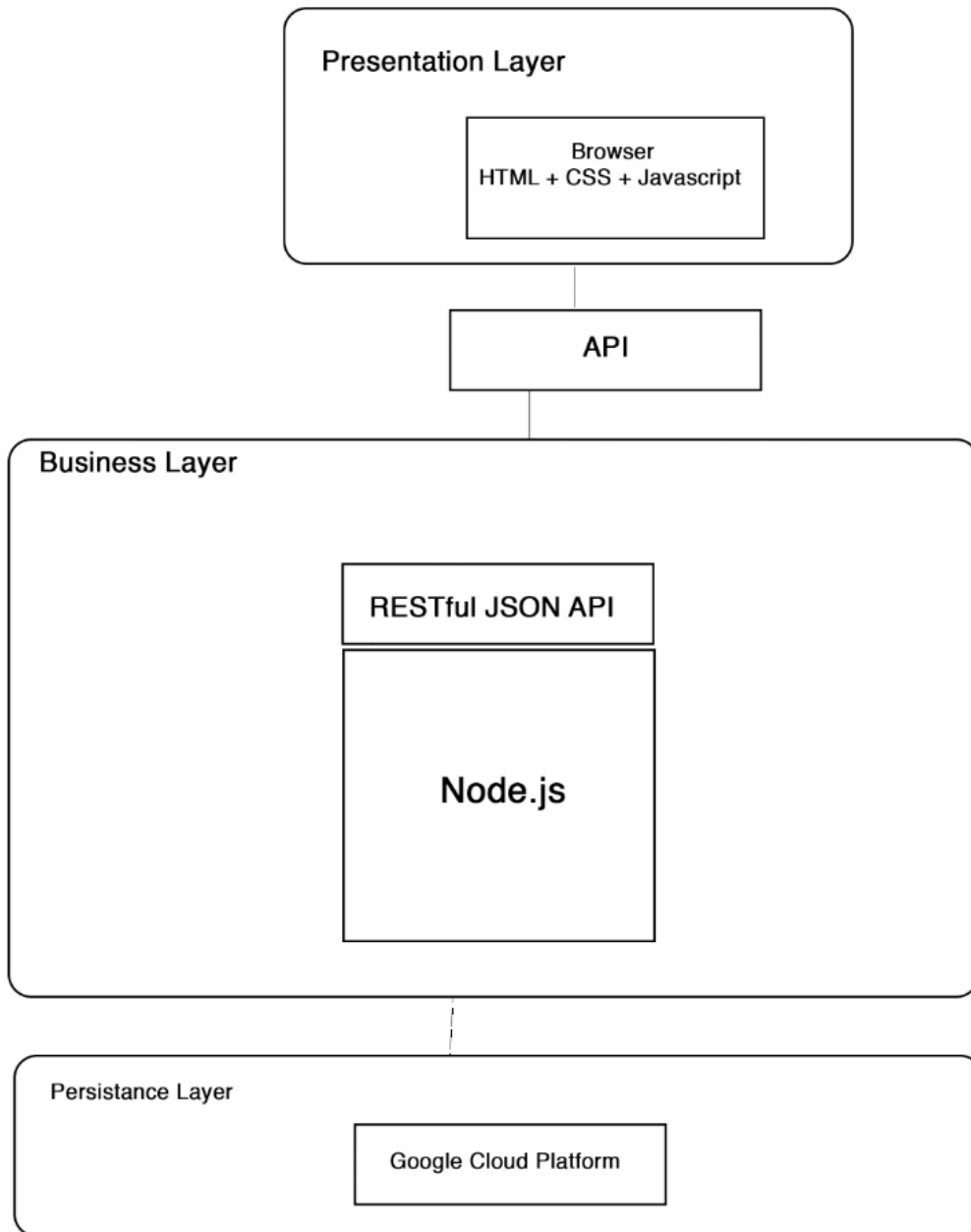
Clean and Green Class Diagram



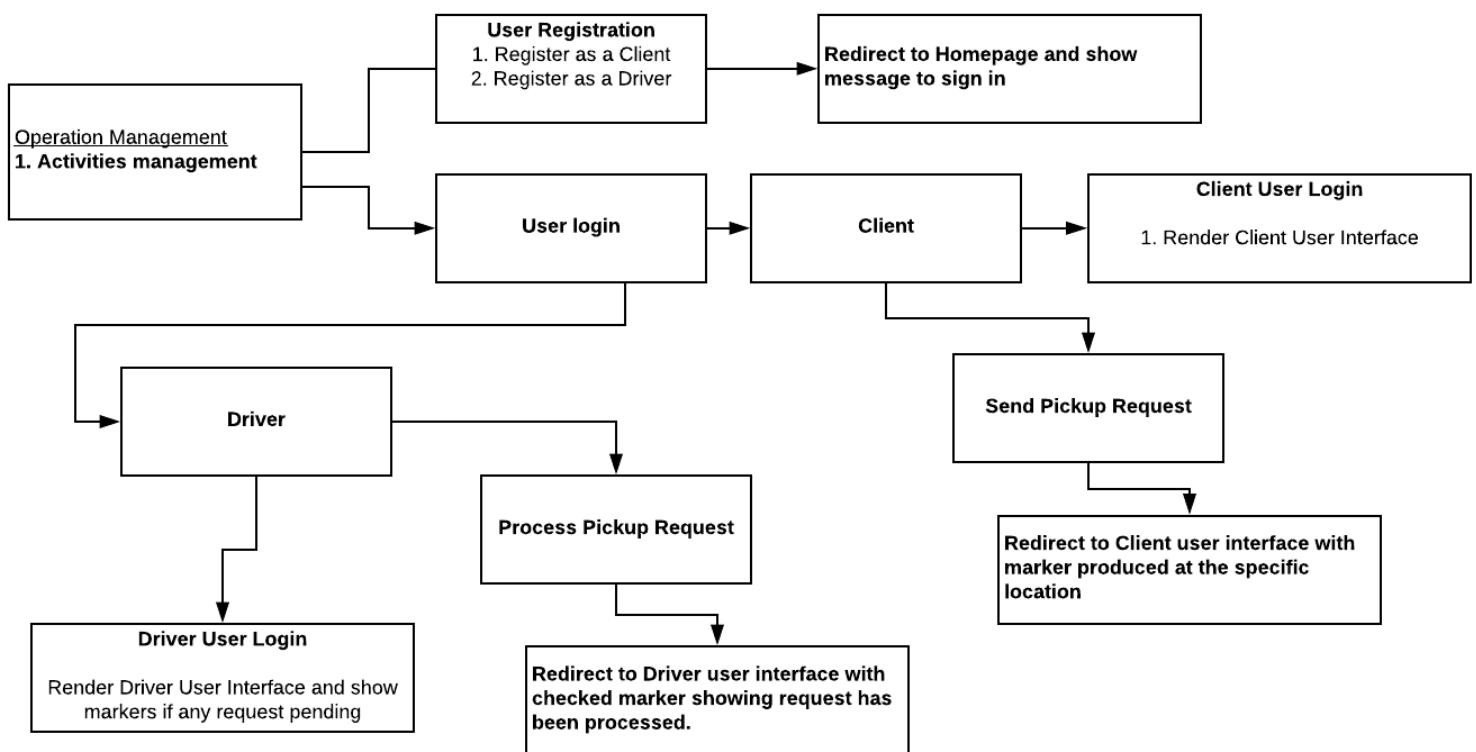
Clean and Green Logical View



Software Architecture



Conceptual View



Infrastructure View

Infrastructure Diagram

