TRIPWISE

by JUNIHERS Group 5

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Executive Summary:

Tripwise is a complete trip planner with an expense distributor during the trip which handles the trip smoothly between a group. Our web app suggests the fastest and the cheapest flight option, reasonable hotel suggestions which are in the vicinity of arrival or departure mediums, a well planned itinerary to visit all the major tourist attractions in the best possible way. The user can also create trip groups to manage splitting of expenses between the co-travelers. We wish to improve the features, populate more data and scale the app.

Requirements:

- ➔ SignUp/Login/Logout
- ➔ Trip Planning:
  - ◆ Selecting route of travel: Suggestion of best possible route i.e. cheapest and fastest
  - ◆ Suggestion Hotels: Comparison of various hotels on the basis of cost and convenience i.e. vicinity of arrival or departure mediums.
  - ◆ Itinerary of the trip: Day and hour-wise optimized trip plan covering the major architectural, food attractions.
- ➔ Splitwise:
  - ◆ Creating a trip group
  - ◆ Adding expenses paid by a particular member for some members of the group.
  - ◆ Splitting the expense between those members.
  - ◆ Displaying the net amount that one needs to pay or owes someone.

- ➔ **Tech stack**:- Backend-Python: Flask, SQLToolkit: SQLAlchemy, FrontEnd: React

Design and Architecture:

We have used a normalized SQL Database.

The trip planning features are a guest feature i.e user need not sign up to be able to use them. Whereas, the Splitwise feature is a user feature.

We have used efficient algorithms and data structures to calculate the best possible suggestions for flights , hotels, generate the itinerary and split the expenses..

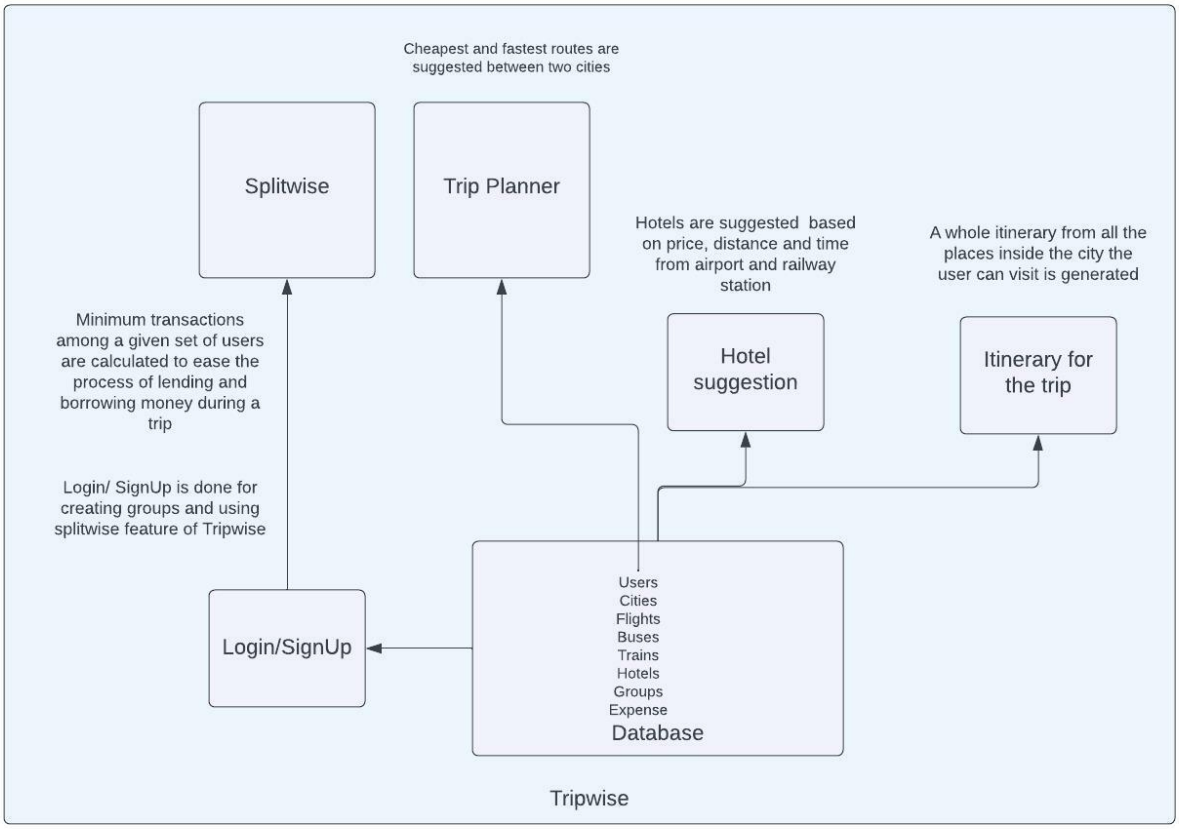
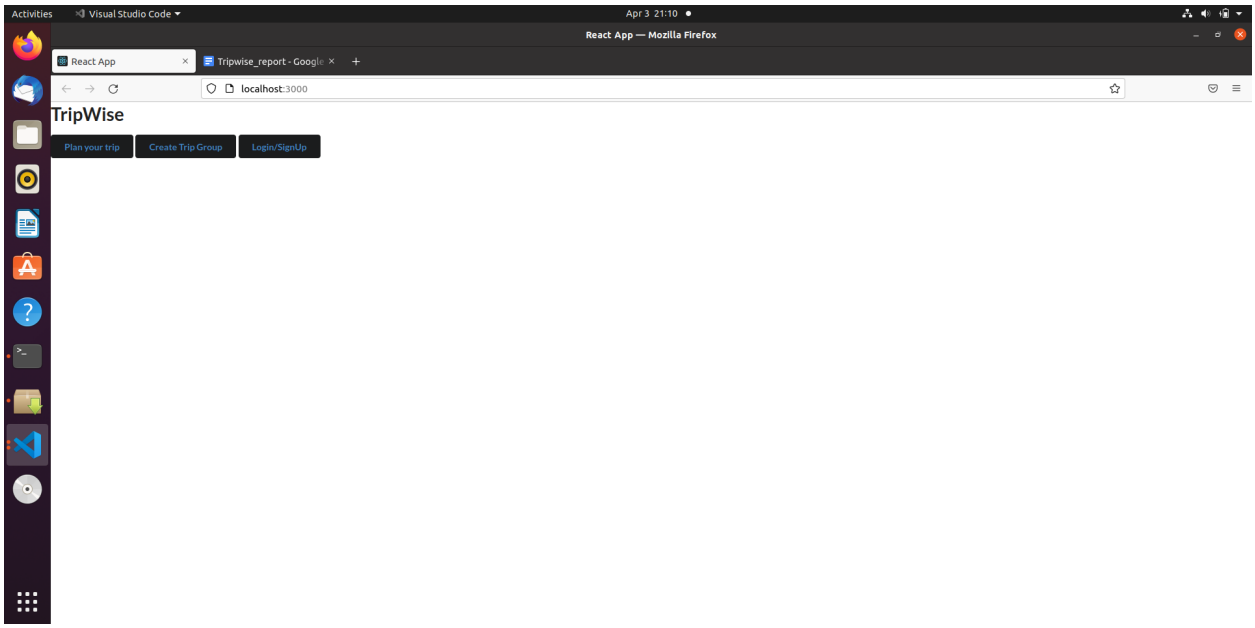


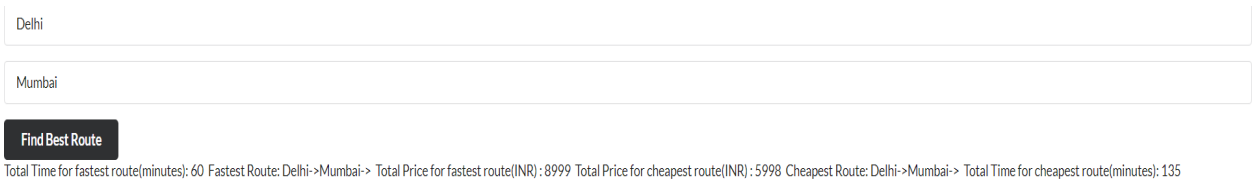
Fig: High Level diagrammatic representation of architecture of Tripwise

Snippets:

Home Page

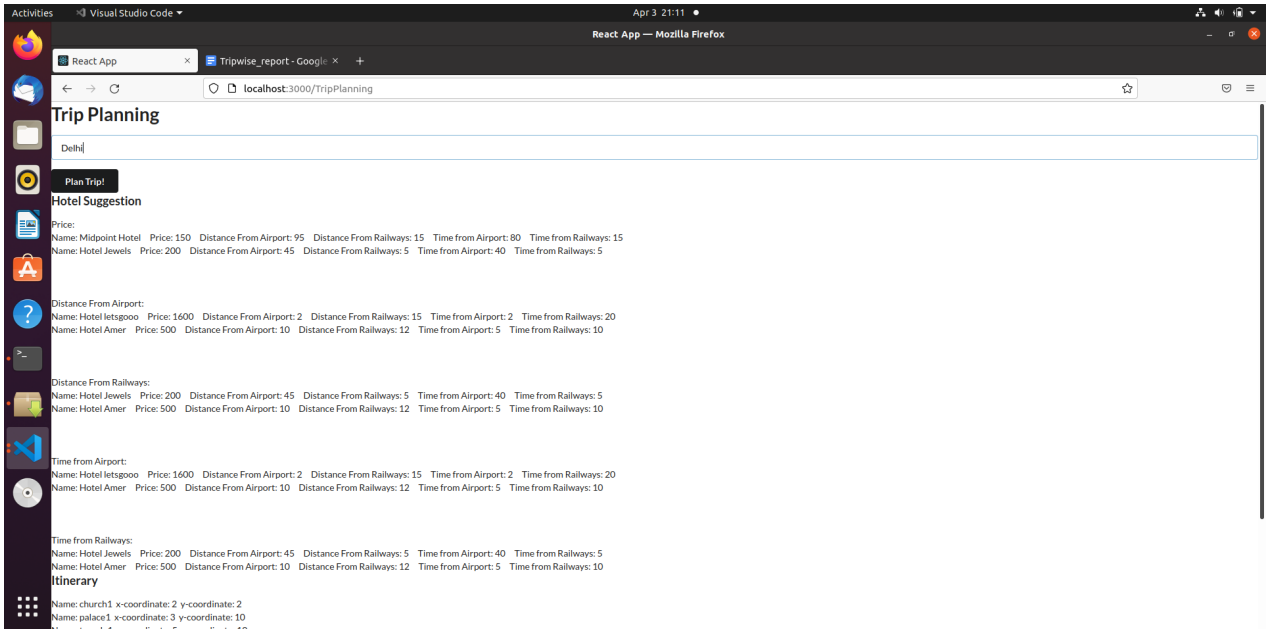


Suggesting fastest and cheapest routes between two cities



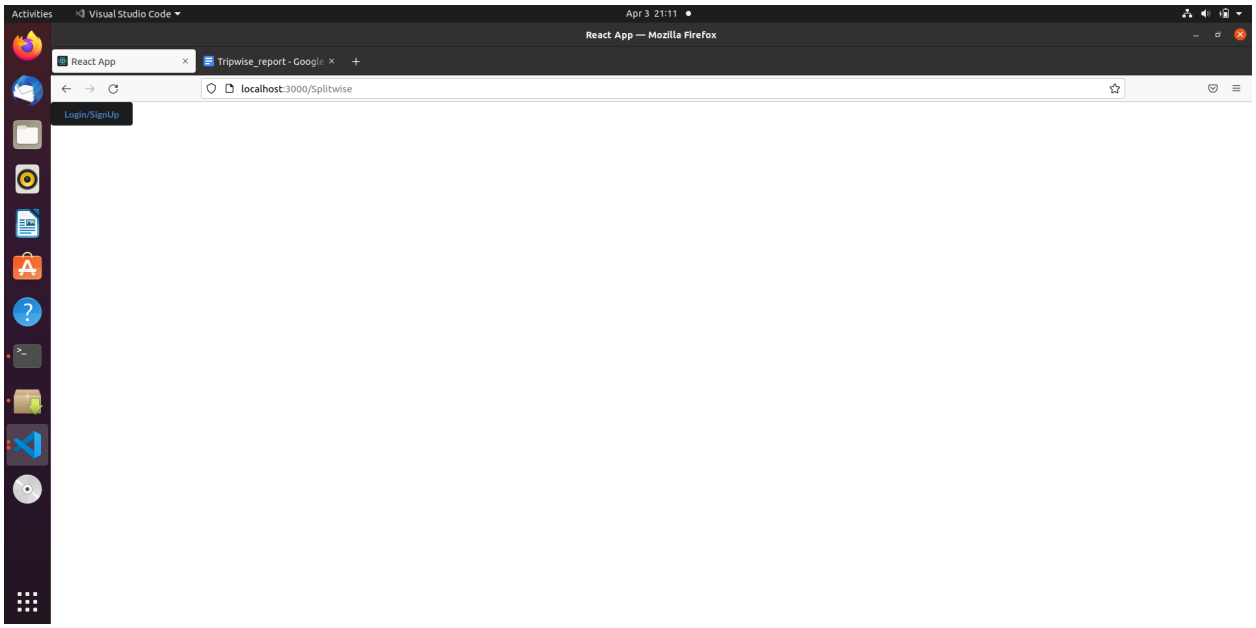
Total Time for fastest route(minutes): 60 Fastest Route: Delhi->Mumbai-> Total Price for fastest route(INR) : 8999 Total Price for cheapest route(INR) : 5998 Cheapest Route: Delhi->Mumbai-> Total Time for cheapest route(minutes): 135

Trip Planning- Hotel Suggestion based on price, time and distance from airport and railway station

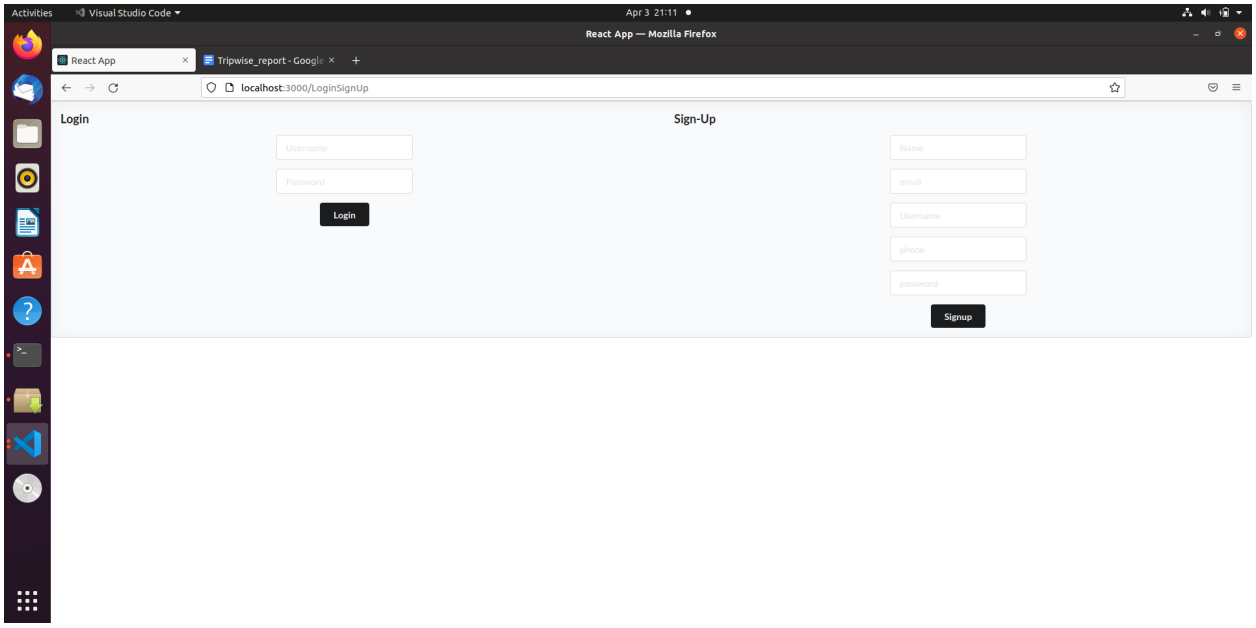


Trip Planning- Itinerary within a city- based on distances between various places(Here the coordinates of places can be used in calculating euclidean distance and improving UI based in that)

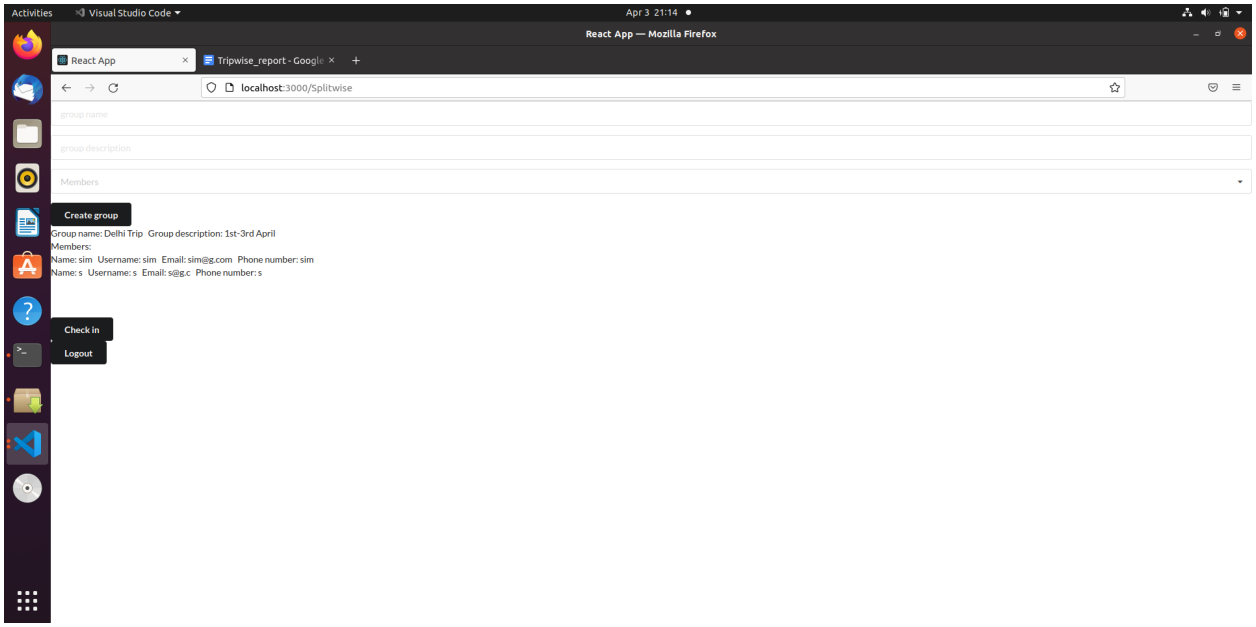
Unable to access Splitwise without Login



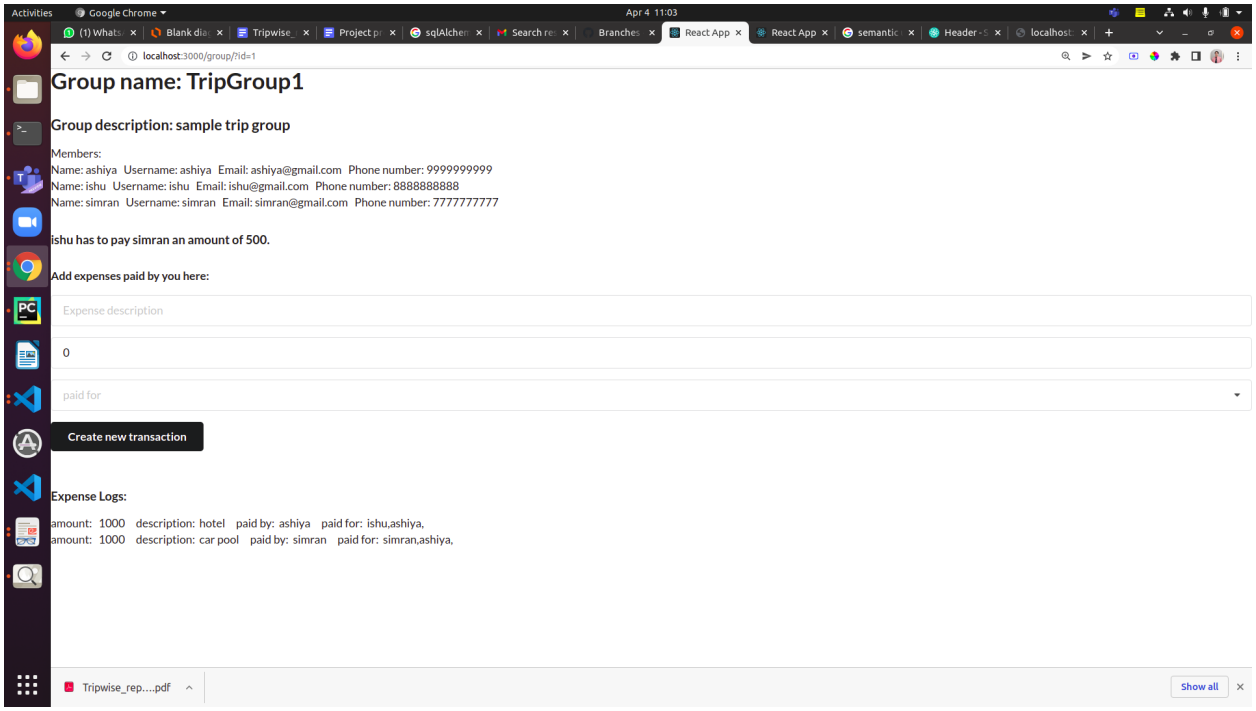
Login/SignUp



Creating a new Trip Group and viewing all groups of the user



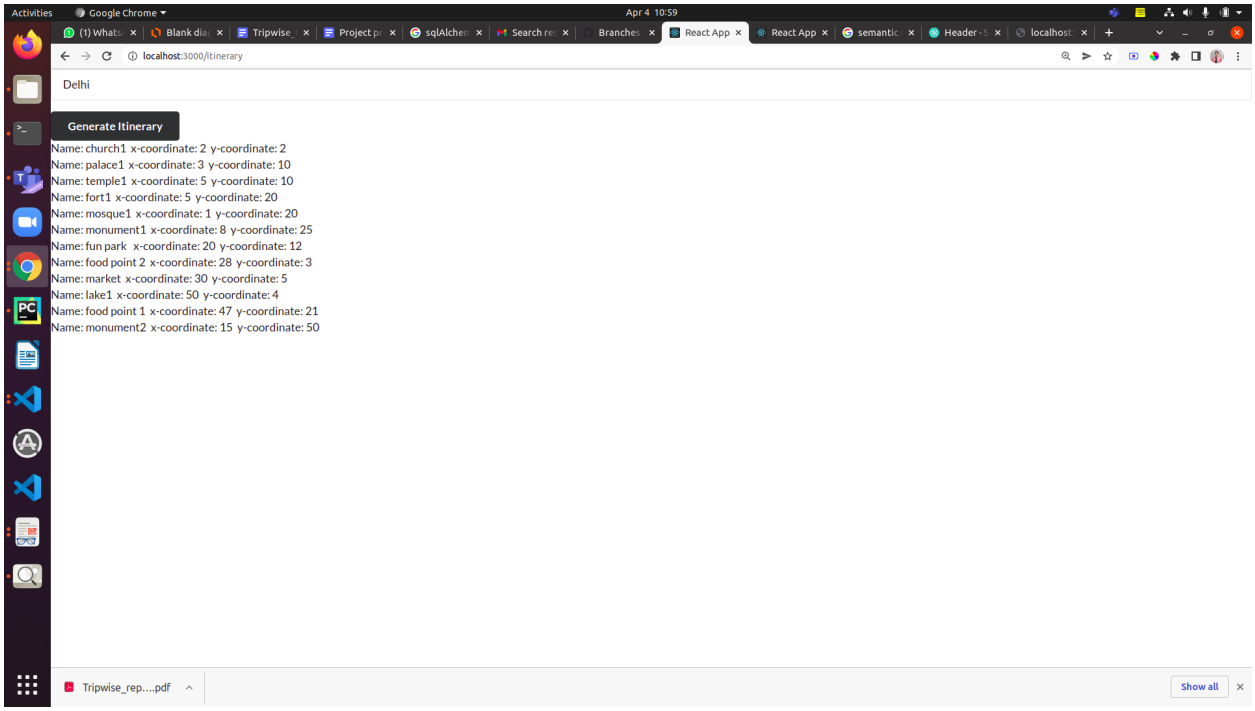
Adding/viewing expense logs to a group. This also simplifies group debts to reduce total number of repayments between the group members



Future Scope:

- We have implemented minimal UI just to show our backend computations and logic. In the near future, there's a lot of scope of improvement in the UI of Tripwise.
- For this version of Tripwise we are using dummy data for simplicity of implementation. The first improvement in Tripwise shall be implementing its existing services on real life data.
- This version of tripwise is used in planning trips and suggesting routes and hotels and other facilities. To improve tripwise in future we can integrate tripwise with various online flight booking systems and airlines to complete the bookings made on tripwise.

- There’s a scope to integrate the hotel industry as well with tripwise. This also has



  the potential to form a business model for tripwise where bookings made for a particular hotel via tripwise will result in a source of profit for Tripwise.
- Expanding tripwise to more areas especially to lesser known areas of rural India. We can use tripwise as a platform to advertise hidden and lesser known tourist spots in India. This will attract tourists who are interested in discovering new places and also will be beneficial in bringing more employment opportunities in the tourism sector in rural places.
- Expanding Tripwise services to travel within a city like suggesting minivans services and taxi services.

Challenges faced during project:

- We initially faced challenges in planning out the project and sticking to the plan. It took 1-2 weeks to get adjusted with the plan we proposed for Tripwise. This project experience taught us how to properly plan out tasks in a project and how to collaborate as a team.
- Apart from this as a team we initially had lack of experience in web development and Flask framework was new to all, due to this we had to spend time learning flask and looking at several references and then implementing it. As we were learning and implementing both in a short period of time, we ran into a lot of bugs and we had to work together in debugging.
- We were facing issues with semantic import and were unable to get expected UI. After spending time looking for a solution to this issue we found the reason

behind this issue. The main reason for this is an extra ";" at line 19990 of semantic.min.css file.

- Working on Tripwise was a great learning experience even with all the challenges we faced, we all feel that the learning outcome we got in these weeks was really worth it.

References:

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- ➔ Weighted Graphs and Dijkstra's Algorithm
- ➔ Query API — SQLAlchemy 1.4 Documentation
- ➔ Flask
- ➔ https://github.com/Semantic-Org/Semantic-UI-CSS/issues/75