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University الأميـــرة سميّـــة
for Technology للتكنولوجيا

System Analysis and Design Project

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One Budget Application

Table of Contents

Introduction

One Budget is an application that enables tourists to maintain a specific budget when travelling. Upon opening the application, the customer is required to either log in with their existing account or create a new account. When all their information is verified, they are asked to input their destination, trip duration, and most importantly, their trip budget. After that, they are also asked to enter a list of interests that will help the application suggest the right places. Finally, the customer receives a plan of activities and places to visit during their trip duration that fall within the budget they entered. However, if the plan does not meet their needs, they are provided with an option to create their plan from a list of places the application suggests that fall within the customer's budget.

The application also allows business owners to create their own page. When a business owner creates their own page, they are then able to include the place's price range, location and update the page to include any extra information. In return, they can get feedback from customers about their business through written feedbacks and see any orders if the business provides it.

The main stakeholders in this application are the customers and business owners.

Project Overview

The Project Scope:

The goal of this application is to create a platform that solves the problem of maintaining a specific budget when travelling by creating a travel plan fully curated to meet the customer's needs. Not only that, but the application could also provide local businesses with great exposure and increase demand on them.

In order to achieve these goals, several tasks have to be done:

1) Researching about the topic of travelling and maintaining a budget.
2) Surveying potential customers and business owners about problems they face.
3) Analyzing the results from the survey and interviews.
4) Create user requirements.
5) Create a business case.

Once all these tasks are done, the outcome should be an application that acts as a mini-tour guide to help the user with exploring new places of the visited country depending on their budget and interests

Business Case:

1) Purpose
   Helping the users to visit places they like within their budget
2) Project description
   An application that enables the user to enter their budget, location, duration of stay, and personal interests, and in return, they are provided with a list of restaurants, hotels, and activities that fall within their budget to make their traveling experience to a new country easier
3) Issues the project will solve:
   Maintaining a budget while traveling
   Helping small/local places by recommending them.
4) Duration:
   3 months
5) Risks of doing the project:
   Availability and usability malfunctions
   Does not meet user requirements
6) The measure of success:
   How many requirements were met
7) Alternatives:
   Other apps with individual services, such as apps for hotels, and apps for restaurants.

Project Planning

Gantt Chart:

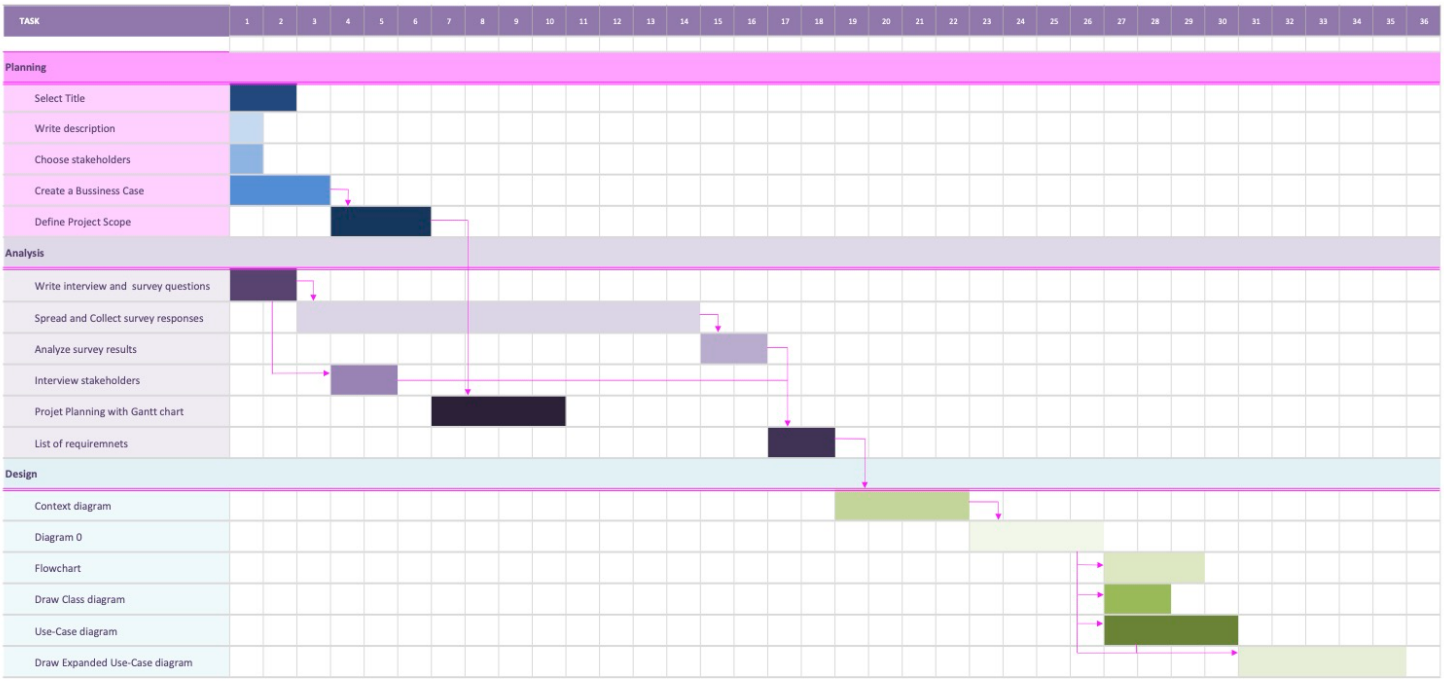


Figure 1

Figure 1 displays a Gantt chart that includes all required tasks and their dependencies for the project and how long each task took. For example, we can see that ‘Spread and collect survey responses’ took the longest time to finish with 12 days and was dependent on the task before it, ‘Write interview and survey questions’,

Fact Finding:

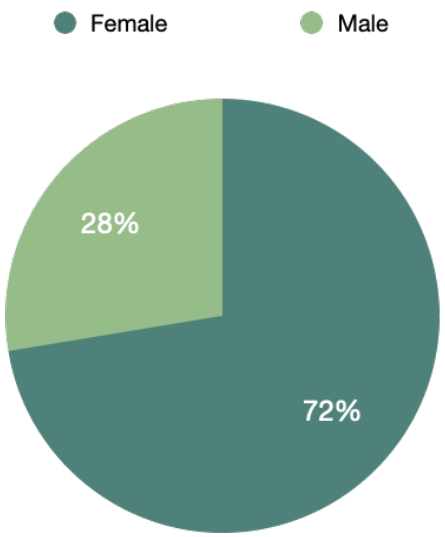
Survey:

In order to gain potential customer input onto the application, we created a survey asking the following:

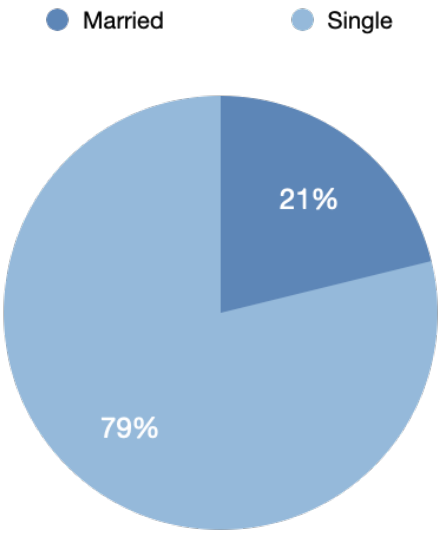
1) Gender
2) Age
3) Social Status
4) How often do you travel a year?
5) Before or while traveling do you use any travelling apps?
6) If you chose yes write them down:
7) How often were you able to stay within budget while traveling?
8) What are the problems you face when visiting a new country?
9) What are some bad experiences you faced during your travels? If any.
10) By reading the app's description do you think it will help the user with staying under the budget?
11) Before travelling do you prefer having an already arranged plan for activities to do? Or do you prefer doing it yourself?
12) Do you suggest adding any improvements to the app?

After receiving 100 responses, these were our findings from the survey:

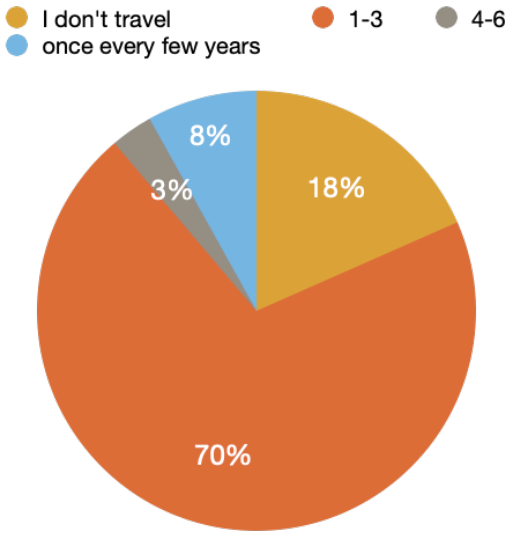
Gender:



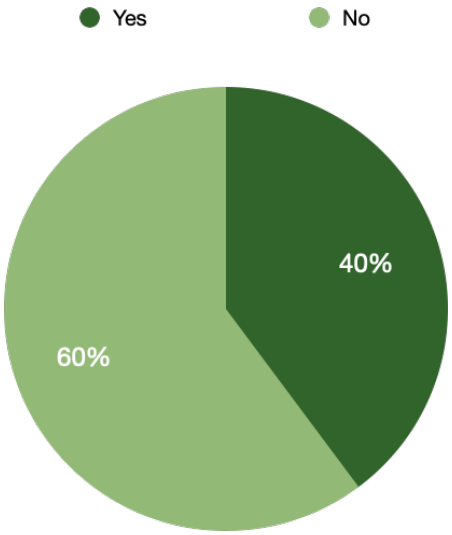
Relation status:

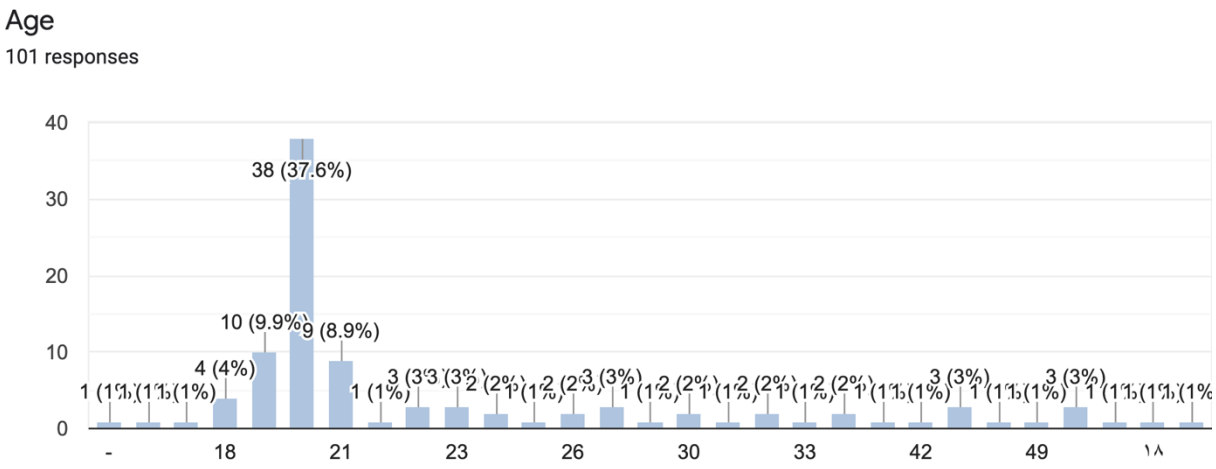


How many times do you travel?

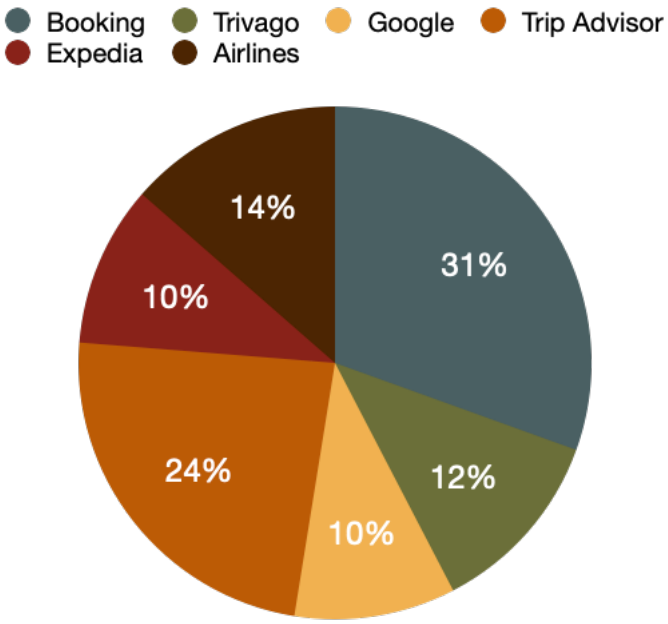


Do you use travelling apps?





Travel apps used by users:



Problems faced when visiting a new country:

- Finding activities
- Maintaining a budget
- Finding restaurants
- Age-suitable places
- Language barriers

App improvements:

- transportation/car rentals
- age suitable options/family friendly
- suggest halal restaurants
- translator
- have the option to plan both individual days and full trip
- readjusting budget
- available in Arabic and English
- dynamic budget based on previous trips

To summarize our findings, the majority of respondents travelled from 1-3 times a year, and the majority of them do not use a travelling application. However, the ones who do, they use applications like Booking and TripAdvisor, which are concerned more with providing reviews to the customers. As for the problems faced when travelling, many respondents chose finding activities and maintaining a budget as two of the main problems they face. When it came to improvements or additions to the application, many suggested an option for transportation or car rentals, which is something we took into consideration with designing the application.

Interview:

We were able to conduct one interview with a restaurant owner, who preferred to keep his name and the business's name anonymous. Nonetheless, these were our findings from the interview with the questions asked:

Q: Now knowing our app idea would you cooperate with us and include your restaurant in our app? Why?
A: Yes, I would, because by that I would be able to know the age groups of my customers.

Q: Would giving tourists a coupon for your restaurant affect the place badly? and elaborate.
A: On the contrary, since more people will come to make use of the coupon it would thrive the restaurant's business and give us more exposure.

Q: Do you think having your restaurant on the application would affect your financial income? How?
A: Yes, it would, as I said earlier since more people will come and use the coupons, therefore a better income.

Q: As a restaurant owner what problems do you usually face with tourists?
A: Tourists usually want to try different kinds of foods like the local dishes of the countries they visit, away from burgers, pizzas, pastas, and similar foods. So, giving them that would satisfy both sides, since its beneficial for our restaurant's ratings and reviews.

From this interview, we can conclude that having business owners as an active part in this application would benefit them greatly, since it would give them more exposure and help them financially. Not only that, but the customer's also would benefit from the special offers and discounts found exclusively on the application.

User Requirements:

1. The user will create an account
2. For tourists they will insert the budget, location, and duration when building their profile.
3. Business owners will enter their business details as well as the category to create their page on the app.
4. The business will have to be verified by the administrator before the page is created.
5. Tourists will be provided with an option: either a prepared plan or unplanned schedule. Also, the option to either to rent a car or have a tour guide.
6. A list of suggestions will be provided for the tourist according to their budget, to choose from, if they had selected an unplanned schedule to make their own trip plan.
7. Tourist can filter the suggestions by activity, location, and rating.
8. The estimated time will be displayed for each activity.
9. Tourists can rate and write reviews on the business page.
10. Business owners and tourists can view reviews and ratings.
11. Businesses can update their page.

Project Diagrams

Context Data Flow Diagram

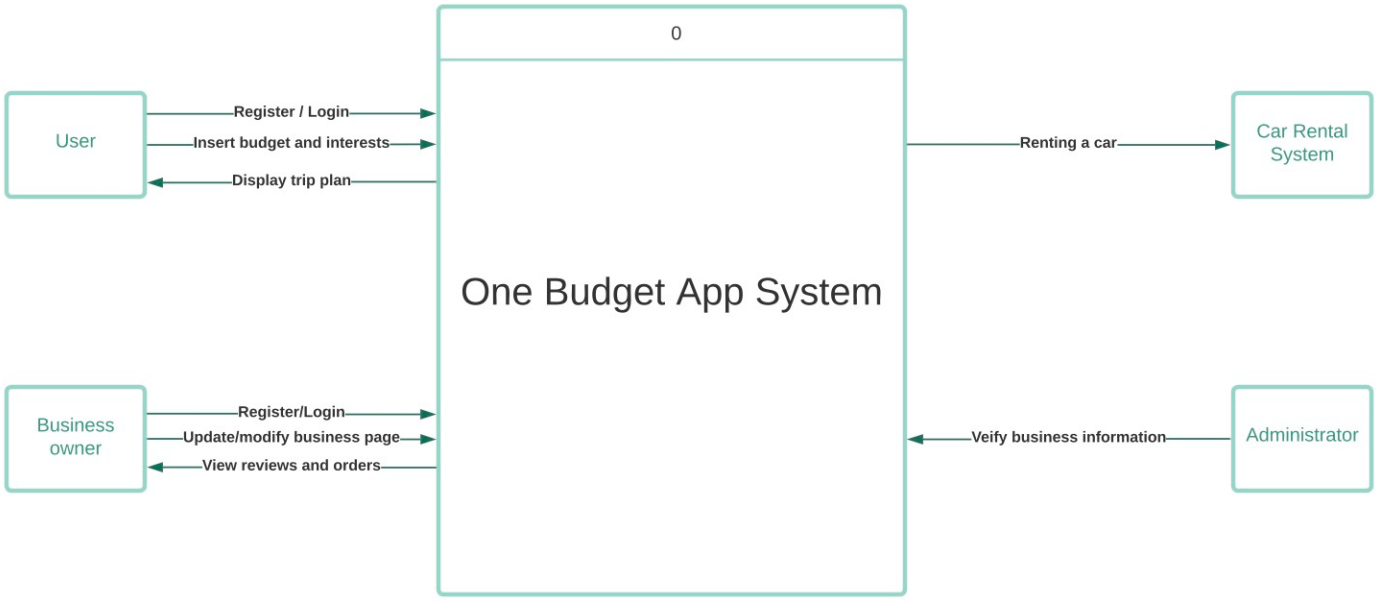


Figure 2

Figure 2 represents the context data flow diagram for the application. It has four main entities: users, business owners, administrator, and car rental system. Each entity has either an input into the system or an output from the system to the entity. For example, the user is required to input their registration or log in information and the details regarding their trip, and as an output they receive their trip plan.

Data Flow Diagram – Diagram 0

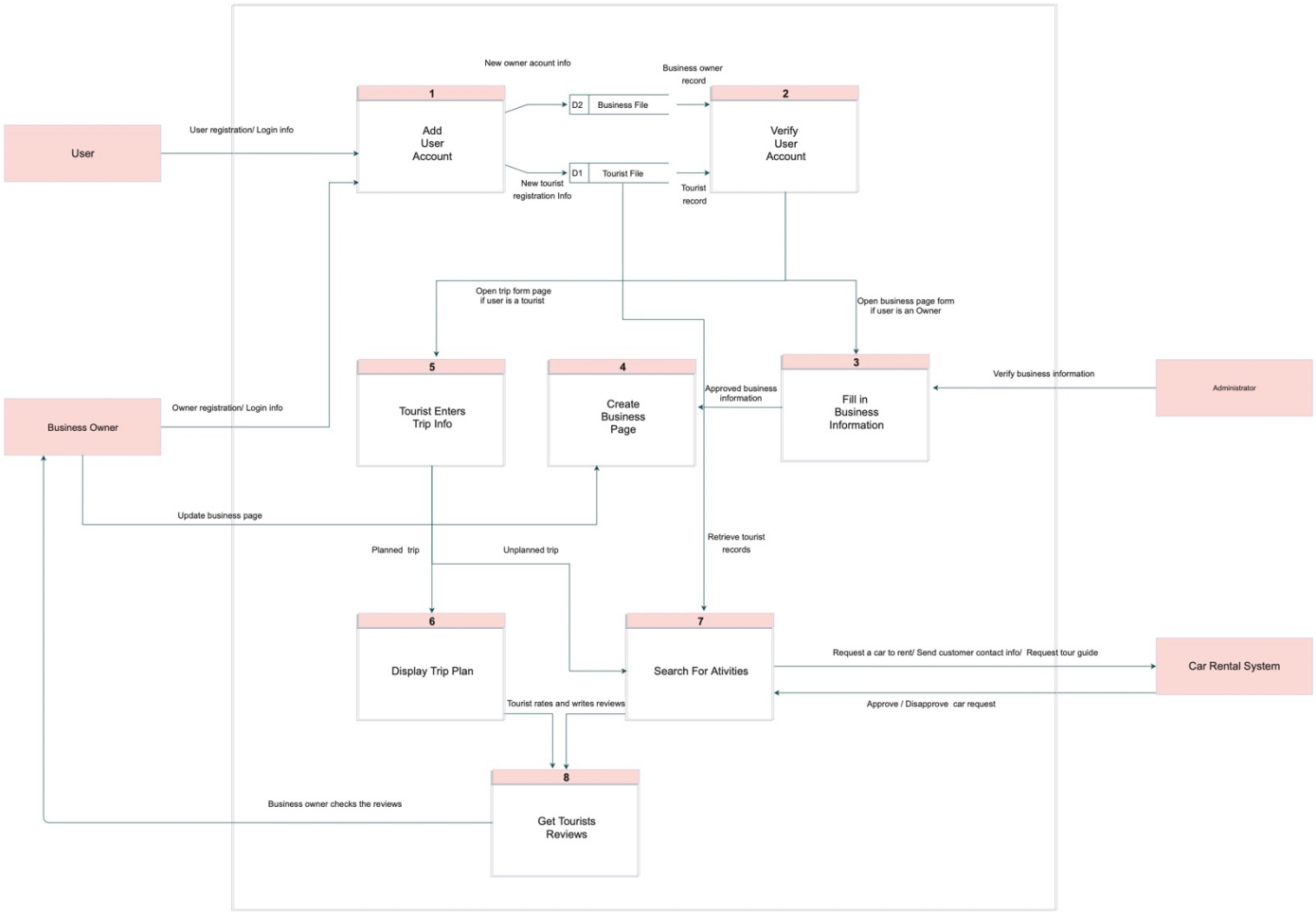


Figure 3

Figure 3 represents diagram 0 for the application. The diagram includes 8 processes that explain the internal workings of the application. For example, when the customer inputs their registration information, that information is then used by the 'Add User Account' process, where it verifies that the information entered is correct, and if it is, that information is stored in the 'Tourist File' data store.

Structured English:

```
IF signup button clicked THEN
{
        User enters the wanted information
        CALL Register () Function
}
ELSE
        User log in
END IF

Void Register (email, phone number, password1, password2)
{
        IF email is used by another user THEN
                Display “Email is taken. Try a different email”
        ENDIF
        IF phone number is used by another user THEN
                Display “Phone number is already taken”
        ENDIF
        IF password1 doesn’t match password2 THEN
                Display “Passwords don’t match. Try again!”
        ENDIF
        IF required field is empty THEN
                Display “Fill all required fields”
        ENDIF
       IF everything is correct THEN
              Display “Registered successfully”
        ENDIF
}
```

Decision Tree:

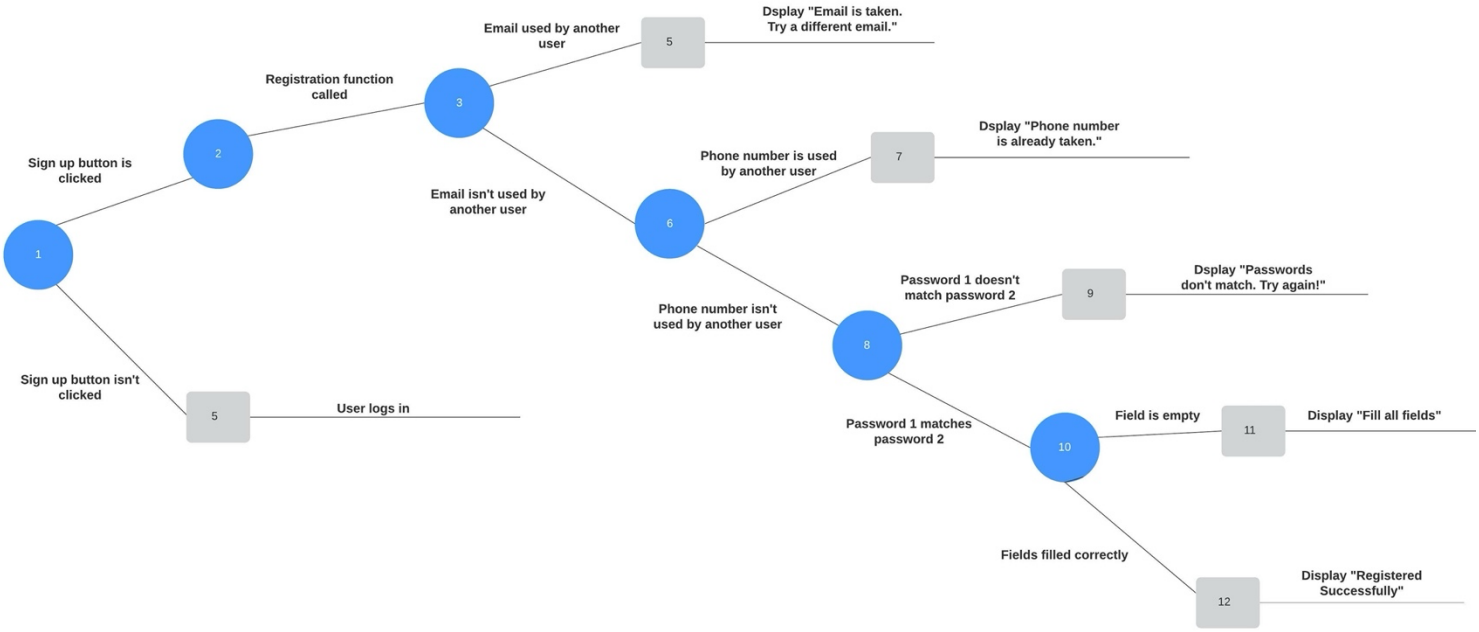


Figure 4

Figure 4 is a representation of the structured English above. This diagram represents the registration verification process. If the user clicks the sign-up button and enters their information, a registration function is called that verifies all information entered is unique and has not been used before, if it used, it requires the user to renter their information. If all information entered is correct and no fields are empty, the registration ends successfully, and if the sign up button is not clicked, this means the user already has an account and they log in normally.

Class Diagram:

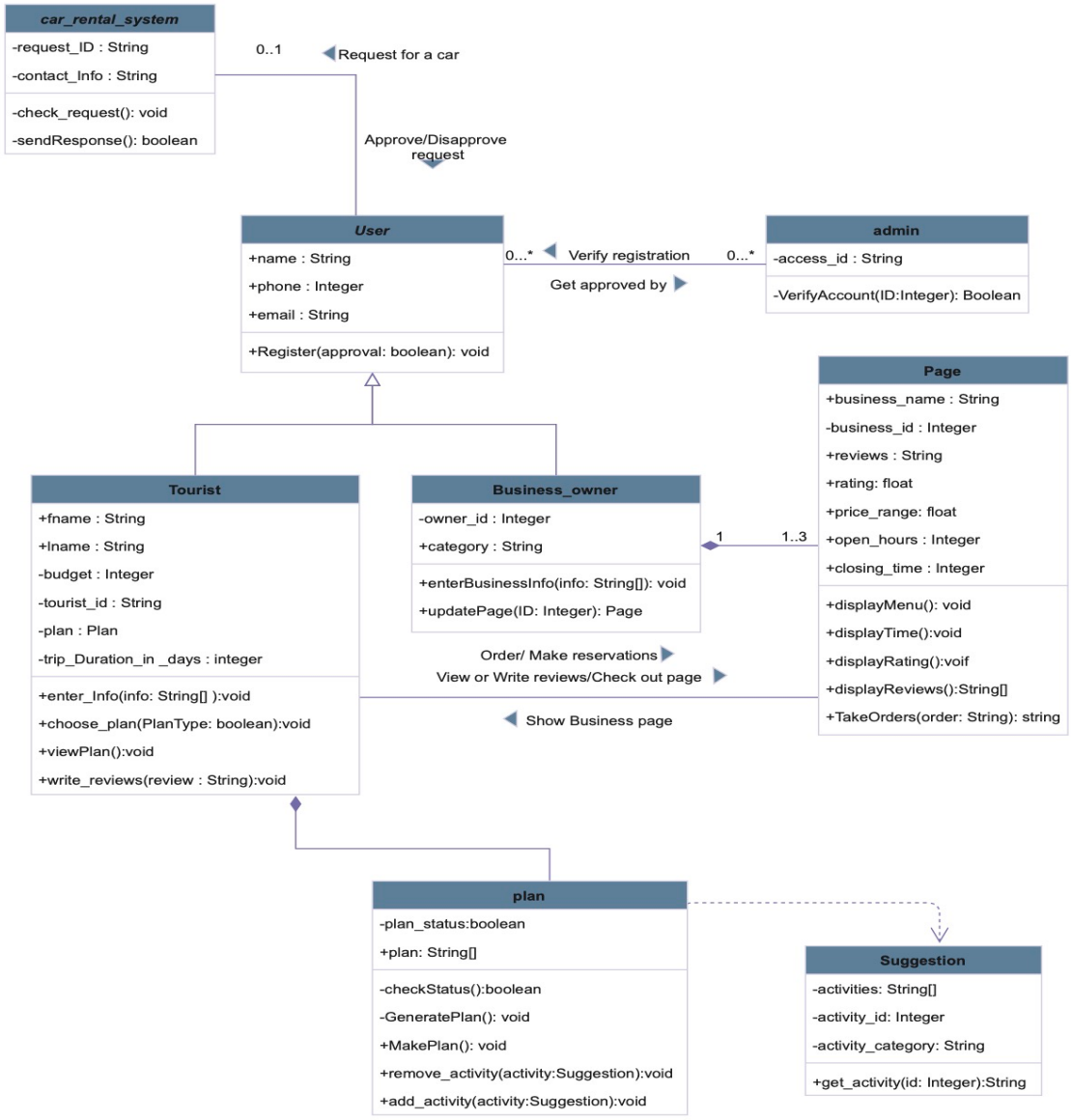


Figure 5

Figure 5 illustrates a class diagram that shows the system's classes, their attributes, operations, and the relationships among objects. For example, we have the User class that has the following attributes: name, phone, and email, and has a function called ‘Registration’, that checks if the information the customer enters is valid or not. An inheritance relationship is found between the Tourist class and Business_owner class, where they inherit from the User class.

Use Case Diagram:

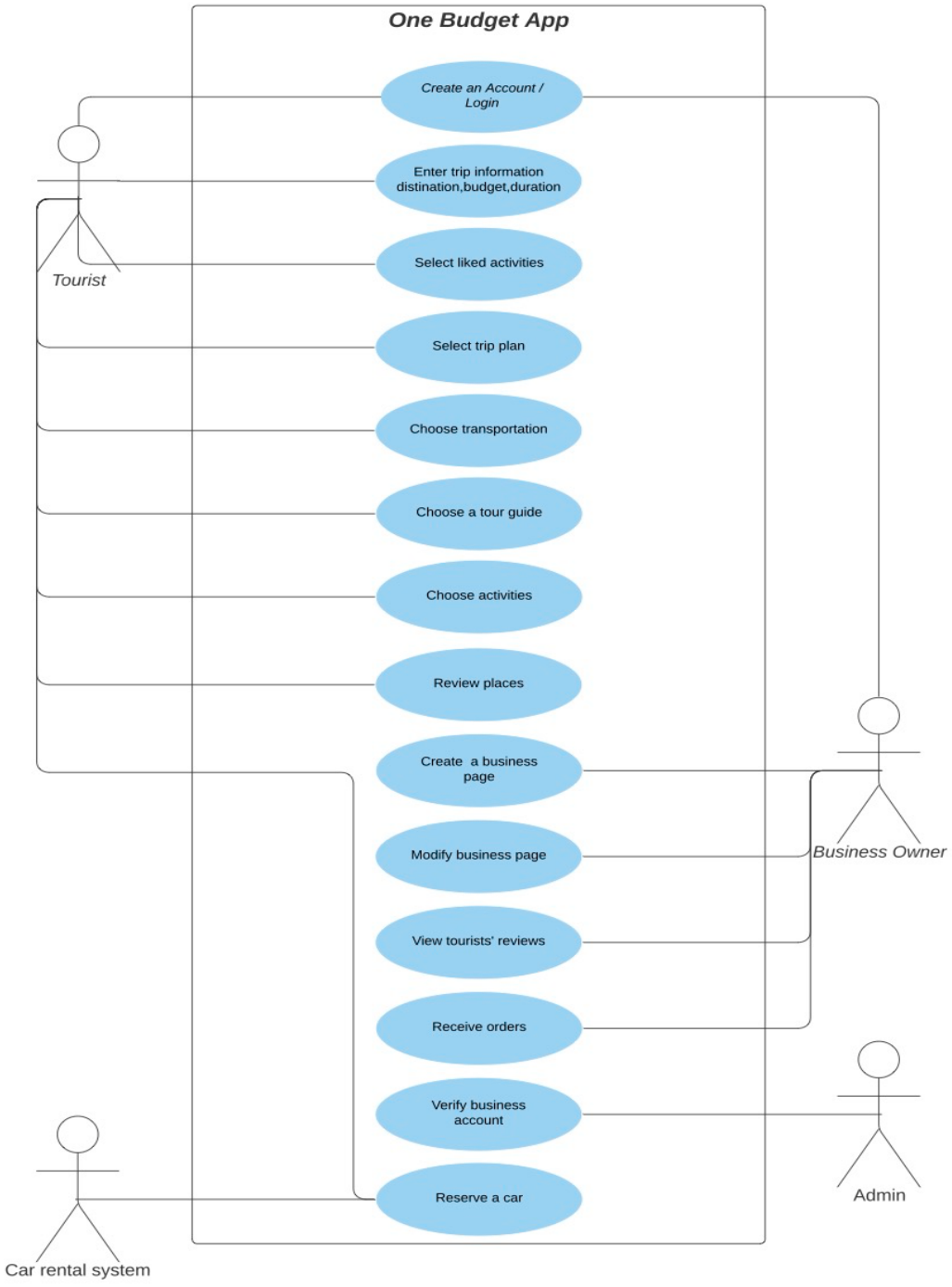


Figure 6

Figure 6 illustrates the use case diagram for the application. The diagram has four main actors: the tourist, business owner, admin and a car rental system. The business owner is able to create an account or log in, create a business page, modify they page, view tourist reviews, and receive orders from tourists.

Expanded Use Case:

Use case: Select trip plan.

Actors: Tourist (initiator).

Purpose: Helping the tourists how to plan their trip.

Overview: After the tourist login, enter their trip info, and select their interests, they get to choose whether they want a planned schedule or want to plan the trip themselves. On completion, the tourist continues to the next step.

Type: Primary.

Typical course of actions:

Actor Action	System Response
1.This use case begins when the tourist is done with selecting interests and move on to the next step.	**2.**Display the choices for the trip plan.
3.The tourist select to have a planned trip.	**4.**Depending on the tourist's option if they choose to have a planned trip the system will generate a plan and display it to the tourist.
5.Tourist moves on to next step.	

Alternatives: Line 3. Tourist selected an unplanned trip. System will display a list of activities for the tourist to choose from and create their own plan.