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Software Engineering Department – System Analysis & Design

Travel Management and Tourism Guidance System

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Mission Statement

To make tourism easier and provide the users with access to the best tourism sites available, using AI and data gathered from them. Our goal is to revolutionize the tourism industry by providing a personalized and seamless experience for travelers, by detecting what is more suitable for the user's situation based on their location, preferences, current weather state and what is more trending at the moment. We aim to gain our costumers satisfaction while saving, time, money and previewing the best offers.

Objectives

- Come up with special expeditions to ensure that the tourists are satisfied and having a memorable visit
- Reduce the amount of money and time spent by reducing the effort and showing the best prizes
- Supply the user with the best offers, packs by encouraging tourist group organizations and travel deals
- Ability to get direct answers to everything they need to know about planning a vacation
- Prevent the user of getting scammed from unauthorized places
- Connect experienced tour guides with tourists
- Keep updated with the current cultural, economic, and social issues affecting the tourism and travel industry

SWOT Analysis

Strengths:

- High-quality infrastructure and tourism facilities that satisfy modern tastes
- Safe and secure, friendly people
- Political stability
- Strong cultural and heritage tourism products
- Strong visa regime

Weaknesses:

- Lack of active promotion of Jordan as a tourist destination
- Financial constraints
- Traffic jam and ground transport infrastructure
- Pollution problems

Opportunities:

- Developing cultural tourism initiatives and the cultural tourism product of the host society
- Partner with local suppliers' services and stores to benefit from local sourcing trend
- Economic wealth and investment in world-class facilities

Threats:

- Environmental impacts of tourism development and scarce natural resources
- Unacceptance of cultural traditions and differences
- Strong competition

Business Case

This Project is to make the best Tourism experience accessible to our visitors, its all about using AI and special features to promote good tourism and connecting tourists with tour guides, this business will be so helpful and end one of the key business issues, the approximate cost is 25,000 JDs, it will take a year to be built completely and ready to put out to the users, and a good thing is that we wont suffer from productivity loss during the transition, the return on investment and payback period is two months.

A good thing is the risks of doing this project are so low but some of them are natural environmental diseases like extreme weather disasters can occur, on the other hand the risks of not doing the project are decrease of tourism and that affecting the economy as Jordan depends partially on tourism as an income, the success will be measured by the satisfaction of the user and the rise in the tourism field and country visits, there may be some alternatives like googling the places but there won't be an application that delivers the same effect as us.

Preliminary Investigation

Opportunity overview

We all know that tourism in Jordan is evolving and becoming a more known and loved tourists stop.

Lately, Jordan has been doing an intensive effort on building, developing the famous tourist's destinations, and even making it more reachable and accessible through making their way to Jordan easier, and enabling more tourism guidance apps, websites, and even local tourist guides. Although there are a lot of competitors in the field,

This is what brought the idea of doing a different tourism guidance app that makes tourism even easier and gets the tourists to experience Jordan in a different way and personalize their travel experiences in the way they love. We guide all customers from all nations, and different languages speakers. We might face some difficulties in finding those fluent speakers who can translate to different languages, as there are some languages that are not very common and easy to learn. Furthermore, while we always care about frequent travelers, we offer the ability to upgrade to a premium account which provides a 10-15% discount on all bookings. This exclusive benefit can be achieved through a monthly or yearly subscription option. With a premium account, travelers can enjoy even greater savings and access to exclusive offers while planning their next trip.

Project scope and constraints

We are aiming to serve tourists specifically in Jordan and our goal is to expand throughout the middle east. At the launching phase we will be on a website and in the future, we will be available on smartphones, and tablets.

MUST DO	SHOULD DO	COULD DO	WON'T DO
Gain governmental acceptance	Reach a level where people recommend us to their friends and family	Offer transportation ways for our customers	Expand our customers data to external facilities
Develop a fully functional website	User-friendly and easy to use	Apply updates to increase performance	Use weak resources
Ensure security to customers	Maintainable and easy to reflect changes	Increase budget through adding ads to the website	Hire unprofessional tourist guides

The expected time to launch up this project will be around 1 year where there will be a specific duration for each of the following missions and constraints. Durations will be discussed more further using Gantt chart:

Human Resources: Forming employees and registration of tourist guides, translators, development team, etc.

Technical: purchase mandatory tools, equipment.

Advertisement: forming an advertisement team, spreading Ads, posters all around Jordan, and posting on several social media platforms.

Project Analysis

As a basis to our project, we must do more research about local, and foreign people and their preferences in different areas and use this information to enhance their experiences. we will gather information by studying different competitors and doing cohort studies, and analyze data using different data science techniques. we could also make an interview by picking random samples from interested people that visited lots of tourism sites, and ask them about problems they have faced, prices, transportation, etc.

we will also gather more information by conducting a five minutes survey that will target interested people to gather more specific details about their past experiences in the tourism field. it will approximately take fifteen days to finalize and form those interviews and surveys. our data analysts will filter those results and take only the useful information to our firm, they will also prepare a report within fifteen days, that includes all findings and recommendations.

For the cost estimations, our approximate cost is 25,000 JDs it will be distributed into several main sections:

- Technical costs:
  - Servers: one-time 1,000 JDs
  - Hosts: 450 JDs/Year
  - Tools: 1500 JDs
  - E-mails services: 900 JDs
  - Database: 2 JDs/Hour
- Advertisement Costs:
  - Television Ads: 200 JDs
  - Social Media Ads: 300 JDs
  - Street Posters: 200 JDs
  - Foreign countries distributers: 300 JDs
- Transportation costs:
  - Employees: 150 JDs
  - Tourists: 200 JDs

Feasibility Evaluation

Operational feasibility

Tourists that are always interested in tour guides will always support such projects, as it will always create competency between different travel agencies which will somehow create a list of choices that the customer can pick from. However, this system is different in a way that it will provide specific choices based on user preferences using data analysis and AI techniques, this will reduce time that users spend on searching for sites of their interests.

One of the major impacts on doing this project is that it will increase workforce in different fields such as tourism guidance, translation, transportation, hospitality industry and many more.

The future users involvement will help mainly in planning the new system and its website design, this will improve the users experience later, where all required and desired functionalities are available to them. However, taking recommendations in the early stages makes it easier to implement them and get them in hand. Implementing a website made our services more reachable, no matter what device and operating system you use, you just need to be connected to the internet and you get full access of our website.

We always focus on our customers security, starting from creating their account, through their payment methods and transportation to get to places safely, as well as providing a safe tourism environment. Furthermore, our company's standards and policies will meet the federal law requirements and rules, as also every transaction, or activity offered by our organization will be recorded and documented in our database.

Technical feasibility

Our company will deal with professional hardware suppliers, that will guarantee the delivery of the necessary, and the best hardware. Furthermore, we will only hire professional software developers that will deliver the system requirements in the best possible way. We will also manage to make our website expandable and maintainable to handle its customers' requests. A prototype is required, as we will make an initial version of the system using the help of the user to design the interface where it could reach a high level of user friendliness. We will also assure in the phase of development that the system is always reliable and can counter different bugs and issues. we will use our own special information system with the help of our IT department, this also ensures that the

development process is meeting the users' requirements and convenient to the management. And good to mention that our system works properly with any operating system that users may use whether it is a home PC or a mobile phone or a tablet. However, as mentioned before, the requirements will be mainly given by the users, this will help in making our expectations clear and will enhance the future specification and updates. This will also help our system to be able to handle future transactions and company's growth.

Economic Feasibility

Employees Including IT staff, Tourist guides, Translators, etc., salaries will be delivered to them at the end of each month, using an Employee-Payment system. We will ensure hiring a famous hardware company that will supply each employee with the equipment he needs based on his role in the company. To gain the best productivity from our employees, we will consider applying the needed formal and informal trainings for our employees. For the federal law side, we will consider hiring a logistics and law related firm that will hold licenses fees and consulting expenses and that represents the company in front of the government, while providing our company with needed facility costs.

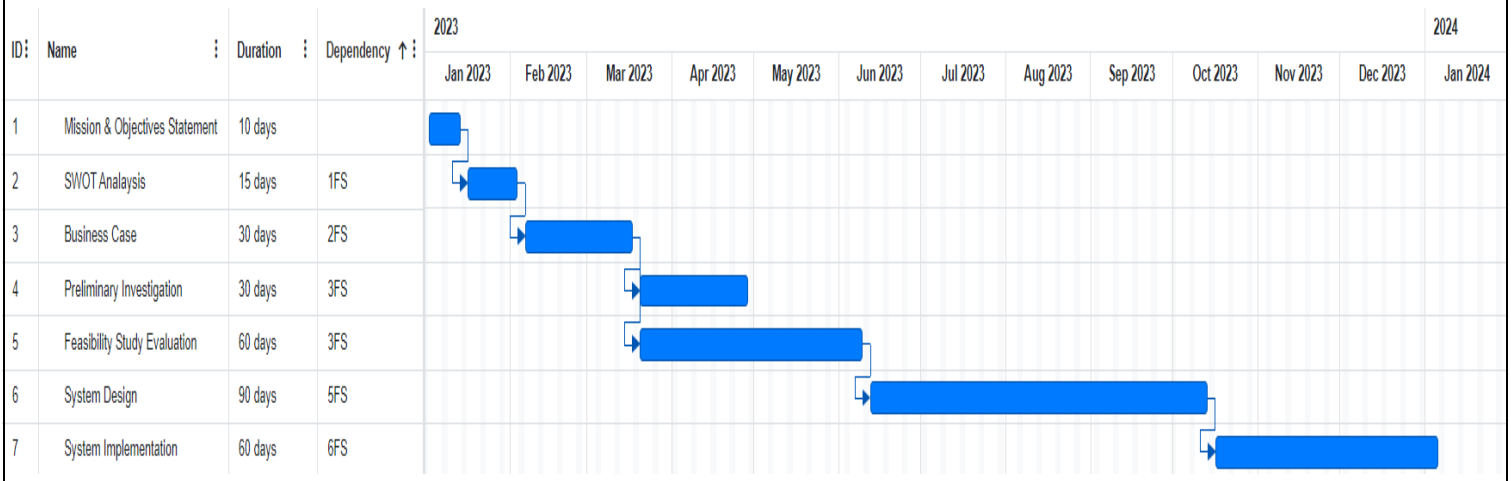
There will be an extra budget that will be used in case of any delayed tasks that will affect the development process or postpone it.

Lastly, financial analysis tools will be applied to control the company's costs and budget and future company's growth in terms of finance.

Schedule Feasibility

The company and the IT team control the factors that affect the schedule feasibility by establishing a firm timetable and finishing all tasks before the due date. Every task should be delivered on time while satisfying the system's requirements and dealing with different system constraints. This leads to a system that delivers the best possible functionality. An accelerated schedule may cause a lack of resources for building the project and the system might include a lot of issues that are not acceptable. we will appoint a project manager that directs and controls us in every step by using project management techniques.

Gantt Chart



Requirements Collection Methodology

The method that will be used for requirements collection is through conducting a survey that aims to gather information about the usage and effectiveness of current travel management and tourism guidance systems. The survey will focus on understanding the needs, preferences of tourists, and travel industry professionals in relation to these systems. The goal of this survey is to gather information that can be used to improve and enhance the features and functionality of travel management and tourism guidance systems. The survey will be conducted online via an electronic software. The goal of this survey is to understand the current state of travel management and tourism guidance systems, identify areas for improvement, and gather information that can be used to create more effective solutions.

The survey could provide an understanding of how widely used these systems are among tourists and travel industry professionals, and which platforms are most popular. Moreover, the survey could also provide information on how satisfied users are with their current travel management and tourism guidance systems, as well as what features are most important to them. While also, the survey could identify areas where users are encountering problems, such as difficulties in finding specific information or navigating the system, or issues with the quality of the recommendations provided.

The survey is expected to take approximately 15-20 minutes to complete. Furthermore, the targeted audience for this survey is tourists and travel industry professionals, including travel agents, tour operators, and anyone else who uses travel management or tourism guidance systems. A visit to different tourists points of interests was made and a survey was distributed among tourists, gathering information from them about their past travels and experiences.

Samples of the conducted survey are attached in the appendix.

Functional Requirements

FR 1.0: The system should allow users to create and manage their travel itineraries.

FR 1.1: The system should provide recommendations for tourism sites and activities based on the user's location, preferences, and current weather conditions.

FR 1.2: The system should allow users to search for and book travel arrangements, including flights, hotels, and car rentals.

FR 1.3: The system should provide information on local customs, culture, and language to assist tourists in navigating unfamiliar destinations.

FR 1.4: The system should allow users to connect with local tour guides and receive personalized recommendations and guidance.

FR 1.5: The system should allow users to review and rate tourism sites and activities, and provide an average rating based on these reviews.

FR 1.6: The system should provide alerts and updates on any changes to travel plans or local events and attractions.

FR 1.7: The system should allow users to refund their money.

FR 1.8: The system should allow users to book transportation to and from the airport, as well as local transportation options such as taxis or public transportation.

FR 1.9: The system should provide information on local weather forecasts and recommend appropriate clothing and activities.

Non-Functional Requirements

N-FR 1.0: The system should be user-friendly and easy to navigate.

N-FR 1.1: The system should be responsive and work well on a variety of devices, including smartphones, tablets, and desktop computers.

N-FR 1.2: The system should be secure and protect the privacy of user data.

N-FR 1.3: The system should have high availability and be accessible at all times.

N-FR 1.4: The system should be scalable and able to handle a large number of users and transactions.

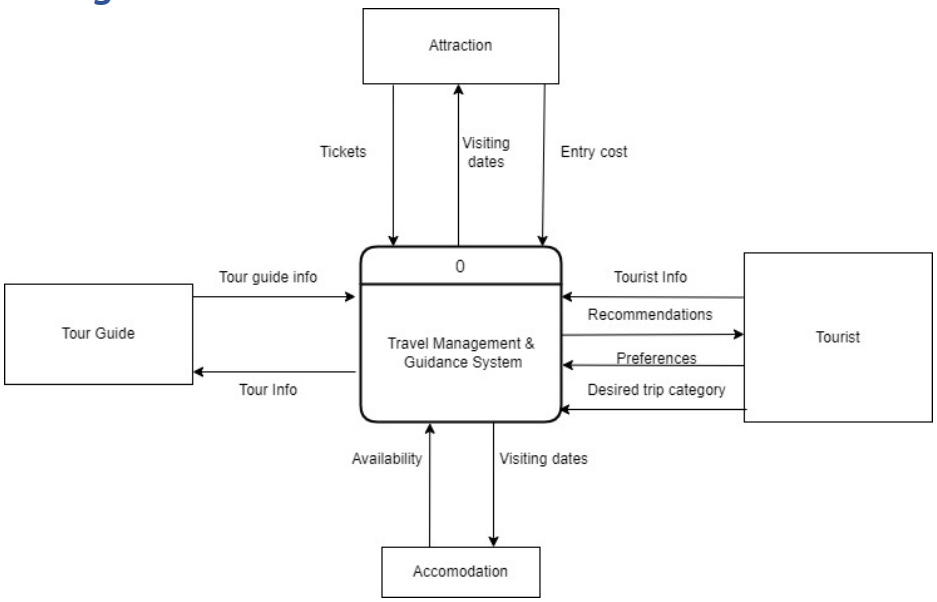
N-FR 1.5: The system should have a fast response time and be able to quickly process requests and transactions.

N-FR 1.6: The system should be localized and provide content in multiple languages.

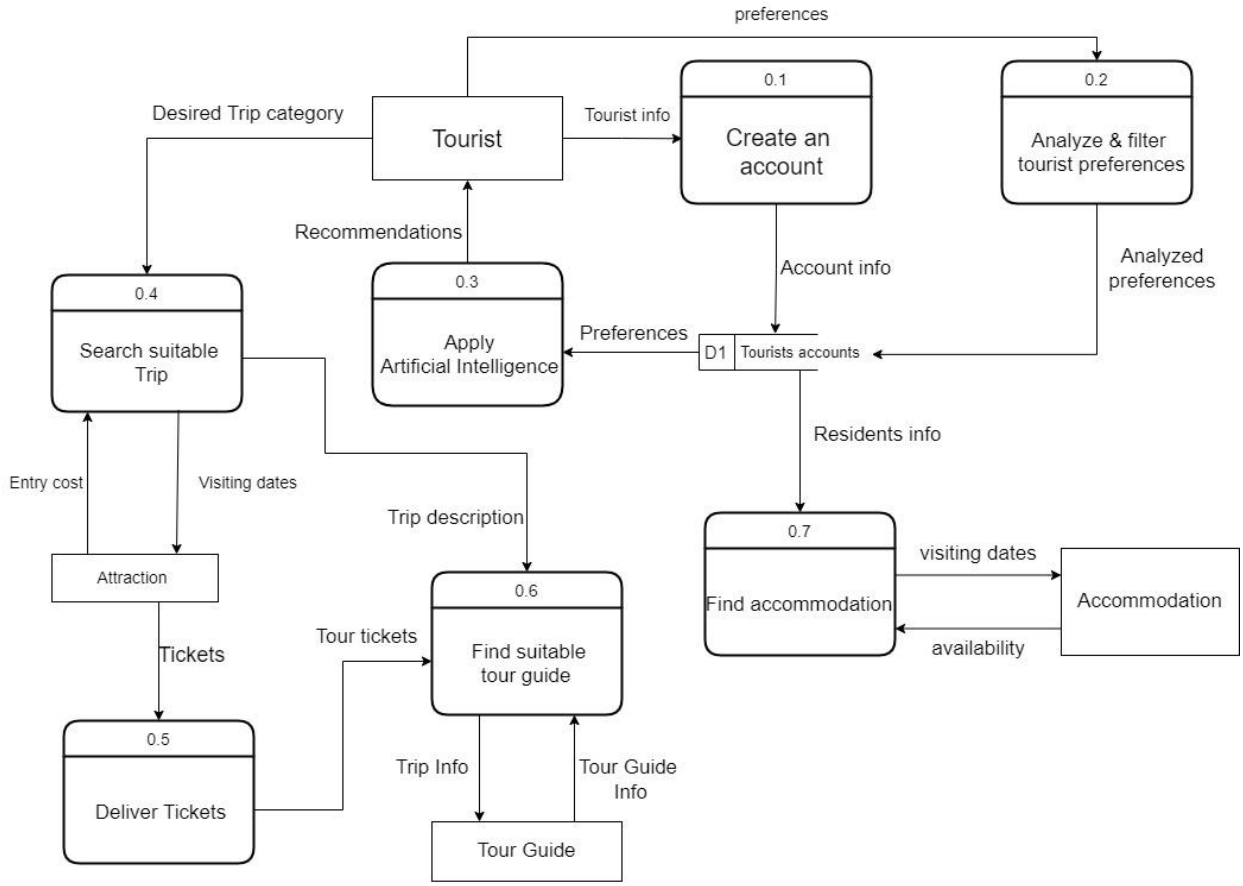
N-FR 1.7: The system should be easy to maintain and update with new features and functionality.

N-FR 1.8: The system should have robust backup and disaster recovery processes in place to ensure data is not lost in the event of a system failure.

Context Diagram



Level 0



Data Dictionary

- ### Data Flow

Name	Description	Alias	Origin	Destination	Volume and frequency
Tourist Info	Tourist (name ,email, password, passport NO, gender, phone) is delivered to the create an account process	Passenger Personal Details	"Tourist" entity	"Create an account" process	Between 30 -50 per day

- ### Data Store

Name	Description	Alias	Attributes	Volume and frequency
Tourists Accounts	Storing every tourist account info to be restored whenever needed	Tourists Profiles	Name: Given name (string, <=20, NO); email (string, <300, NO); password (string, <=20, NO); Passport no (string, <=20, NO); gender (char, 1, YES); Phone No. (string, 10, YES)	Between 30 -50 per day

- ### Data Process

Name	Description	Number	Input/Output description
Find Suitable Tour guide	After tour guide info is received, the process compares the tour guide experiences with trip description, and tries to find the suitable tour guide for the trip. Then the tour tickets are sent to the chosen tour guide	0.6	input: Tour guide info, Tour tickets, Trip description. output: Trip info.

- **Entity**

Name	Description	Alias	Input/Output description
Attraction.	An attraction that is available, for the offered trips.	Destination.	Input: Visiting Dates. Output: Entry Cost, Tickets.

- **Data Record**

Name	Description	Alias	Attributes
Residents Info.	Tourists' information that are willing to stay at an accommodation	None	Name: Given name — type: string — length: <=20 — null: NO Name: Passport No. — type: string — length: <=20 — null: NO Name: Phone No. — type: string — length: 10 — null: YES

Process Description Tools

Business logic of Process 0.1 - **Create an account**

When the user clicks on the "Create an Account" button on the login page of the travel management and tourism guidance system, the system displays a form for the user to enter their personal information the following logic will be followed:

1- The system verifies that the password and email entered are valid and accomplishes the required structure.
2- If the entered email, and password is valid, the system sends a confirmation link to conform the process.
3- If the user clicks on the sent link and verifies his account, the system provides two options:

    Normal subscription account, **Premium** subscription account

4- If a Premium account is selected, a 10% discount will be offered to the user, but if a normal account is selected, no discounts is offered.
5- If the entered information is not valid or the confirmation link is not clicked, the account is not created, and an error message is displayed with the missing information.

Structured English

```
//Blue: conditions, Green: actions
IF (Email is Valid){
  IF(Password is Valid){
    IF(Email is verified){
      IF(Account Type = Normal)
        Normal Account Created
      ELSE IF(Account Type = Premium)
        Premium Account Created With 10% discount
    }
    ELSE Account Not Created
  }
  ELSE Account Not Created
}
ELSE Account Not Created
```

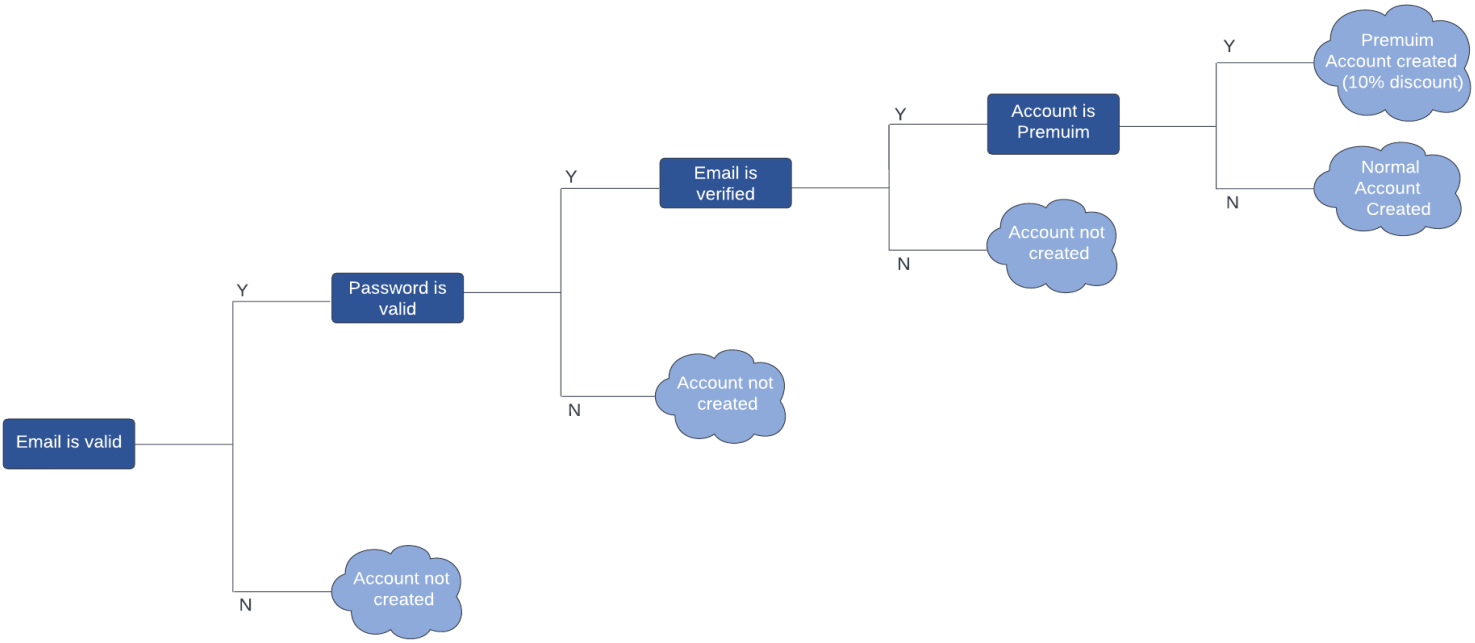
Decision Table

Conditions:																
Email is valid	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y
Password is valid	N	N	N	N	Y	Y	Y	Y	N	N	N	N	Y	Y	Y	Y
Email is verified	N	N	Y	Y	N	N	Y	Y	N	N	Y	Y	N	N	Y	Y
Account is premium	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y
Actions:																
Normal Account created															X	
Premium Account created (10% discount)																X
Account not created	X	X	X	X	X	X	X	X	X	X	X	X	X	X		

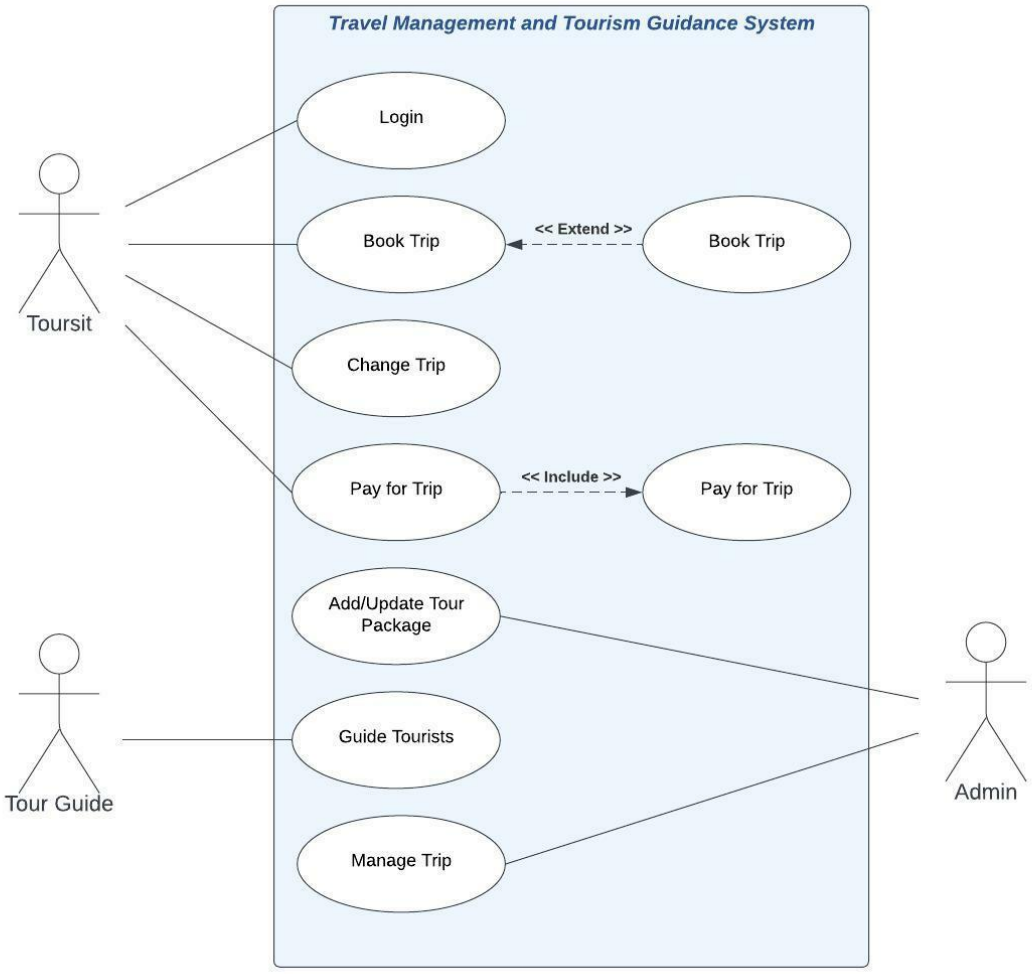
Condensed Version

Conditions:					
Email is valid	N	-	-	Y	Y
Password is valid	-	N	-	Y	Y
Email is verified	-	-	N	Y	Y
Account is premium	-	-	-	N	Y
Actions:					
Normal Account created				X	
Premium Account created (10% discount)					X
Account not created	X	X	X		

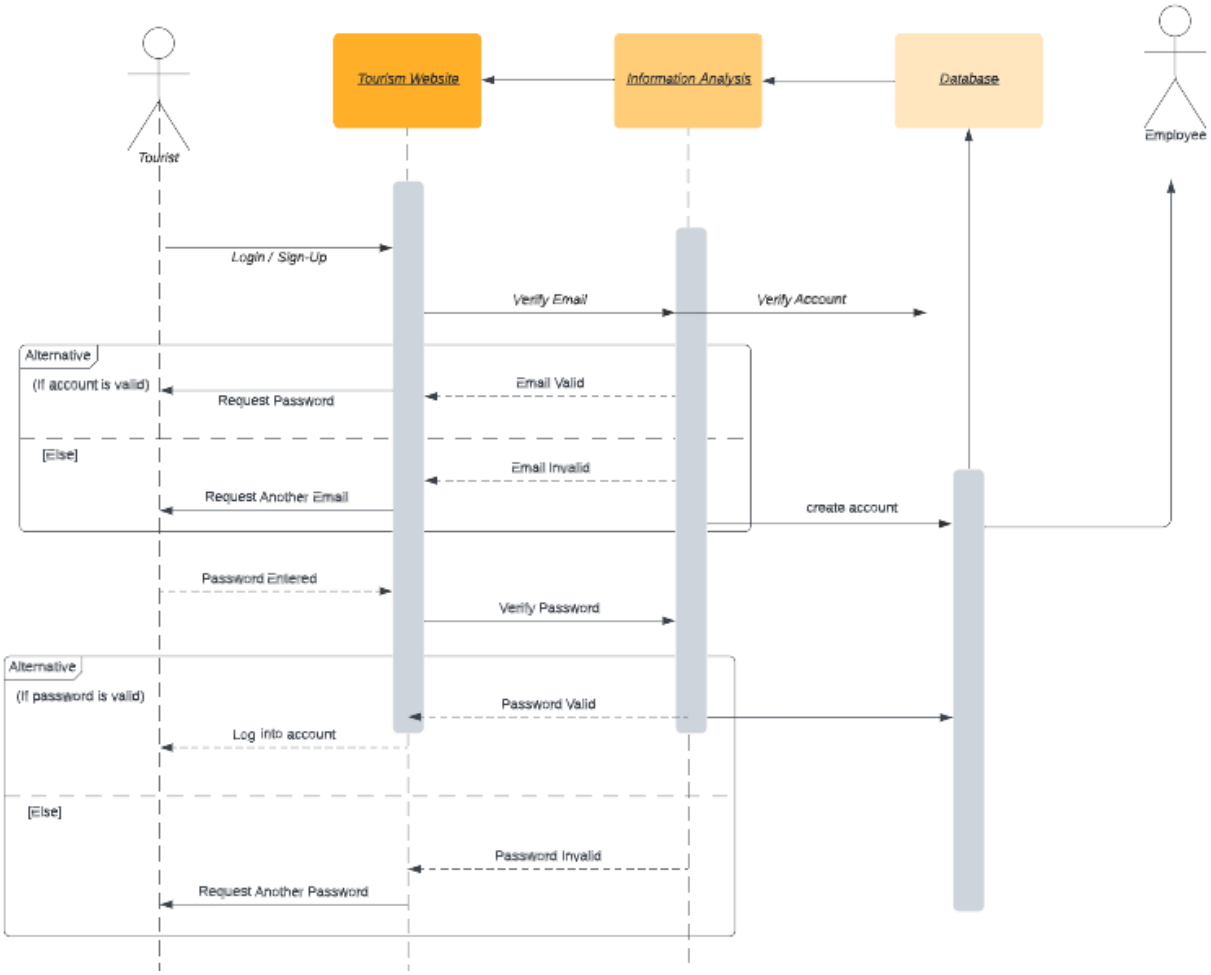
Decision Tree



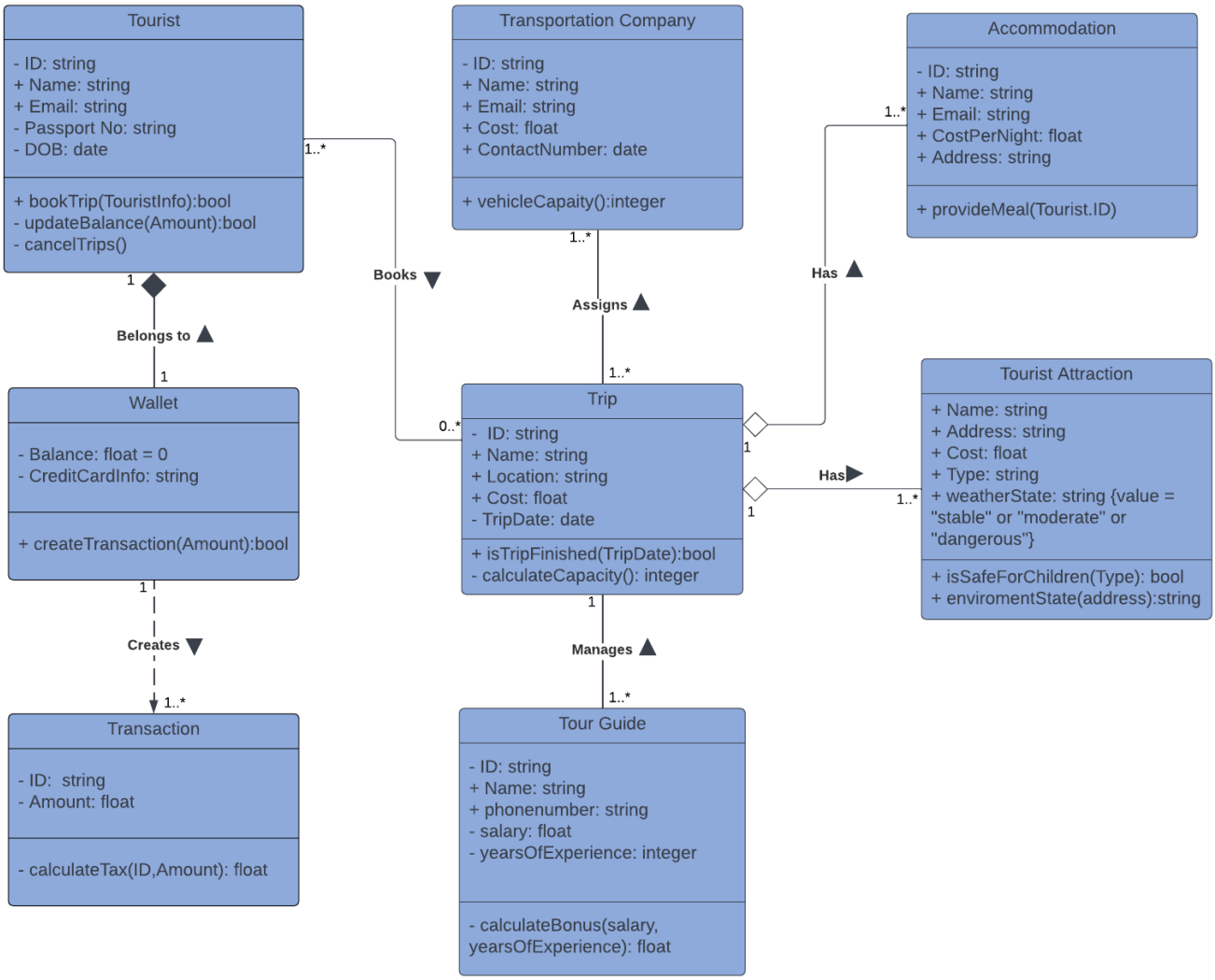
Use Case Diagram



Sequence Diagram



Class Diagram

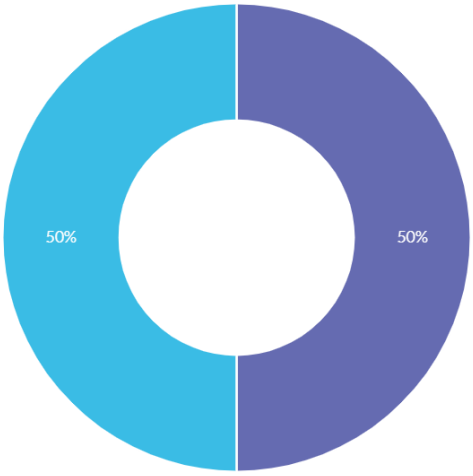


Appendix & Extras

Survey Samples

Q1 Is it easy to find hot tourist spots when traveling to a foreign country ?

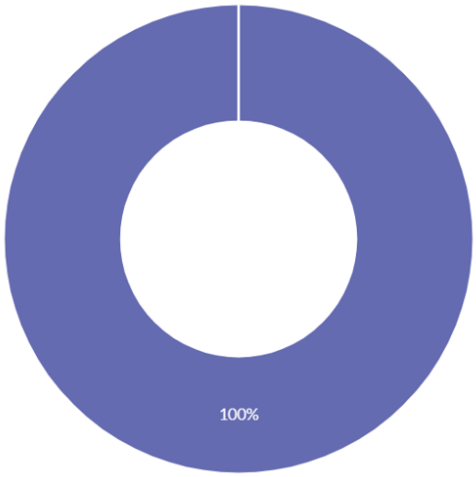
Multiple Choice



Choice	Total
yes	1
no	1

Q2 have you ever experienced a vocation getting ruined because you didn't have enough information about the weather in the foreign country ?

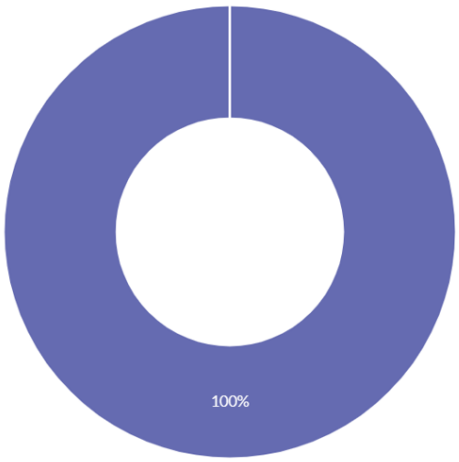
Multiple Choice



Choice	Total
yes	2
no	0

Q3 have you ever experienced a vocation getting ruined because you didn't have enough information about the weather in the foreign country ?

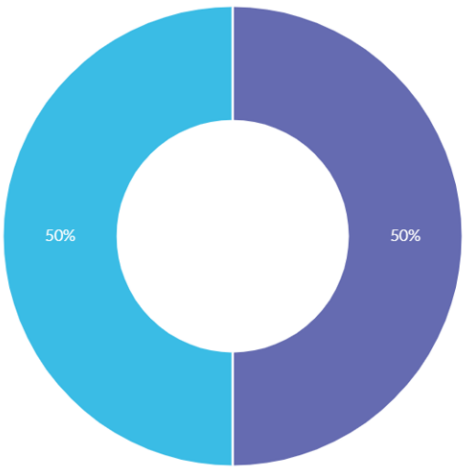
Multiple Choice



Choice	Total
yes	2
no	0

Q6 Were the tourist sites and activities you visited what you were expecting?

Multiple Choice



Choice	Total
yes	1
No, I was unsatisfied	1

Meetings Report

Phase 1

Meeting Date	26/10/2022	6/11/2022	7/11/2022	12/11/2022	20/11/2022
Meeting Purpose	Introduction and project topic discussion	Mission Statement	Objectives & Business case	Business case & Preliminary Investigation	Preliminary investigation & gantt chart
Duration	45 min	45 min	90 min	55 min	100 min
Attendance	Sami, Taya, Moataz, Zaid	Sami, Taya, Moataz, Zaid	Sami, Taya, Moataz	Sami, Taya, Moataz	Sami, Moataz, Taya, Zaid
Extras	Each one of team members offered an idea and we choose a final topic.	Mission statement is written with the help of all team members	We discussed our project objectives and future plan for the next phases	Completion of business case and Step 1,2 of preliminary investigation	Step 4 of preliminary investigation and feasibility study and gantt chart

Phase 2

Meeting Date	28/12/2022	29/12/2022	8/01/2023	11/1/2023
Meeting Purpose	NFR and FR	Context DFD +Level 0	Process Description Tools	Data Dictionary and interview
Duration	120 min	120 min	120 min	180 min
Attendance	Sami, Moataz, Zaid	Sami, Moataz, Zaid	Taya, Moataz, Zaid	Sami, Moataz, Taya (Last hour)
Extras	All team members offered many FRs and NFRs, and we decided to execute unneeded ones	We decided to do context DFD and Level 0 using Sami's laptop and with discussion in a meeting among all team members, we managed to design the diagrams	Taya made an initial design for the decision table, Moataz did an initial design for the structured English, and Zaid did an initial design for the decision tree, Sami redesigned and reformed all designs	Moataz implemented the design of data dictionary while sami helped him in filling the information in the tables, Taya did the survey and integrated the survey results.

Phase 3

For this phase, steps were distributed among team members as he following:

Steps	Step 1	Step 2	Step 3	Step 5
Step Content	Use Case Diagram	Sequence Diagram	Class Diagram	Reporting Roles
Done by	Moataz	Taya & Zaid	Sami	Taya, Zaid and Sami