



Software Product Release

Prepared by

Student Name	ID
Manar Mutaieb	441201106
Randa Bakhshwain	441203867
Ghadeer Almaymoon	441200441
Dhai Almurshed	441200912

Supervised by
T.Nora Madi

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CHAPTER 1

INTRODUCTION

1 Chapter 1: Introduction

Saudi Arabia is currently concentrating its efforts on rebranding itself as the Middle East's main holiday destination. However, one of the main issues that tourists face in Saudi Arabia is planning their trip and the absence of a unified reference to which they can refer. As a result, our product '**مسفار**' which is an online consumer review software system that includes all of Saudi Arabia's tourist attractions, might help in shaping tourists' perceptions and expectations about these attractions.

due to the lack of sources focusing on tourism in Saudi and tourists' needs for a website where they can search, view, and write reviews about their experiences in Saudi Arabia, which they can then share on social media, to help them plan their trip efficiently, avoid wasting time visiting uninteresting places, and make it simple for them to discover new places.

We decided to develop a website that combines a list of Saudi Arabia's tourist attractions and provides up-to-date reviews of them so that these reviews may serve as a helpful reference for tourists to refer to at any time and from any location.

The website can assist admins in listing tourist attractions in Saudi Arabia, thus facilitating the process of discovering and acquiring information about the finest tourist attractions for tourists to visit. Our website will serve as the main reference for anyone interested in visiting Saudi Arabia and planning their visit to cover the highly recommended attractions around the country.

our main objective is to build a website that will make it easier for people to see and review tourist attractions in Saudi Arabia, to reduce time wasted on visiting attractions that are not in the user's interest. Also, to help tourists decide where to go, our website will benefit tourists who want to visit Saudi Arabia by providing them with the ability to view, search, write reviews, and share them on social media.

This document presents the domain analysis, which has the following sub-sections: terminology, general domain knowledge, customers and users, environment, tasks and procedures, competing software, and similarities across domains and organizations. It also includes requirement engineering, which has the following sub-section:

requirement elicitation, findings from interviews and questionnaires, system users, use case diagrams, and the product backlog.

Additionally, this document includes domain analysis, requirements engineering, system design, implementation, testing, and conclusion.

1.1 The Problem

Generally, tourists prefer to read real recommendations written by other tourists about the attractions they are going to visit before they actually go. Also, they want to write their own reviews and share them on social media.

For example, when Saudi Arabia's ministry of tourism provided a tourist visa -eVisa- to citizens in 49 countries as a first step to enhance tourism in the country, people found it difficult to decide where to go due to the stereotypes they had about the country and the lack of information provided to the world about the attractions in Saudi Arabia.

Tourists need a website to search, view, and write reviews about their experiences while in Saudi Arabia and share them on social media. In order to plan their trip efficiently, avoid wasting time going to places that do not suit their interests, and make it easy for them to discover new places.

1.2 The Solution

The solution involves developing a website that offers a collection of tourist attractions in Saudi Arabia and up-to-date reviews of them, so that these reviews can be a helpful guide that tourists can return to anytime and anywhere.

The website can help admins post tourist attractions in Saudi Arabia to ease the process of discovering and gaining information about the best tourist attractions for tourists to visit. Our website will be the main resource for people who want to visit Saudi as tourists and set plans for their visit to cover the highly recommended attractions around the country.

1.3 The Product

In this section we will discuss our project vision, roadmap, objective, and scope.

1.3.1 Product Vision

For tourists who want to visit Saudi Arabia, 'مسفار' is a website that allows tourists to search, view, write reviews about their experience and share it in social media.

Unlike other travel review sites such as TripAdvisor, **our website** will focus on reviewing Saudi Arabia landmarks with the ability to share it in social media.

1.3.2 Product Roadmap



Figure 1 Road Map

1.3.3 Objectives

- **Product (customer focus-value):**

Why are we building this website?

We are building this website to facilitate the process of viewing and reviewing Saudi Arabia's tourist attractions for tourists, and as for admin managing and maintaining Saudi Arabia attractions.

What problems will it solve?

Our website will reduce time wasted on visiting attractions that are not within the user's interest. Also, it will help tourists decide where to go. While for admins it will help them to have a specialized platform for Saudi Arabia attractions.

Who will benefit (the users), and how?

Our website will benefit tourists who want to visit Saudi Arabia by providing them with the ability to view, search, write reviews, and share them on social media. Also, our website will benefit admins who wants to manage Saudi Arabia attractions with the ability to sign up, log in, log out, view attractions and reviews, upload, update, and delete the attractions.

- **Project (solution focus-plan):**

- **Proposal:**

- Define the problem.
- Define the solution.
- Construct the website vision.
- Construct the website roadmap.
- Define the objectives.
- Define the scope.

- **Domain Analysis:**

- Defining the terminologies used in the domain.
- Gather general information about the domain.
- Determine the customers and users.
- Describing the environment that is in our website context.
- Determining the tasks and procedures.
- Specify the competing software.
- Determining the similarities across domains and organizations.

- **Requirements Engineering:**

- Elicit requirements.
- Understand user needs.
- Conduct interviews.
- Specify the characteristics of the system users.
- Construct the website backlog.

- Define system architecture.
- Design the website wireframes.
- Implement the website.
- Test the website.
- Deploy the website.

- **Learning (student focus):**

In this project, we will learn:

- How to develop a system by following an agile process work model.
- How to program with php language.
- How to use Jira software to track agile progress.

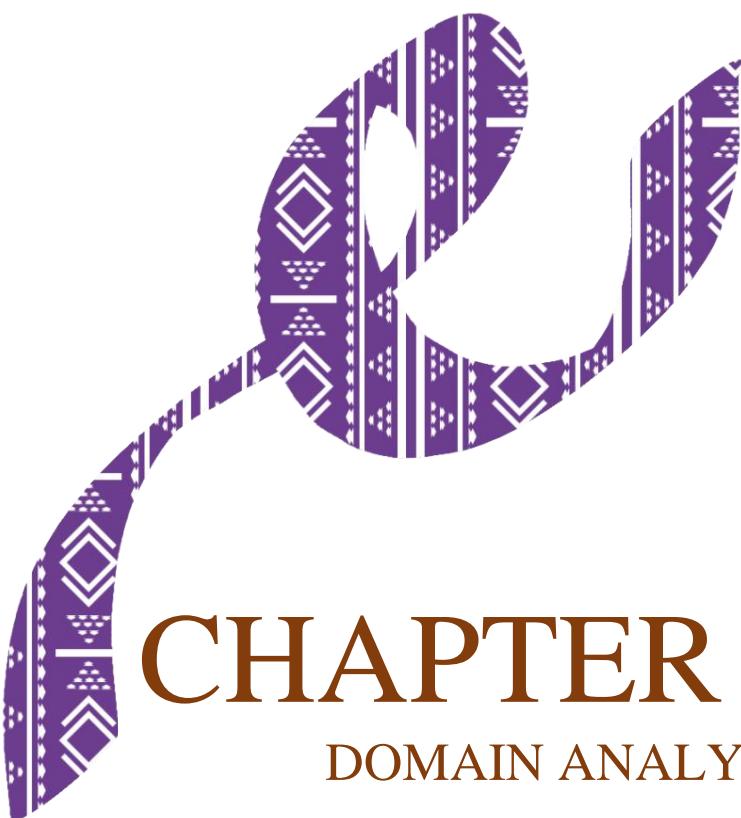
1.3.4 Scope

- Program with only html, CSS, php, and JavaScript languages.
- Use Jira, git, and GitHub platforms.
- Develop a website only and not an application.
- Support only English language.
- Review only attractions in Saudi Arabia.
- Tourists can view, write, and search reviews about Saudi Arabia attractions but cannot edit them.
- Tourists can share their reviews on social media.
- The admin can upload, modify, delete Saudi Arabia attraction posts, and view them with the reviews.

1.4 The Scrum Team

Scrum Team Members	
Product Owner (PO):	Manar Mutaieb
Developers:	Manar Mutaieb Randa Bakhshwain Ghadeer Almaymoon Dhai Almurshed
Scrum Master (SM):	T.Nora Madi
Stakeholders:	T.Nora Madi

Table 1 Scrum team



CHAPTER 2

DOMAIN ANALYSIS

2 Chapter 2: Domain Analysis

Our domain is tourism in Saudi. The tourism sector in Saudi offers geographical and historical diversity that meets the aspirations of tourists. Saudi Arabia has a long-term vision focused on growing tourism and has been making major investments toward completing this vision. The country is on the road to rebranding itself as a tourist hotspot, so we decided to be part of that journey by creating a website that can help to show the world the tourist attractions in Saudi Arabia and motivate tourists to come.

The information presented in this document is gained from online resources and will be used to guide the development of a website that highlights the attractions in Saudi Arabia.

2.1 Terminology

In this subsection, we are presenting a list of terminologies that are related to our domain -travel in Saudi- and since the traveling terminologies are the same across the world, these are some of them which might be shown in the document or in the interface of the system. This subsection will make it clearer for the users, costumers and to whom it may concern to have a better understanding when reading the document or when using the system.

Tourism: Tourism refers to the activity of visitors ([IRTS 2008, 2.9](#)).

Visit: A trip is made up of visits to different places. The term “tourism visit” refers to a stay in a place visited during a tourism trip ([IRTS 2008, 2.7](#) and [2.33](#)).

Visitor: A visitor is a traveller taking a trip to a main destination outside his/her usual environment, for less than a year, for any main purpose (business, leisure or other personal purpose) other than to be employed by a resident entity in the country or place visited ([IRTS 2008, 2.9](#)).

Adventure tour: a tour designed around an adventurous activity such as rafting or hiking

Adventure tourism: A form of tourism in natural areas that incorporates an element of risk, higher levels of physical exertion, and the need for specialized skills.

Destination (main destination of a trip): The main destination of a tourism trip is defined as the place visited that is central to the decision to take the trip. See also purpose of a tourism trip ([IRTS 2008, 2.31](#)).

Attraction: a place, event, building or area which tourists want to visit.

Human-made attraction: an attraction created by people.

Natural attraction: a tourist attraction that has not been made or created by people.

Heritage: Things of value that are inherited which people want to keep. Heritage can be natural, cultural, tangible, intangible, personal or collective. Natural heritage is often conserved in places such as reserves and national parks. Cultural heritage practices are often conserved through ongoing traditions and practices.

Activity/activities: In tourism statistics, the term activities represent the actions and behaviors of people in preparation for and during a trip in their capacity as consumers ([IRTS 2008, 1.2](#)).

Shoulder season: period when there is neither a high nor low demand for a destination, usually falling in the spring or fall months for most areas.

Value season: a time of year when prices are lower than peak, also called low or off-season.

Sightseeing tour: short excursions of usually a few hours that focus on sightseeing and/or attraction visits.

Carrying capacity: The amount of visitor activity that a site or destination can sustain.

Guide: (1) a person qualified to conduct tours of specific localities or attractions (many reliable guides are licensed), (2) an airline, bus, railroad, or ship manual of schedules and fares, usually printed seasonally

Souvenir: a product purchased by a tourist as a reminder of a holiday.

2.2 General Domain Knowledge

General Domain Knowledge means the awareness of the environment in which the target system operates. And here we will present the general domain knowledge about *tourism in Saudi Arabia*, which is our domain. It is important because it usually must be learned from end-users in the domain (as domain specialists or experts) rather than from software developers.

- Saudi Arabia is the second biggest tourist destination in the [Middle East](#).
- There are five [UNESCO World Heritage Sites](#) in [Saudi Arabia](#).
- Saudi Seasons is a nation-wide tourism initiative that aims to attract local and international tourists. The seasons are organized in many Saudi cities at different times throughout the year. There are currently 11 seasons.
- The best time to visit Saudi Arabia is during the winter between late October and early March. But some attractions are better to be visited before November or after February.
- Saudi Arabia plans to welcome over 100 million visitors annually by 2030.
- Arabic is the official language of Saudi Arabia and is the primary language used in all dealings and public transactions. While English serves as an informal second language in the kingdom and is spoken by a large section of its society, all road signs are bilingual, showing information in both Arabic and English.

- Saudi Arabia's rich heritage and traditions have been shaped by its position as a historic trade hub and the birthplace of Islam. In recent years, the Kingdom has undergone a significant cultural transformation, evolving centuries-old customs to fit the contemporary world we live in today.
- Certain shops close briefly during prayer times to allow time for worship. During the holy month of Ramadan, the rhythm of the country changes into a mellow, spiritual one.
- The main goal of creating the Saudi Commission for Tourism and National Heritage (SCTH), from the very outset, was to pay greater attention to all aspects of the tourism sector in Saudi Arabia, in its organization, development, and promotion.

2.3 Customers and Users

Since our system is focusing on tourism in Saudi Arabia, our potential customers who might be interested in our website development could range from the ministry of tourism in Saudi Arabia to travel agencies who are looking for platforms to provide a great source of information for tourists. These two customers are more likely to have a website administrator with good technical knowledge. They probably use computers to perform most of their daily work, so they are familiar with these technologies and are ready to invest time in learning new ones.

Others impacted by the system will include tourists from outside Saudi Arabia. These tourists will be from different places with different backgrounds. They could range from computer novices to people who are familiar with such websites and services and have enough knowledge to use them properly.

Also, a tour guide who provides in-depth information about the places they are showing their guests might have an interest in a traveling review site.

2.4 The Environment

In this sub-section, we are describing the equipment and systems that our website will have to work in the context of, which in this case is the browser that hosts the website.

2.5 Tasks and Procedures

We are making a list of what different people do currently as they go about their work in this specific domain, and by knowing this, we can develop a system where they can do their work in a more beneficial way.

- How do tourists find out about tourist attractions?
 - Tourists ask friends and family about tourist attractions that they have visited before in Saudi Arabia.
 - Tourists search for tourist attractions on social media platforms like Twitter, Instagram, and Snapchat.
 - Tourists watch YouTube vlogs about visiting Saudi Arabia.
 - Tourists search for attractions on Google Maps.
 - Tourists find possible attractions from travel agencies or tour guides.
- How do tourists describe their previous visits to tourist attractions?
 - Tourists write about their experiences on social media platforms like Twitter and blogs.
 - Tourists post pictures and videos of the attractions on Snapchat, Instagram, and YouTube.
 - Tourists leave comments on the attractions that they visit on Google Maps.
 - Tourists share their experience of the visited attractions with their friends and family.
- What is the current process of announcing available attractions?
 - The attraction is advertised through television and SMS messages.
 - Some travel agencies set up meetings with tourists so they can offer plans to visit available attractions.

2.6 Competing Software

In the table below, we are analyzing competing software. First, we specified the features that will be provided by our new software system. Second, we searched for other review systems and compared them according to the specified feature, whether it's shown in that competitor or not. Finally, we compare our product to the others on the market.

Feature	Yelp	Foursquare	tripAdvisor	visitSaudi	مسفار
Ability to write reviews	✓	✓	✓		✓
Description			✓	✓	✓
Share on Social Media		✓			✓
Saudi Arabia attractions		✓	✓	✓	✓

Table 2 Competing software table

2.7 Similarities Across Domains and Organizations

Here we determined what distinguishes this domain -*tourism in Saudi Arabia*- from the others, as well as what they have in common. So, we write down what our domain has in common with other domains in the following points:

- Categorizing attractions based on cities.
- Putting up pictures of the attraction and writing general information about it, such as its description, location, opening hours, and contact information.

However, our domain is mainly focused on reviewing Saudi Arabia's attractions and sharing them on social media platforms.



CHAPTER 3

REQUIREMENTS ENGINEERING

3 Chapter 3: Requirements Engineering

This section briefly describes the requirement elicitation methods we used to formulate our requirements. First, we conducted online interviews via WhatsApp chats with people who have traveled or want to travel to Saudi Arabia. Second, we distributed an online questionnaire via Google Form to the target audience. Then, we analyzed these interviews and the questionnaire - as shown at the appendix - as the following:

- Interviews Findings:

Based on the interviews [Appendix A](#) we conducted with potential system users, we can conclude that it is critical to provide a rich description of the attraction to the tourist, such as historical and cultural information, as well as popular times and wait times, to help them avoid crowds and plan the perfect trip. As well, we notice that all the people who responded have used a travel review site to find an appropriate place. They agreed that usability is one of the main advantages of these kinds of websites, and they are also looking for a well-organized, easy-to-use, and informative travel review site. Speaking of good organization, we can see that they prefer such websites to be organized by categories based on the location, such as cities or the type of the attraction. In addition, it is plain to see that providing multimedia such as photos along with the reviews plays a huge role in enhancing the credibility of the reviews on the site. Eventually, the results we have got from the interviews and how the interviewees interact with us suggest a need for a travel review site that focuses on reflecting the different aspects of tourism in Saudi Arabia and helps tourists plan their trip easily.

- Questionnaire Findings:

From the responses of the distributed questionnaire [Appendix B](#), it is obvious that a short description and providing some information about the price are what most users want to know about an attraction [Figure B.5](#), and that indeed supports the fact that almost half of the users chose the price to be the biggest challenge they face while choosing an attraction to visit [Figure B.2](#). Moreover, we can see that 70% of the users trust other people's reviews about an attraction [Figure B.4](#), while 80% think that photos raise the credibility of such reviews [Figure B.6](#). These results indicate the importance of tourists' reviews in the tourism field, how it affects tourists' decisions, and how it is essential to provide some multimedia along with them. Finally, 77.8% of the users would like to share reviews on other platforms [Figure B.3](#). As it might be seen from that percentage, people want to enhance the lives of others and are willing to share their traveling experiences and reviews on social media, which makes tourism practices and destination decisions more and more affected by the opinions of tourists.

In our requirement engineering section, we are going to use the knowledge we gained from the domain analysis as well as the interviews and the questionnaire findings to clarify the system users, draw the use case diagram, which demonstrates the different ways that a user might interact with our system, it's finally presented the product backlog where we set the website user stories with their size, type, and the acceptance criteria.

3.1 System Users

We are clarifying in this sub-section who is going to use our system by defining each possible user within the system and their educational level, experience, and technical expertise.

We have two types of users that interact with 'مسفار' Website: tourists and admin.

'مسفار' targets tourists who want to travel to Saudi Arabia and can read English regardless of their educational level. Tourists should have a little technical experience to deal with the website. Last, tourists should have any device that has an internet connection with a browser in order to run the website.

An admin is a person who has sufficient knowledge and experience in the tourism field and can read English. The admin should have a medium technical skill in order to perform more complex actions than the tourist. Finally, the admin should have any device that has an internet connection with a browser in order to run the website.

3.2 Use Case Diagram

This use case diagram describes the possible sequence of interactions between the website 'مسفار', and its actors -the users of the website: admin and users- related to their goal. The admin could be an employee in the ministry of tourism or an employee in a travel agency. They can sign up once, so the next time they access the system, they log in. They also have the ability to log out of the system. However, their main functionalities are to view attractions and the reviews about them and to add, update, and delete attractions. As for users they could be tourists or travel guides, they can also view attractions and the reviews about them, search for attractions, and post reviews and share them on social media.

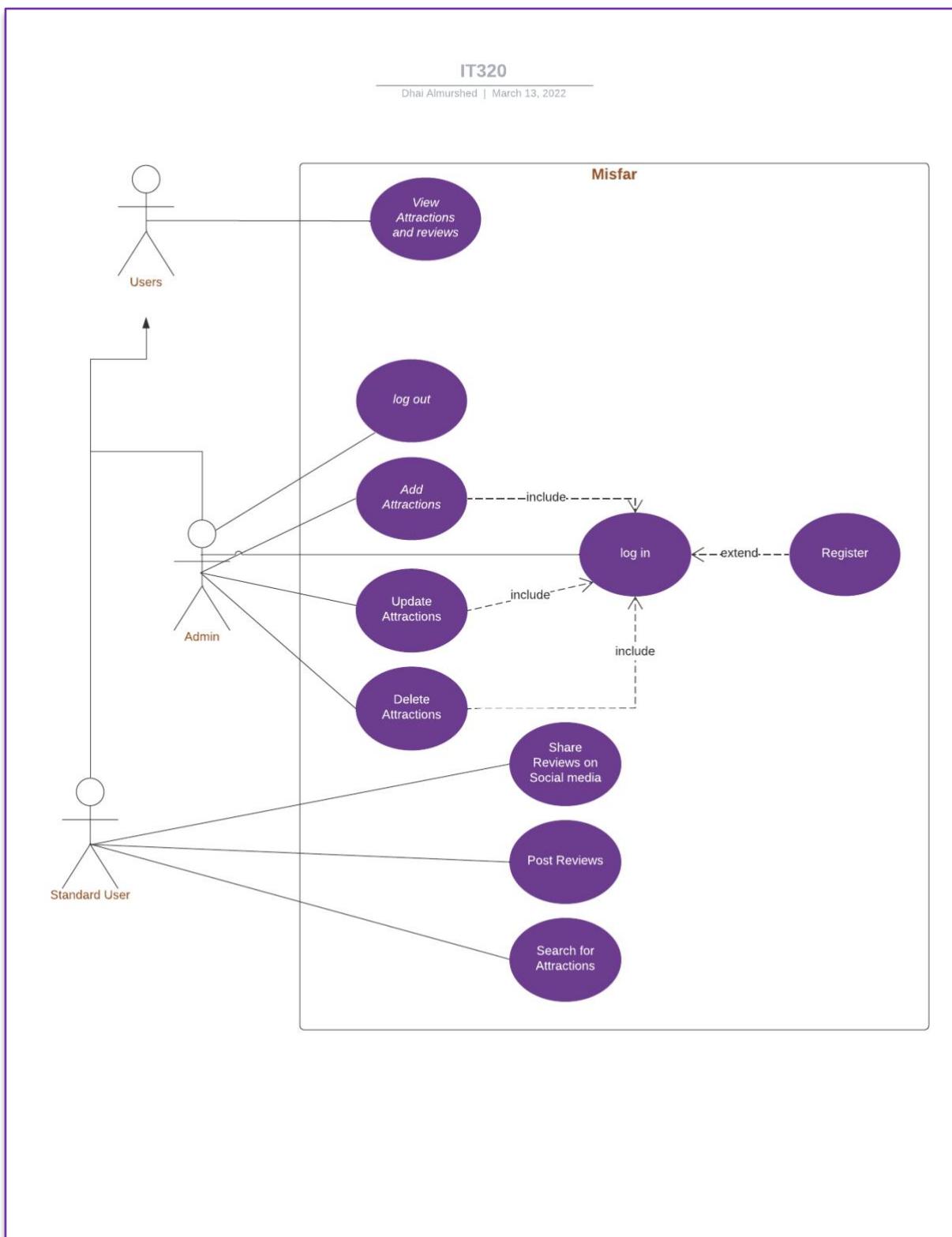


Figure 2 Use Case Diagram

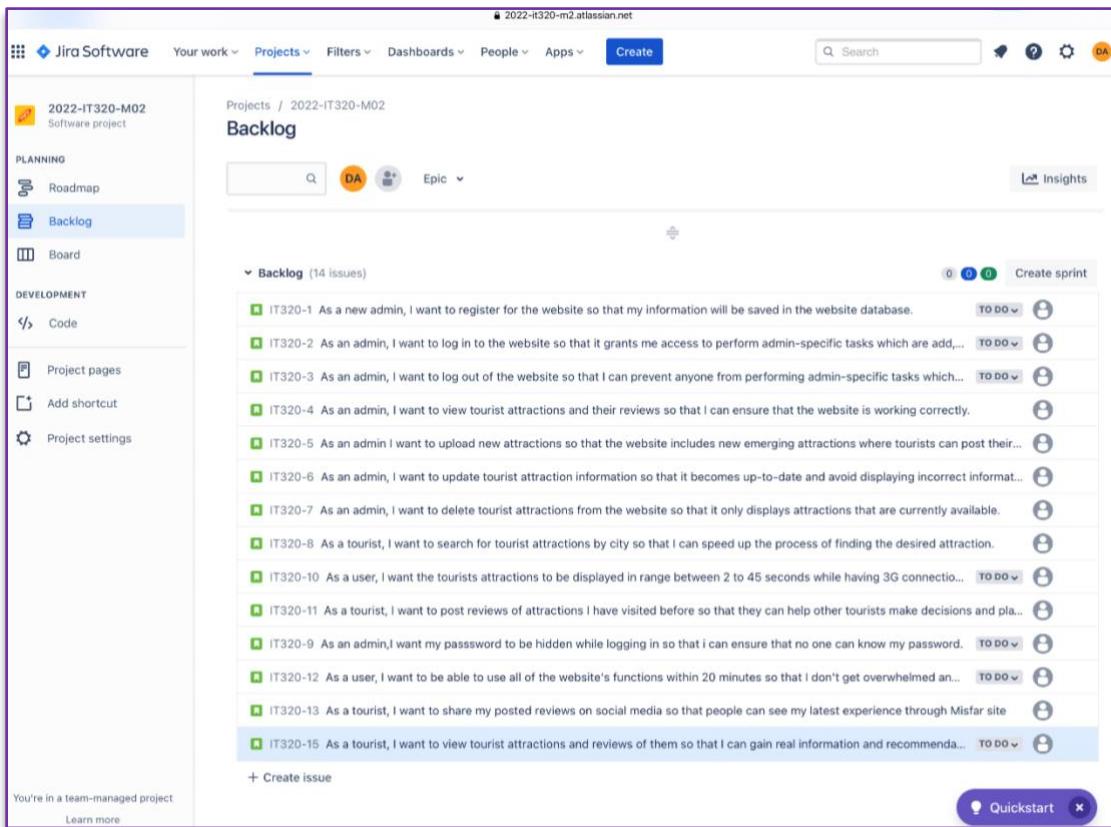
3.3 Product Backlog

In this sub-section, we will present the definition of ready which is a checklist that each item in the product backlog should meet, as it is a way to determine that items at the top of the backlog should be ready to be moved into a sprint. Also, the product backlog table below lists all of our website requirements in the form of user stories. The highest items are the ones that we will start implementing in the next sprint. We specified in detail their size, type, and acceptance criteria.

Definition of Ready	
<input type="checkbox"/>	Business value is clearly articulated.
<input type="checkbox"/>	Team is appropriately staffed relative to the PBI.
<input type="checkbox"/>	The user story has been estimated and is under a certain size.
<input type="checkbox"/>	Acceptance criteria is clear and defined.
<input type="checkbox"/>	The team has what they need to start working on the story, but some details will be discovered during the development.
<input type="checkbox"/>	Performance criteria, if any, are defined and testable

Table 3 Definition Of Ready

All the items in the product backlog checks the definition of ready list above.



The screenshot shows the Jira Software interface for the project "2022-IT320-M02". The left sidebar includes navigation links for "Roadmap", "Backlog" (which is currently selected), and "Board". The main area displays the "Backlog" with 14 issues listed as user stories. Each issue has a small icon, a summary text, and a "Status" dropdown menu set to "TO DO". The issues are:

- IT320-1 As a new admin, I want to register for the website so that my information will be saved in the website database.
- IT320-2 As an admin, I want to log in to the website so that it grants me access to perform admin-specific tasks which are add,...
- IT320-3 As an admin, I want to log out of the website so that I can prevent anyone from performing admin-specific tasks which...
- IT320-4 As an admin, I want to view tourist attractions and their reviews so that I can ensure that the website is working correctly.
- IT320-5 As an admin I want to upload new attractions so that the website includes new emerging attractions where tourists can post their...
- IT320-6 As an admin, I want to update tourist attraction information so that it becomes up-to-date and avoid displaying incorrect informat...
- IT320-7 As an admin, I want to delete tourist attractions from the website so that it only displays attractions that are currently available.
- IT320-8 As a tourist, I want to search for tourist attractions by city so that I can speed up the process of finding the desired attraction.
- IT320-10 As a user, I want the tourists attractions to be displayed in range between 2 to 45 seconds while having 3G connectio...
- IT320-11 As a tourist, I want to post reviews of attractions I have visited before so that they can help other tourists make decisions and pla...
- IT320-9 As an admin, I want my password to be hidden while logging in so that I can ensure that no one can know my password.
- IT320-12 As a user, I want to be able to use all of the website's functions within 20 minutes so that I don't get overwhelmed an...
- IT320-13 As a tourist, I want to share my posted reviews on social media so that people can see my latest experience through Misfar site
- IT320-15 As a tourist, I want to view tourist attractions and reviews of them so that I can gain real information and recommenda...

Figure 3 Product Backlog In Jira

PBI	Size	Type	Acceptance Criteria
As a new admin, I want to register for the website so that my information will be saved in the website database.	2	Feature	<p>-As a new Admin,</p> <p>If I go to the register page and enter my name, username, email, and password, and click on the "register" button, then my information should be saved to the website database.</p> <p>If I go to the register page and enter any of the following information incorrectly: name, username, email, or password, then register fails and a detailed error message will be displayed.</p> <p>If I go to the register page and enter my name, username, email, and password, and click on the "register" button, then the user register session is loaded in less than ten seconds.</p>
As an admin, I want to log in to the website so that it grants me access to perform admin-specific tasks which are add, update, and delete tourist attractions.	2	Feature	<p>-As a registered admin,</p> <p>If I go to the log in page and enter my username and password, and click on the "log in" button, then my information should be retrieved from the website database.</p> <p>If I go to the log in page and enter either my username or password incorrectly, then log in fails and a detailed error message will be displayed.</p> <p>If I go to the log in page and enter my username and password, and click on the "log in" button, then the user's log in session is loaded in less than eight seconds.</p>
As an admin, I want to log out of the website so that I can prevent anyone from performing admin-specific tasks which are add, update, and delete tourist attractions.	1	Feature	<p>-As a registered admin,</p> <p>If I click on log out button, Then the system should prevent me from doing admin specific tasks.</p> <p>If I click on log out button, Then the system should redirect me to website home page.</p>
As an admin, I want to view tourist attractions and their reviews so that I can ensure that the website is working correctly.	3	Feature	<p>-As a registered admin,</p> <p>If I go to the log in page and enter my username and password and click on "log in", then the site will redirect me to the homepage where all the attractions are presented.</p> <p>-As an admin,</p> <p>-In the homepage of the site I will be able to view the attractions and all the information about it.</p> <p>-In the homepage of the site I will be able to view the reviews associated with a specific attraction.</p>
As an admin I want to upload new attractions so that the website includes new emerging attractions where tourists can post their reviews of it.	5	Feature	<p>-As a registered admin,</p> <p>If I have the attractions displayed, then I should be provided with an upload button after choosing a specific category to upload the new attraction to</p> <p>If I click "upload" and entered all the required information (such as: attraction name, short description, photos, location, opening hours, capacity and price), then the new attraction must be uploaded, and a confirmation message should appear</p> <p>If uploading a new attraction successfully done, then the new attraction must be visible on the user side in the correct category.</p> <p>If I upload the new attraction and the attraction's required information haven't been fulfilled, then I should get an error message indicating the failure of the uploading process.</p>

PBI	Size	Type	Acceptance Criteria
As an admin, I want to update tourist attraction information so that it becomes up-to-date and avoid displaying incorrect information.	3	Feature	<p>-As a registered admin,</p> <p>If I have the attractions displayed, then I should be provided with an update button next to each attraction to be able to update it.</p> <p>If I choose the attraction that is to be updated then I should have the current attraction's information displayed and also, I should be provided with options to update these information (such as: attraction name, short description, photos, location, opening hours, capacity and price).</p> <p>If I update the attraction's post, then I should view the attractions current information updated.</p> <p>If I update the attraction's post and the attraction's information did not change, then I should get an error message indicating the failure of the process.</p>
As an admin, I want to delete tourist attractions from the website so that it only displays attractions that are currently available.	2	Feature	<p>-As a registered admin,</p> <p>If I have the attractions displayed, then I should be provided with a delete button next to each attraction to be able to delete it.</p> <p>If I click on the "delete" button, then I should receive a confirmation message whether I want to proceed with the process or not.</p> <p>If I click on the agree button in the confirmation message, then the attraction should disappear, and I should be informed of the success of the process.</p> <p>If I click on the "agree" button in the confirmation message and the attraction didn't disappear then I should be informed of the failure of the process.</p>
As a tourist, I want to search for tourist attractions by city so that I can speed up the process of finding the desired attraction.	3	Feature	<p>-As a tourist,</p> <p>If I enter the website URL to search or to read reviews about an attraction, the homepage must be shown where each attraction resides in its category based on the city it is in.</p> <p>If I click on one city from the homepage to look for an attraction, another linked page will appear with all the attractions in this city, then I can choose any attraction to check its reviews or to write one.</p>
As a tourist, I want to view tourist attractions and reviews of them so that I can gain real information and recommendations about the places that will help me plan my trip easily.	2	Feature	<p>-As a tourist,</p> <p>If I have the website open, then I should view the attractions categories.</p> <p>If I choose the attraction's category and click on it, then I should view the attraction's posts belonging to that category</p> <p>If I click on the attraction's post, then I should view the attraction along with the description of it which includes (attraction name, short description, photos, location, opening hours, capacity and price), and the attraction's reviews should be displayed.</p> <p>If no reviews available for a specific attraction, then "there is no review" message will display.</p>
As a tourist, I want to post reviews of attractions I have visited before so that they can help other tourists make decisions and plan their trip.	5	Feature	<p>-As a tourist,</p> <p>If I click on the attraction's post in the attraction's category page, then I should have a text area to be able to post my review.</p> <p>If I post reviews, then it must be visible for all users.</p>

PBI	Size	Type	Acceptance Criteria
As a tourist, I want to share my posted reviews on social media so that people can see my latest experience through Misfar site.	5	Feature	<p>-As a tourist, If I choose an attraction to write a review about, a clickable share icon for sharing the review will be shown next to the post review button.</p> <p>If I choose an attraction and write a review about it and then click the share icon, social media options will appear to choose where to share the review.</p> <p>If I choose an attraction and write a review about it and then click the share icon and chose the specific platform to share the review in, a predefined text will be shared with the review with the option to keep or delete the text.</p>
As a user, I want to be able to use all of the website's functions within 20 minutes so that I don't get overwhelmed and browse another site.	-	Feature	<p>-As a user, If I have the website open, then it should take me 20 minutes at most to navigate around the website and understand its functions.</p>
As a user, I want the tourists' attractions to be displayed in range between 2 to 45 seconds while having 3G connection so that I don't keep refreshing the page.	-	Feature	<p>-As a user, If I have the website open and the attraction's category is clicked, then the attractions should be displayed within 2 to 45 second while having a 3G connection.</p>
As an admin, I want my password to be hidden while logging in so that I can ensure that no one can know my password.	-	Feature	<p>-As a user, If I start typing the password in the specific text box then, I want stars to be shown instead of my password.</p> <p>-As an admin, If I enter my password while login in or register process in the specific text box, then the password must not be written as plain text If I start typing the password while login in, then the password must be shown as stars to ensure security</p>

Table 4 User Stories

3.4 Definition of Done

In this sub-section, we will present the definition of done which is a checklist of the types of work that we must successfully complete before we can declare our work to be potentially shippable.

We will check this list again before we release our website.

Definition of Done	
<input type="checkbox"/>	The design is reviewed by the product owner or one of the stakeholders.
<input type="checkbox"/>	In code: All code is developed. The code has no errors. The code is commented. The code is reviewed.
<input type="checkbox"/>	In testing: User story acceptance testing. Integration testing. User acceptance testing.
<input type="checkbox"/>	Zero known defects
<input type="checkbox"/>	Documentation updated
<input type="checkbox"/>	Upload code source on GitHub

Table 5 Definition of Done



CHAPTER 4

SYSTEM DESIGN

4 Chapter 4: System Design

In this chapter we are going through the system architecture, class diagram, data design, component design, and interface design.

4.1 System Architecture

The best architectural pattern we found that stylized our system and help in defining it very well was the *Client-Server Architecture Pattern*.

Client-server architecture is a network model where every process or computer on a network is a server or a client, it is an application network separating tasks between the clients and servers that live in the same system or have to communicate through a computer network. The server-client mainly relies on sending the request to another program to access the service made accessible by the server. This server runs a few programs that share the resources with & distribute work among the clients.

We decided to choose this specific pattern because we have a server that is connected to a database where all the system information is stored there. The clients will request a service from the server and the server will respond with the information that has been requested.

The principle advantage of this model is that it meets up with the non-functional requirement Performance, Client-Server Architecture can insure Performance for us due to the distributed servers across the network. Also, the general functionality can be available to all clients and doesn't need to be implemented by all services.

The reason why we chose this particular pattern among the others goes back to the best usage of each pattern. As it was described, the *MVC pattern* are used when there are multiple ways to view and interact with data which is not applicable in our system since we can view data by only sending a request and waiting for a response from the server. As well as the *Layered Architecture*, it organizes the system into layers where each layer provides a set of services and it is used when the development is spread across several teams, However our system need not to be implemented in such a way since one team is responsible for the whole system. Although our system contained data and needs to be connected to a database to function probably we didn't use the *Repository Architecture* because it stores the whole data in one repository to be available for independent components our system doesn't combine independent components to one database - repository- so it wasn't the architecture that best stylized our system. Finally, the *Pipe and Filter Architecture*, it is commonly used in data processing applications when the transformations are sequential which is clearly not useful in our system since we can go back and forth between the different pages.

Client-Server Architecture:

Figure 4 represent the client-server Architecture, collect data means that the admin initiates the request by signup, log in, log out, upload, update, and delete the attractions, while tourists post, and share reviews about the attractions being uploaded by admin. Both Admin and tourist can request search by city and view attractions along with their reviews. And server will response upon that specific request and display it to the user (admin/tourist).

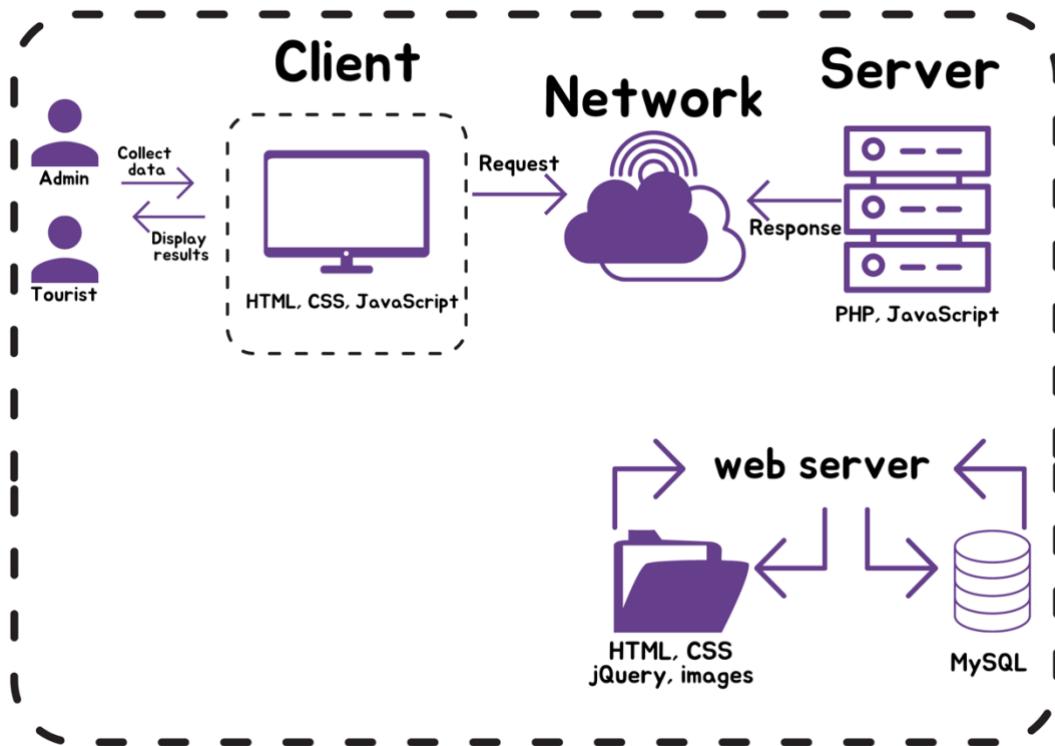


Figure 4 Client-Server Architecture

4.2 Class Diagram

In this sub section we draw a class diagram which model the organization of 'مسفار' website. However, attachment1 and attachment2 as parameters for postReview() function are optional.

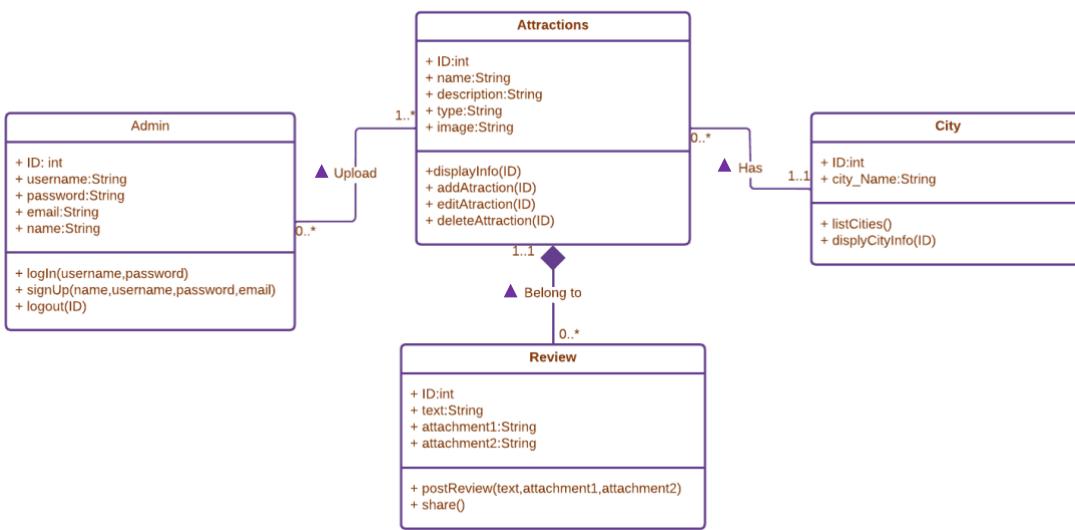


Figure 5 Class Diagram

4.3 Data Design

This section describes the data structure using entity relation, database schema and database dictionary.

ER:

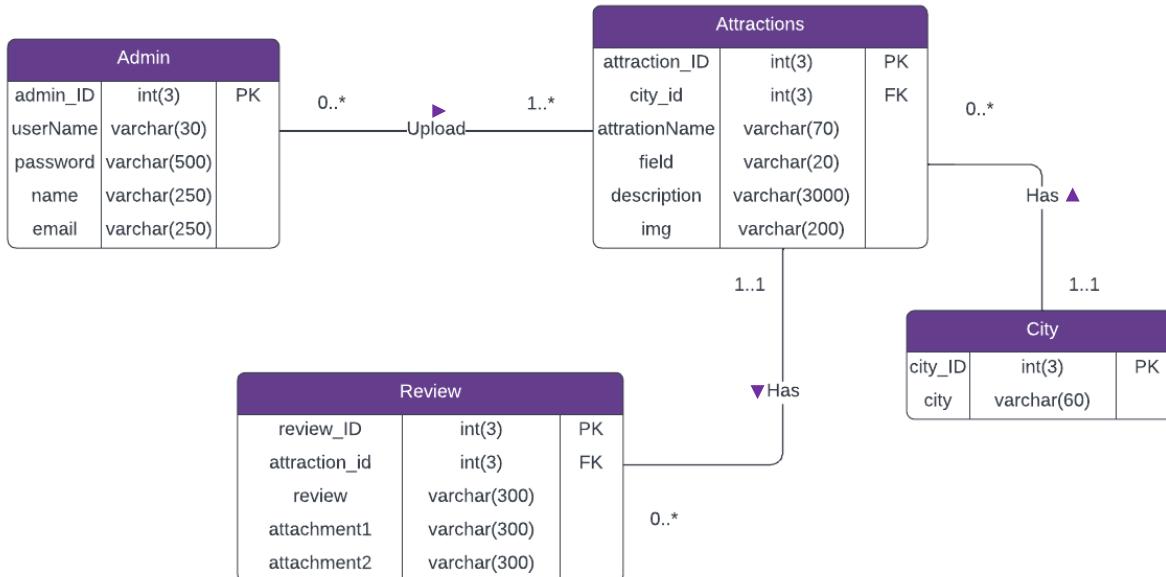


Figure 6 Entity Relationship Diagram

Relational Schema:

Admin (admin_ID, userName, password, name, email)

Primary key: admin_ID

Attractions (attraction_ID, city_id, attractionName, field, description, img)

Primary key: attraction_ID

Foreign key: city_id reference city_ID

Reviewer (review_ID, attraction_id, review, attachment1, attachment2)

Primary key: review_ID

Foreign key: attraction_id reference attraction_ID

City (city_ID, city)

Primary key: city_ID

Data Dictionary showing description of all entities:

Entity Name	Description	Occurrence
Admin	<i>A person who uploads/deletes/updates an attraction by logging in and specifying the action to be done</i>	Each admin Upload one or more attractions.
Attractions	<i>A place/land mark that is uploaded by the admin along with a proper description and can be later modified</i>	each attraction can be updated by zero or many Admins. Each attraction Resides exactly in one city. Each attraction Has none or many reviews.
City	<i>A place that holds the attractions in it</i>	Each city Has zero to many attractions.
Review	<i>An appraisal of an attraction published in the website</i>	Each review Belongs to one and only one attraction.

Table 6 Data Dictionary Description of Entities

Data Dictionary showing description of all relationships:

Entity Name	Multiplicity	Relationship	Entity Name	Multiplicity
Admin	0..*	Upload	Attractions	1..*
Attractions	0..*	Has	Review	1..1
City	1..1	Has	Attractions	0..*

Table 7 Data Dictionary Description of Relationship

Data Dictionary showing description of all attributes:

Entity Name	Attribute	Description	Data Type	Length	Nulls	Multi-Valued	Default Value	Range	PK
Attractions	attraction_ID	Uniquely identifies the attraction and an auto-increment attribute	int	3	No	No	None		Yes
	attractionName	Name of the attraction	Varchar	70	No	No	None		
	field	Categorization of the attraction	Varchar	20	No	No	None		
	description	intended to give a mental image of the attraction	Varchar	3000	No	No	None		
	img	A path for the image of the attraction	Varchar	200	No	No	None		
	city_id	Shows the city that the attraction related to	Varchar	3	No	No	None		

Entity Name	Attribute	Description	Data Type	Length	Nulls	Multi-Valued	Default Value	Range	PK
City	city_ID	Uniquely identifies the city and an auto-increment attribute	int	11	No	No	None		Yes
	city	The name of the city	Varchar	60	No	No	None		

Entity Name	Attribute	Description	Data Type	Length	Nulls	Multi-Valued	Default Value	Range	PK
Review	review_ID	Uniquely identifies the review and an auto-increment attribute	int	3	No	No	None		Yes
	attraction_id	Shows the attraction that the review belongs to	int	3	No	No	None		
	review	An appraisal of the related attraction	Varchar	300	No	No	None		
	attachment1	A path for an image related to the attraction	Varchar	300	Yes	No	Null		
	attachment2	A path for an image related to the attraction	Varchar	300	Yes	No	Null		

Entity Name	Attribute	Description	Data Type	Length	Nulls	Multi-Valued	Default Value	Range	PK
Admin	admin_ID	Uniquely identifies the admin and an auto-increment attribute	int	3	No	No	None		Yes
	userName	Username of the admin	Varchar	30	No	No	None		
	password	A pattern that is uniquely identify and authorized the admin	Varchar	500	No	No	None		
	name	Name of the admin	varchar	250	No	No	None		
	email	Email address of the admin	varchar	250	No	No	None		

Table 8 Data Dictionary showing description of all attributes

4.4 Component Design

In this section we will show detailed modeling of add, search and post review components in our system with the help of pseudocode where we managed to demonstrate the algorithms, we are going to follow to design each component.

-Add attraction:

sprint number	PBI (user story)	User story tasks with effort estimates in hours					Sum of effort
2	As an admin I want to upload new attractions so that the website includes new emerging attractions where tourists can post their reviews of it.	Define Upload button and Upload page style	Develop the Html and CSS code for Upload page and Upload button	Develop JavaScript Input validation code	Create table in the database for attractions and develop PHP code for Add feature	Acceptance criteria is verified during testing	9 hour
		1 hour	2 hours	1 hour	4 hours	1 hour	

Table 9 User Story Task for Add feature

BEGIN

IF administrator click on the Upload attraction THEN

Display Title, category, description, city, image input fields

IF administrator click on the Upload image THEN

READ image

ENDIF

IF administrator click on Upload THEN

READ Title, category, description, city

ENDIF

WHILE administrator enters existed name **OR** empty field

DISPLAY error message

READ Title, category, description, city, image

ENDWHILE

IF administrator enter new name **AND not empty field THEN**

DISPLAY confirmation message

WRITE Title

ENDIF

ENDIF

END

-Search

Sprint number	PBI (user story)	User story tasks with effort estimates in hours				Sum of effort
2	As a tourist, I want to search for tourist attractions by city so that I can speed up the process of finding the desired attraction.	Define searching categories' Element style.	Develop the Html and CSS code for searching categories' Element	Create table in the database for Cities and develop PHP code for search feature	Acceptance criteria is verified during testing	3 hours
		Half hour	1hours	1 hour	half hours	

Table 10 User Story Task For search feature

BEGIN

DISPLAY categories

IF tourist clicks on a category **THEN**

DISPLAY the Attractions belong to the clicked category

ENDIF

END

-Post review

Sprint number	PBI (user story)	User story tasks with effort estimates in hours				Sum of effort
2	As a tourist, I want to post reviews of attractions I have visited before so that they can help other tourists make decisions and plan their trip	Define post review elements style	Develop the Html and CSS code for post review elements	Create table in the database for reviews and develop PHP code for post review feature	Acceptance criteria is verified during testing	3 hours
		Half hour	1 hour	1 hour	half hours	

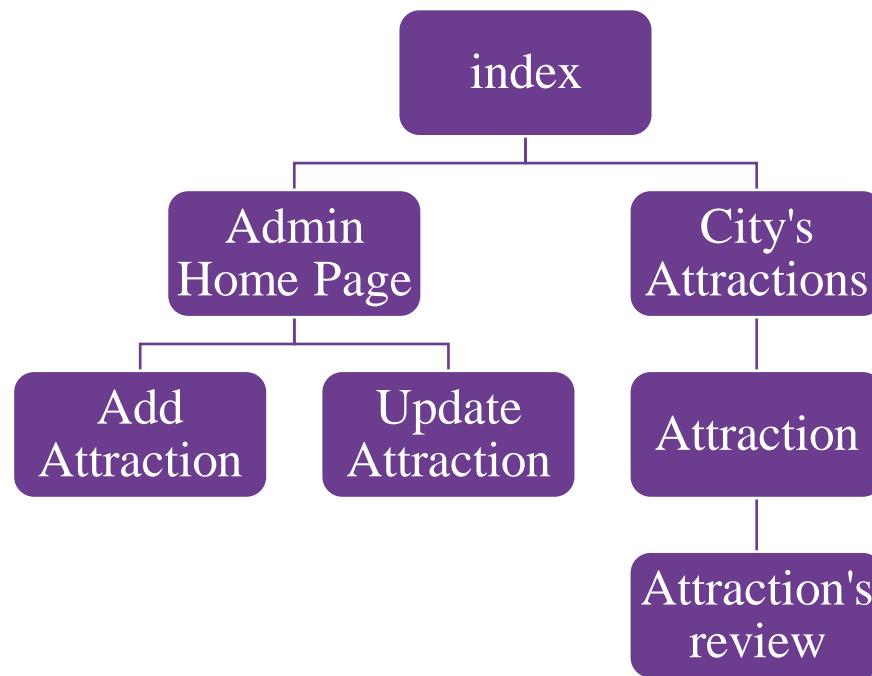
Table 11 User Story Task For Post Review Feature

```
BEGIN
DISPLAY review input field
WHILE tourist click post
    READ review
    IF empty THEN
        DISPLAY error message
    ENDIF
    IF tourist enters review THEN
        READ review
    ENDIF
    IF tourist click on upload file THEN
        Read the selected File
        IF File >2 THEN
            DISPLAY error message
        ENDIF
        IF File is not image THEN
            DISPLAY error message
        ENDIF
    ENDIF
    IF no FILE THEN
        DISPLAY confirmation message
        WRITE reviews
    ELSE
        DISPLAY confirmation message
        WRITE reviews
        WRITE attach file
    ENDIF
    IF tourist click on attach file THEN
        DISPLAY attached images
    ENDIF
ENDWHILE
END
```

4.5 Interface Design

In this section we will show the website structure using a site map, the UX guidelines that is incorporated while designing the interface, and the user interface manual.

- Site map:



- UX guidelines applied on the website:

#Rule	Principle	Figure No	How is this principle applied?
1	Learnability Principles	Predictability	- Figure 40 - The admin can predict that by pressing the "Update" button, the system will update the attraction according to the changes she or he made.
2		Synthesizability (immediate honesty)	- Figure 43 - Figure 8 - When the admin updates an attraction, the system will respond with a confirmation message confirming whether the operation was successful or not. - When a user posts a review, the system will respond with an alert message confirming whether the review was posted successfully or not.
3		Familiarity	- Figure 1 #2 - Figure 33 #1 - Figure 3 #5 - The "log in", "log out", "attachments" icons are a metaphor for real-life objects.
4		Generalizability	- Figure 12 - Figure 21 - The "log in" "sign up" form pages are similar to most websites.
5	Flexibility Principles	Dialog initiative (System preemptive)	- Figure 44 - The admin must answer the confirmation message that appears when she or he deletes an attraction.
6	Robustness Principles	Observability (Reachability)	- Figure 2 #1 - The users and admins can navigate through pages from the breadcrumbs.
7		Recoverability	- Figure 21 #6 - If the admin clicks on the "sign up" link accidentally, there is a link below that takes her or him back immediately to the "log in" form.

Table 12 User Experience Guidelines

- User interface manual:

1 User

1.1 User home page



Figure 7 User Home Page

#	Description
1	The website's logo.
2	A button that opens a log-in form for preexisting admins that has two input fields (username and password) and a link that opens a sign-up form for new admins that has four input fields (name, username, email, and password) and a link that reopens the log-in form again.
3	A text field that informs the user of the website's purpose.
4	A collection of clickable images of cities. When you click on a city image, it will transfer you to that city's attractions page. When you hover over a city image, it shows a brief description of that city.
5	An image that shows the contact information for the website.

Table 13 User Home Page

1.2 If the user clicked on a city image -#4 from table 13-

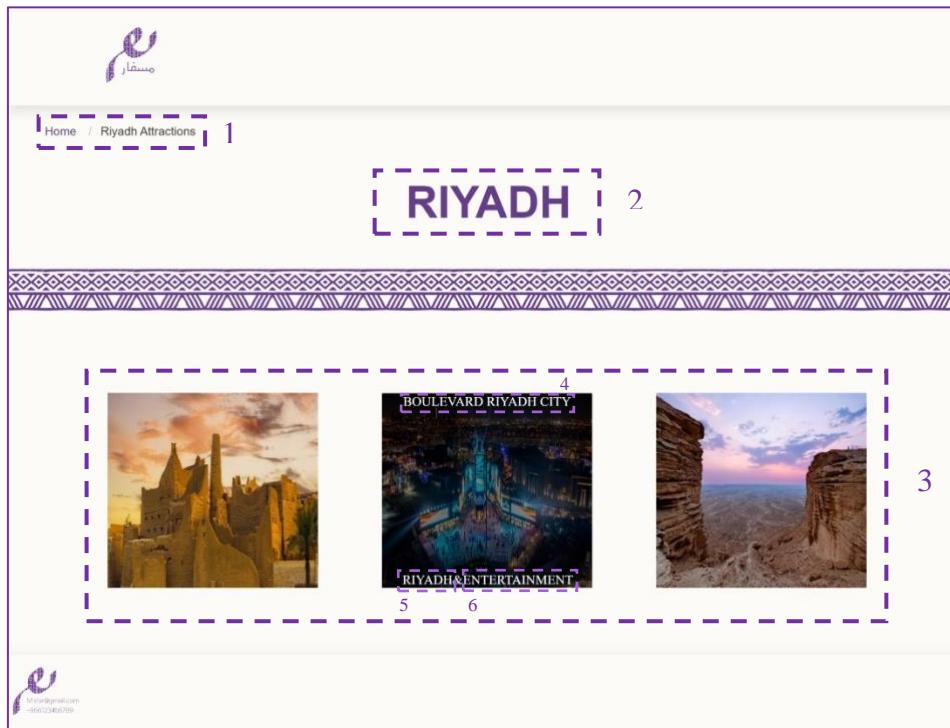


Figure 8 Attractions Page for a Specific City

#	Description
1	A text path or a "breadcrumb trail" that shows where the user is on the website, from the home page to the user's current location. Every step of that path is clickable.
2	A text field that shows the name of the city where the attractions belong.
3	A collection of clickable images of attractions. When you click on an attraction image, it will transfer you to that attraction's review page.
4	When you hover over an attraction image, it shows the attraction name
5	When you hover over an attraction image, it shows the attraction location (Riyadh, Al Ula, and Jeddah).
6	When you hover over an attraction image, it shows the attraction category (history, museums, entertainment, and parks).

Table 14 Attractions Page for a Specific City Description

1.3 If the user clicked on an attraction image -#3 from table 14-

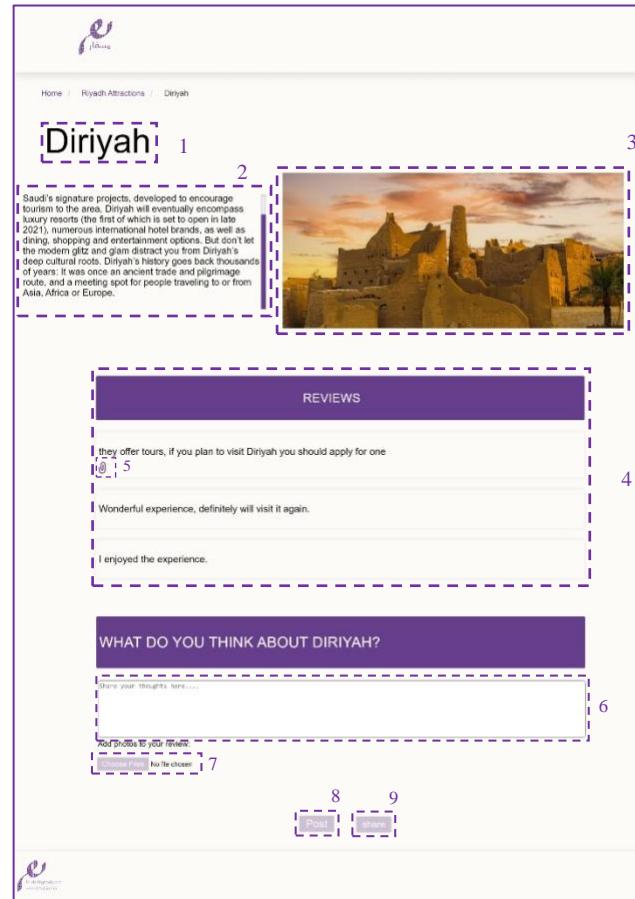


Figure 9 Attraction Review Page

#	Description
1	A text field that shows the name of the attraction.
2	A text field that shows the description of the attraction.
3	An image of the attraction.
4	The Reviews area, which contains a list of reviews posted by users.
5	A button that appears only when the user adds photos to their review. It will transfer you to a page with the user's pictures of the attraction.
6	An input text field for the user to write her or his review of the attraction.
7	A button that allows users to add photos of the attraction and attach them to their review.
8	A button that allows the user to post their review to the attraction's review page.
9	A button that allows users to share their reviews on social media platforms (Twitter, Facebook, and WhatsApp)

Table 15 Attraction Review Page Description

1.3.1 If there are no reviews on the attraction review page

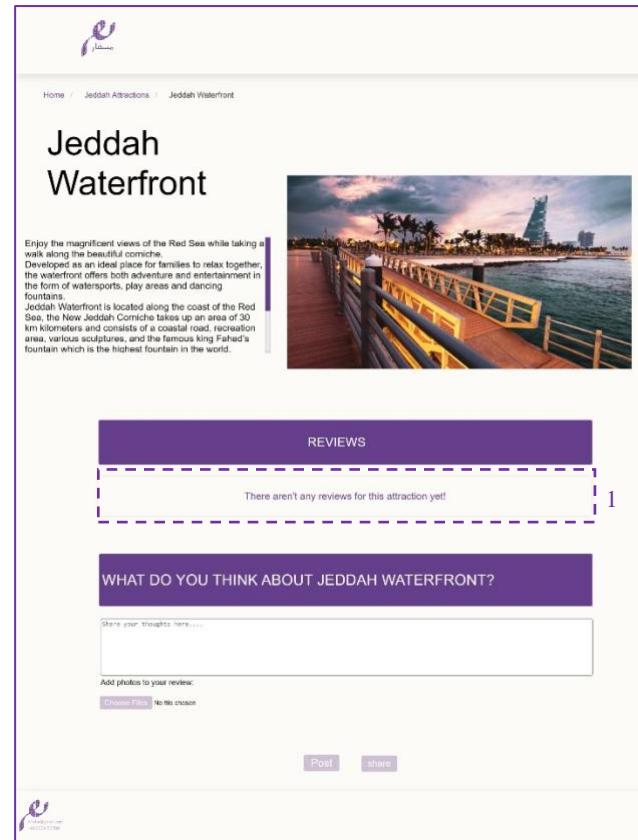


Figure 10 Attraction Review Page When There aren't Any Reviews

#	Description
1	A system response message is shown when there are no reviews of the attraction.

Table 16 Attraction Review Page When There aren't Any Reviews Description

- 1.3.2 If the user clicked on the post button -#8 from table 15- and the input text filed -#6 from table 15- was empty

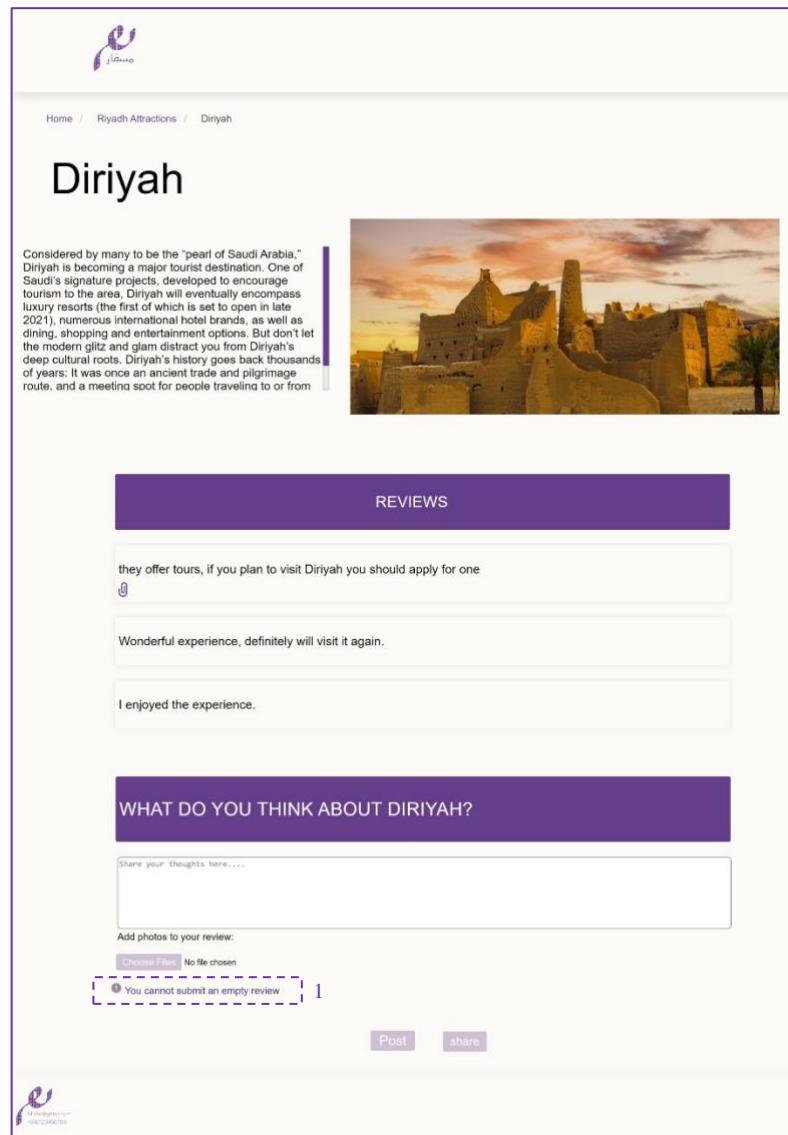


Figure 11 System Error Message When User Post an Empty Review.

#	Description
1	A system error message is shown when the user tries to post an empty review.

Table 17 System Error Message When User Post an Empty Review Description

- 1.3.3 If the user clicks on the post button -#8 from table 15- and adds more than two photos to the review -button #7 from table 15-

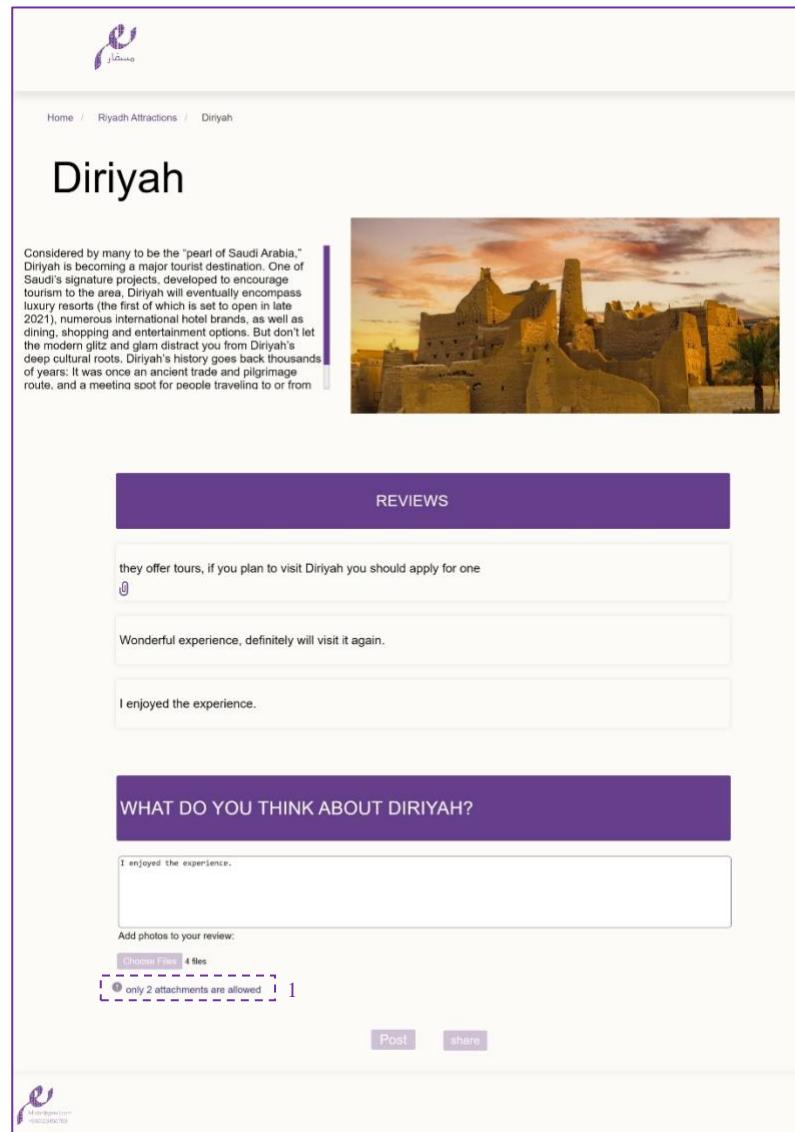


Figure 12 System Error Message When User Post Review with More Than Two Photos

#	Description
1	A system error message is shown when the user tries to add more than two photos to the review.

Table 18 System Error Message When User Post Review with More Than Two Photos Description

1.3.4 If the user adds any file other than a photo to the review -button #7 from table 15-

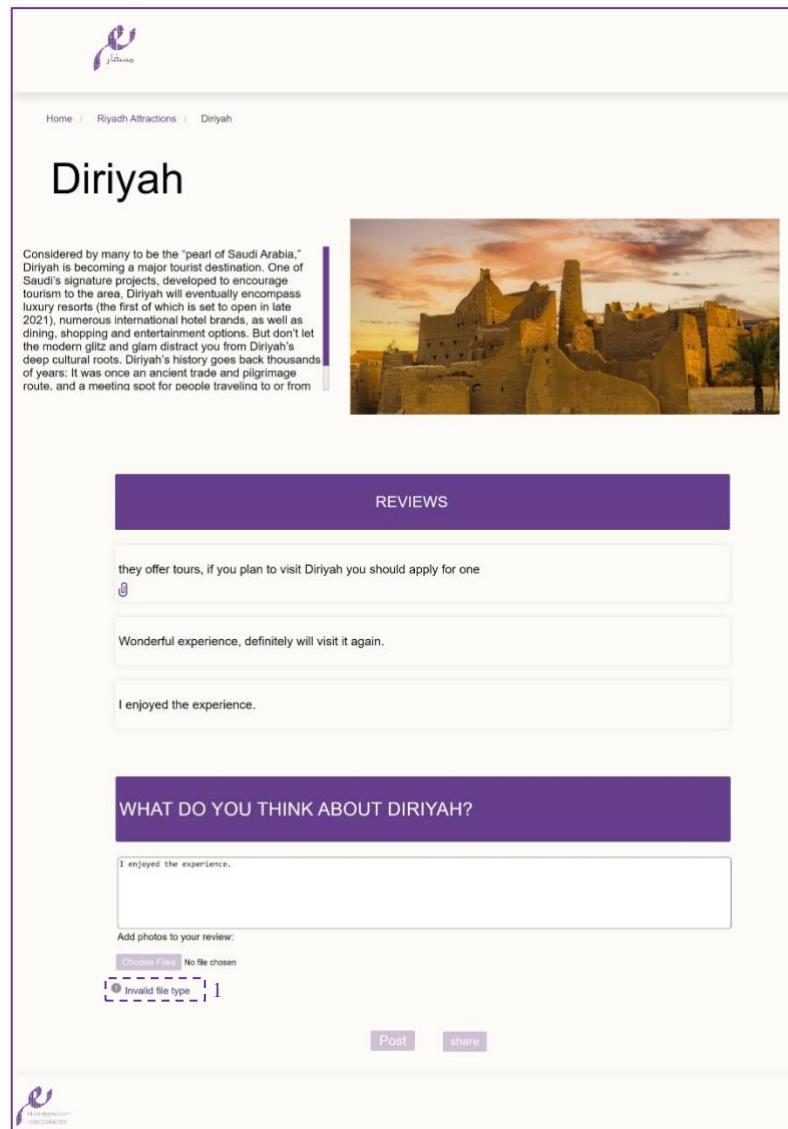


Figure 13 System Error Message When User Adds Any File Type Other Than a Photo

#	Description
1	A system error message is shown when the user adds any file other than a photo to the review.

Table 19 System Error Message When User Adds Any File Type Other Than a Photo Description

- 1.3.5 If the user clicks on the post button -#8 from table 15- and the review is posted successfully

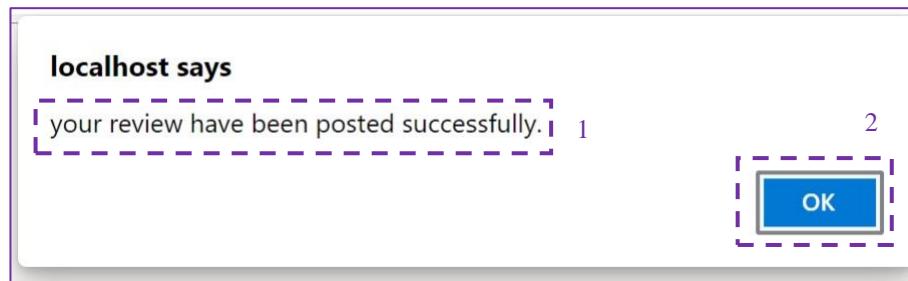


Figure 14 System Response Message When the User Posts a Review Successfully

#	Description
1	A system response message is shown when the user successfully posts a review.
2	A button that transfers you back to the attraction review page.

Table 20 System Response Message When the User Posts a Review Successfully Description

1.3.6 If the user clicks on the share button -#9 from table 15-

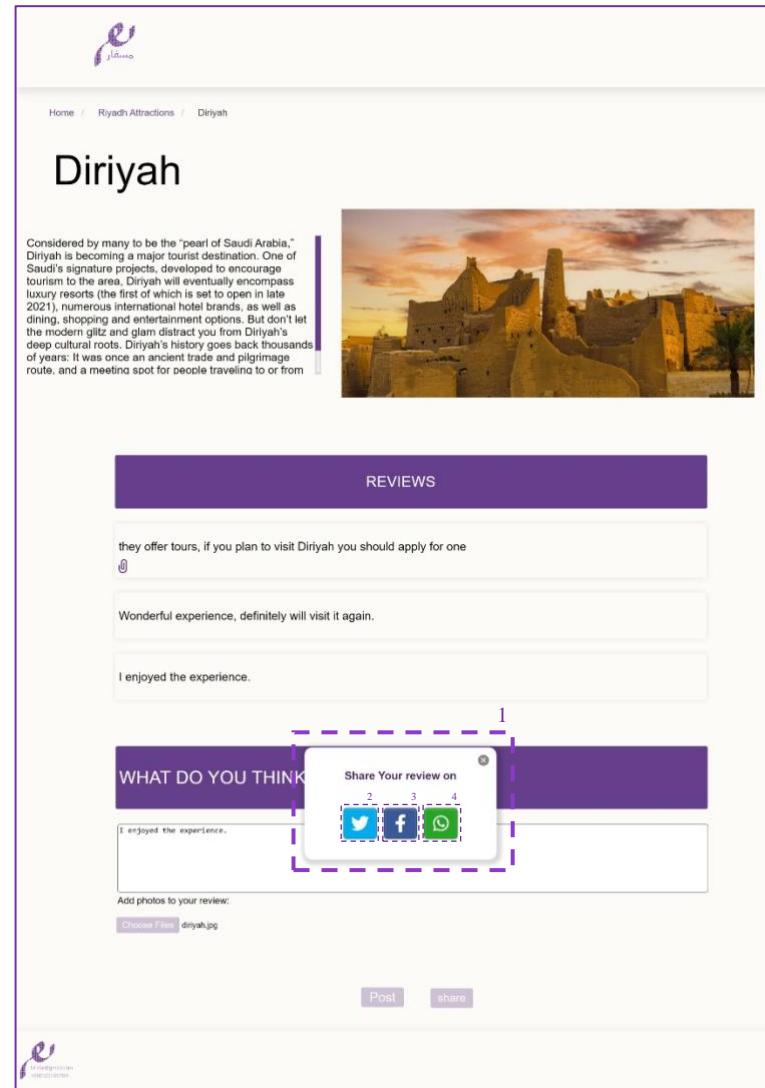


Figure 15 Attraction Review Page When User Click the Share Button

#	Description
1	A pop-up window appears, displaying three buttons indicating the apps on which the review will be shared.
2	A button to share the review on Twitter.
3	A button to share the review on Facebook.
4	A button to share the review on WhatsApp.

Table 21 Attraction Review Page When User Click the Share Button Description

1.3.6.1 If the user clicks on -buttons from #2 to #4 from table 21-

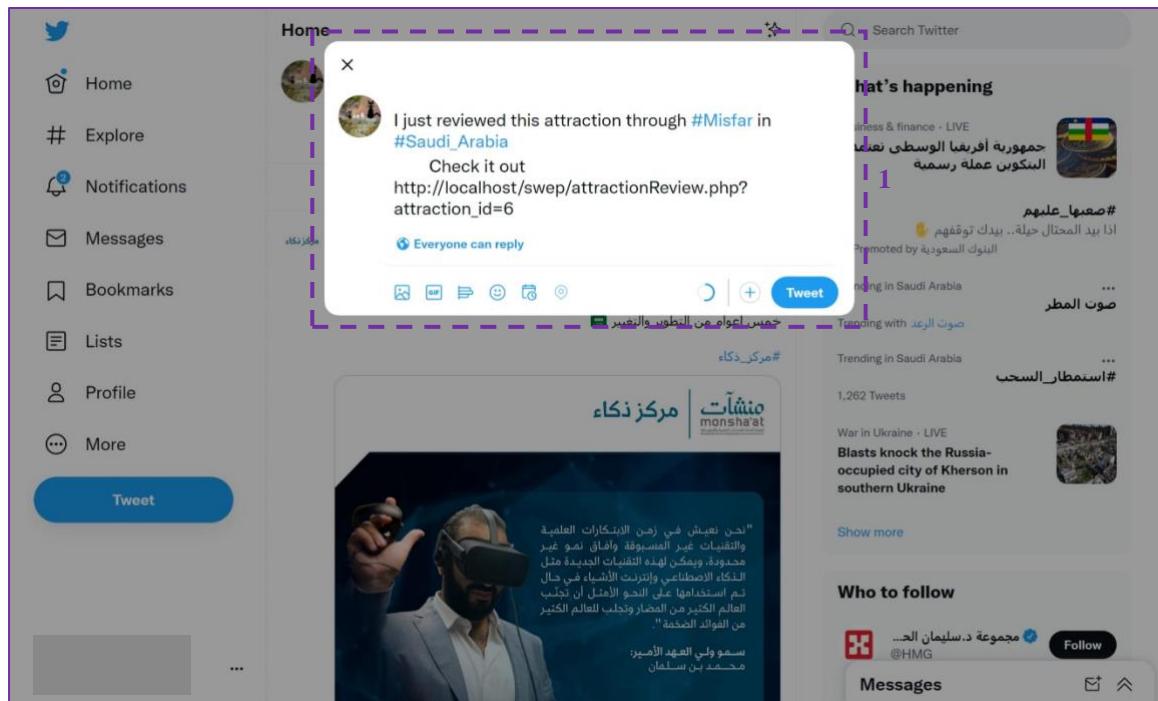


Figure 16 the New Window of the App That the Review Will be Shared on

#	Description
1	It will open a new window of the app that review will be shared on with a previously written message.

Table 22 the New Window of the App That the Review Will be Shared on Description

1.4 If the user clicks on the attachments button -#5 from table 15-

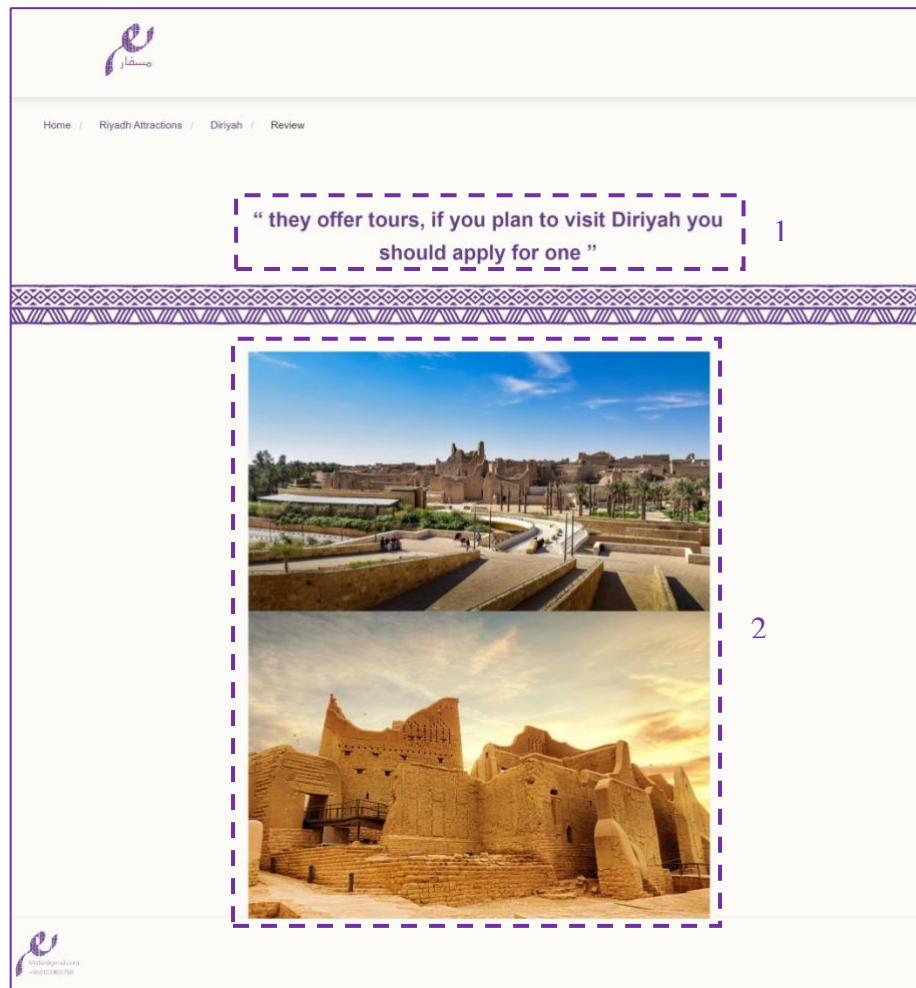


Figure 17 User's Pictures of the Attractions

#	Description
1	A text field that shows the user's review.
2	The attachment area, which contains the photos of the attraction posted by the user.

Table 23 User's Pictures of the Attractions Description

2 Admin

2.1 If the user clicks on the log-in button -#2 from table 13-

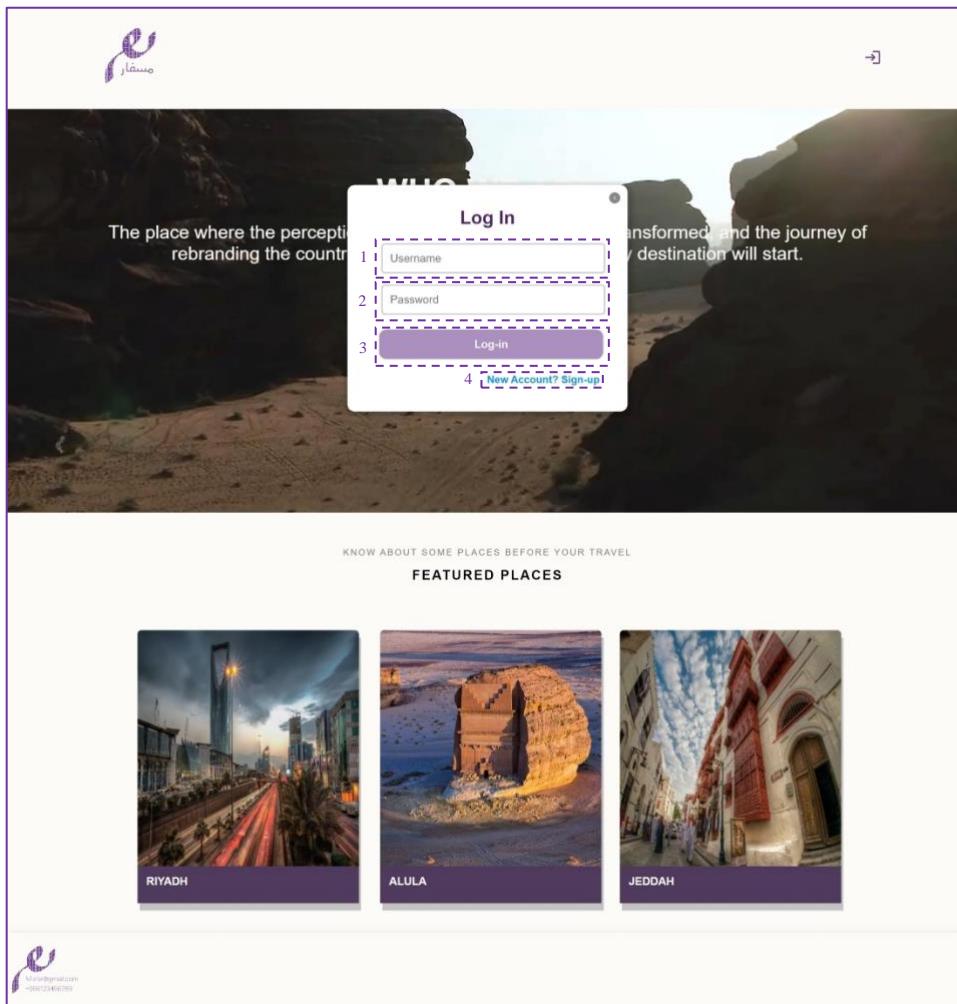


Figure 18 The Admin Log-in Form

#	Description
1	An input text field for admins to write their username. A username must not contain digits.
2	An input text field for admins to write their password. A Password should be at least 8 characters long. A password should contain at least one number. A password should contain at least one capital letter. A password should contain at least one small letter.
3	A button to log-in and transfer you to the admin homepage.
4	A link that transfers you to the admin sign-up form.

Table 24 The Admin Log-in Form Description

- 2.1.1 If the admin clicks on the log-in button -#3 from table 24- and username field -#1 from table 24- or password filed -#2 from table 24- are empty

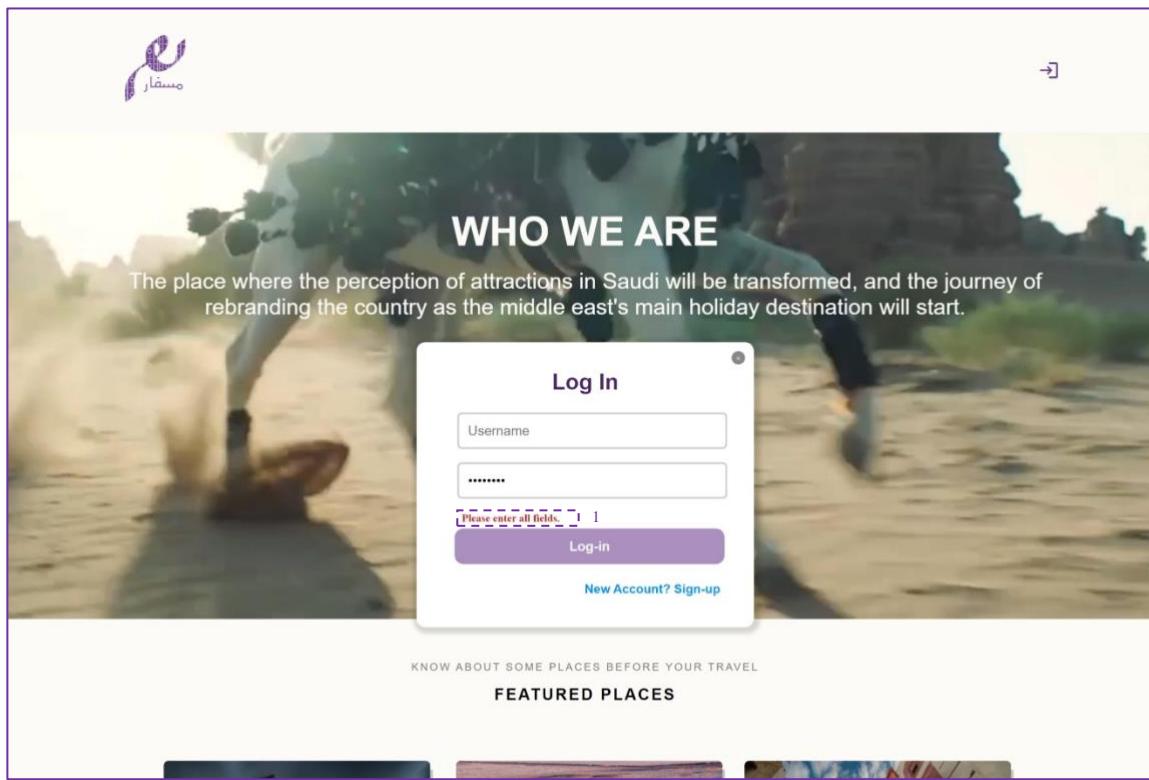


Figure 19 System Error Message When the Admin Log-in With an Empty Username or Password

#	Description
1	A system error message is shown when the admin tries to log-in with an empty username or password.

Table 25 System Error Message When the Admin Log-in With an Empty Username or Password Description

- 2.1.2 If the admin clicks on the log-in button -#3 from table 24- and username field -#1 from table 24- or password filed -#2 from table 24- are incorrect (no match found in the database)



Figure 20 System Error Message When the Admin Tries to Log-in With an Incorrect Username or Password

#	Description
1	A system error message is shown when the admin tries to log-in with an incorrect username or password.
2	A button that transfers you back to the home page.

Table 26 System Error Message When the Admin Tries to Log-in With an Incorrect Username or Password Description

2.1.3 If the admin clicks on the log-in button -#3 from table 24- and the entered username contain digits

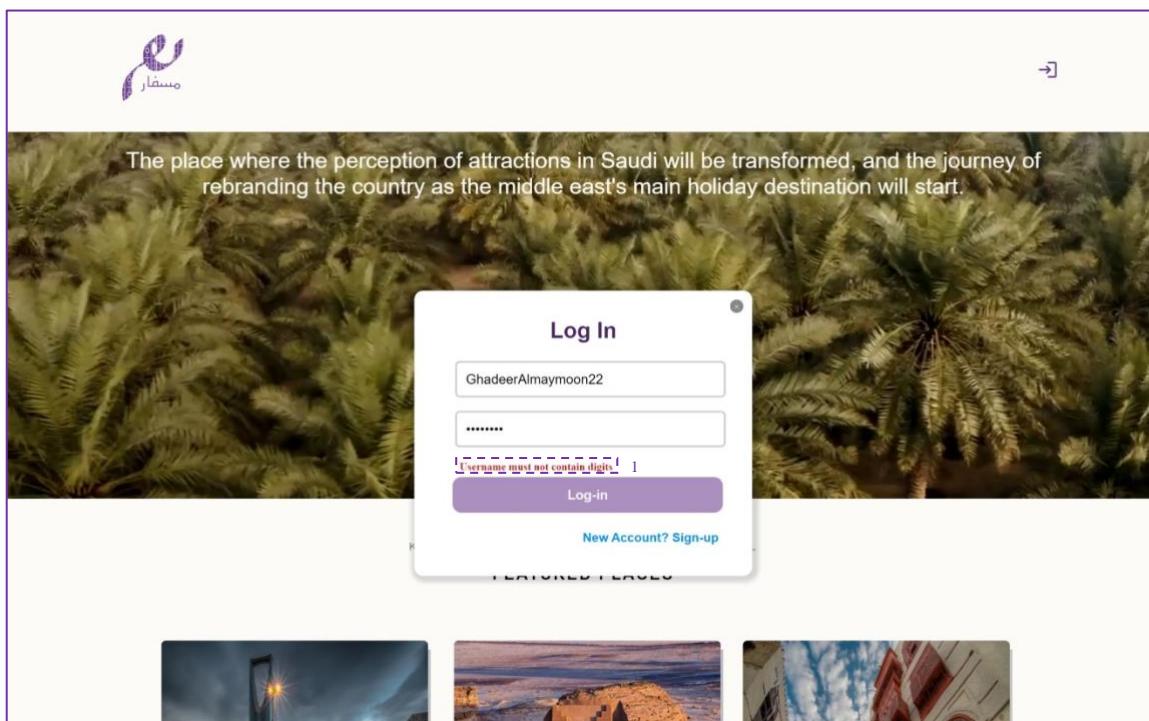


Figure 21 System Error Message When the Admin Log-in With a Username that Contains Digits

#	Description
1	A system error message is shown when the admin tries to log-in with a username that contains digits.

Table 27 System Error Message When the Admin Log-in With a Username that Contains Digits Description

2.1.4 If the admin clicks on the log-in button -#3 from table 24- and the entered password is less than 8 characters

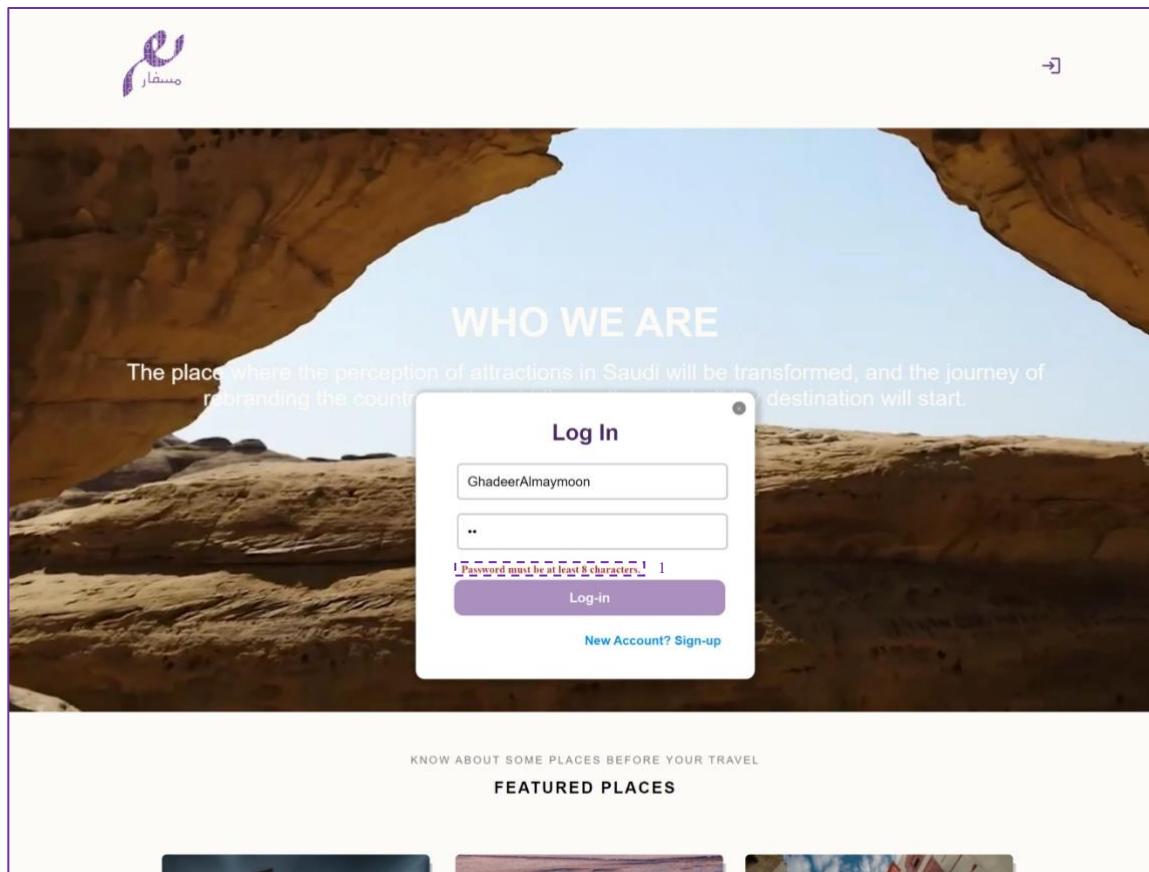


Figure 22 System Error Message When the Admin Log-in With a Password that is Less than 8 Characters

#	Description
1	A system error message is shown when the admin tries to log-in with a password that is less than 8 characters.

Table 28 System Error Message When the Admin Log-in With a Password that is Less than 8 Characters Description

2.1.5 If the admin clicks on the log-in button -#3 from table 24- and the entered password does not contain a capital letter

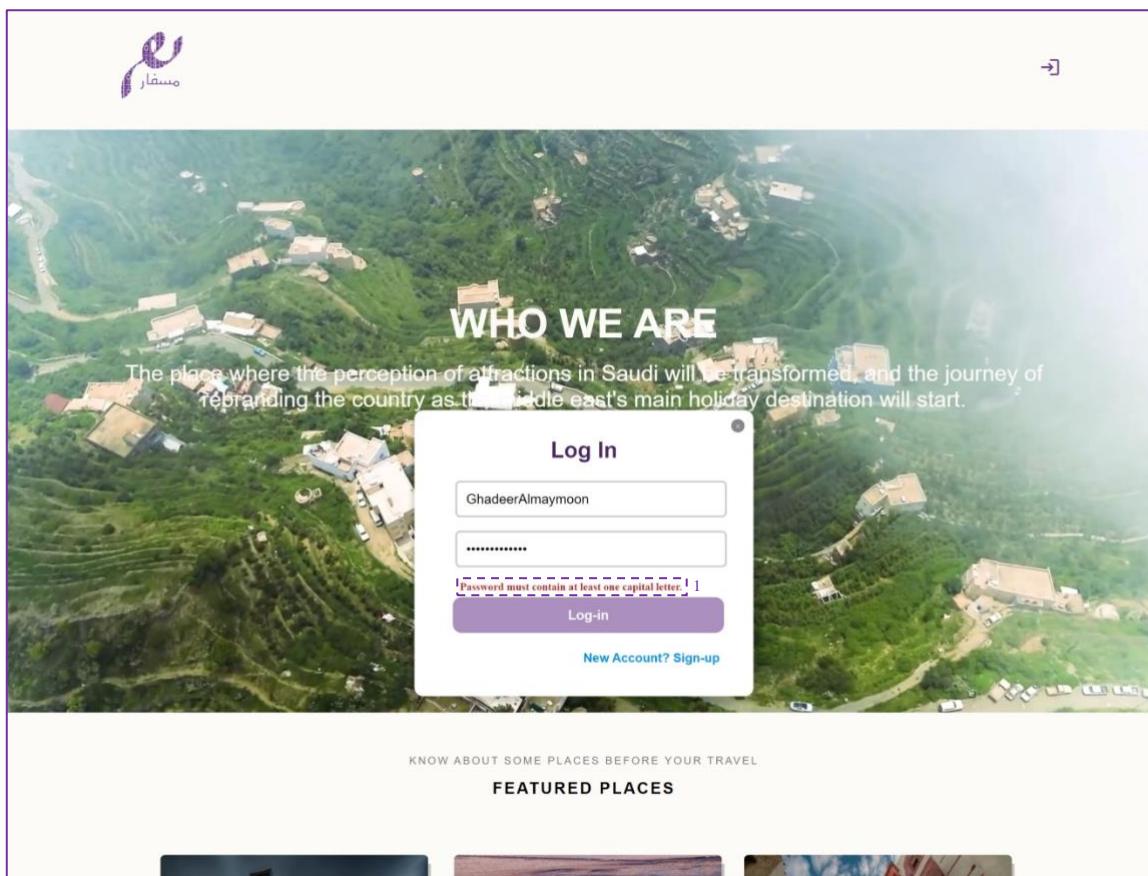


Figure 23 System Error Message When the Admin Log-in With a Password that does not Contain a Capital Letter

#	Description
1	A system error message is shown when the admin tries to log-in with a password that does not contain a capital letter.

Table 29 System Error Message When the Admin Log-in With a Password that does not Contain a Capital Letter Description

- 2.1.6 If the admin clicks on the log-in button -#3 from table 24- and the entered password does not contain a capital letter does not contain a small letter

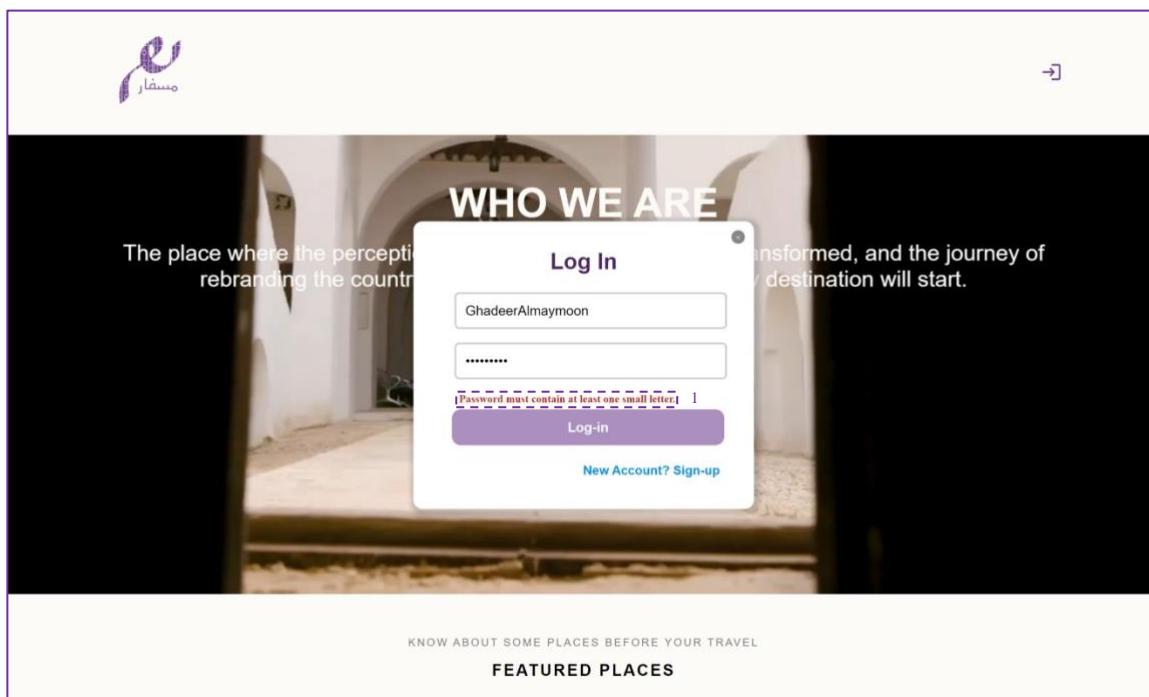


Figure 24 System Error Message When the Admin Log-in With a Password that does not Contain a Small Letter

#	Description
1	A system error message is shown when the admin tries to log-in with a password that does not contain a small letter.

Table 30 System Error Message When the Admin Log-in With a Password that does not Contain a Small Letter Description

- 2.1.7 If the admin clicks on the log-in button -#3 from table 24- and the entered password does not contain a capital letter does not contain a digit

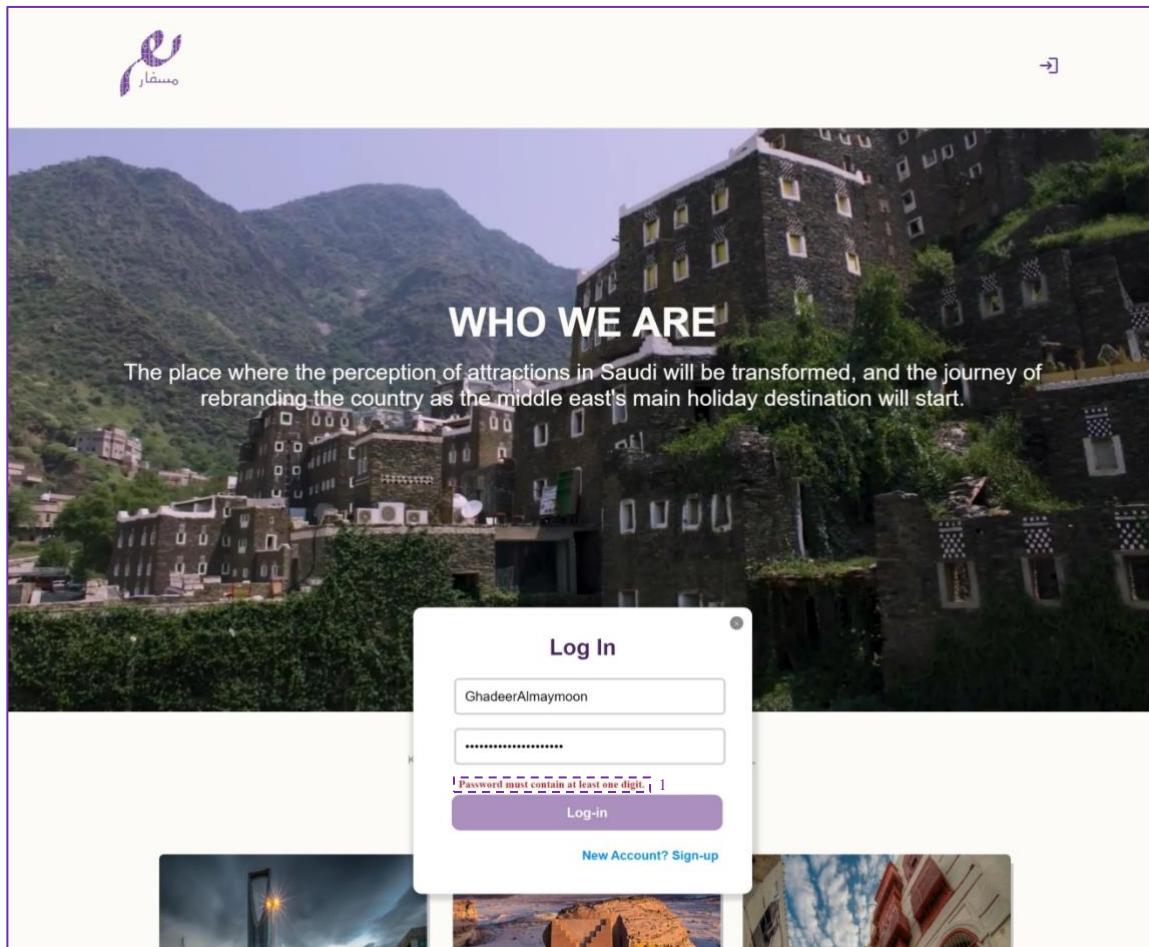


Figure 25 System Error Message When the Admin Log-in With a Password that does not Contain a Digit

#	Description
1	A system error message is shown when the admin tries to log-in with a password that does not contain a digit.

Table 31 System Error Message When the Admin Log-in With a Password that does not Contain a Digit Description

2.1.8 If the admin clicks on the log-in button -#3 from table 24- and log in successfully

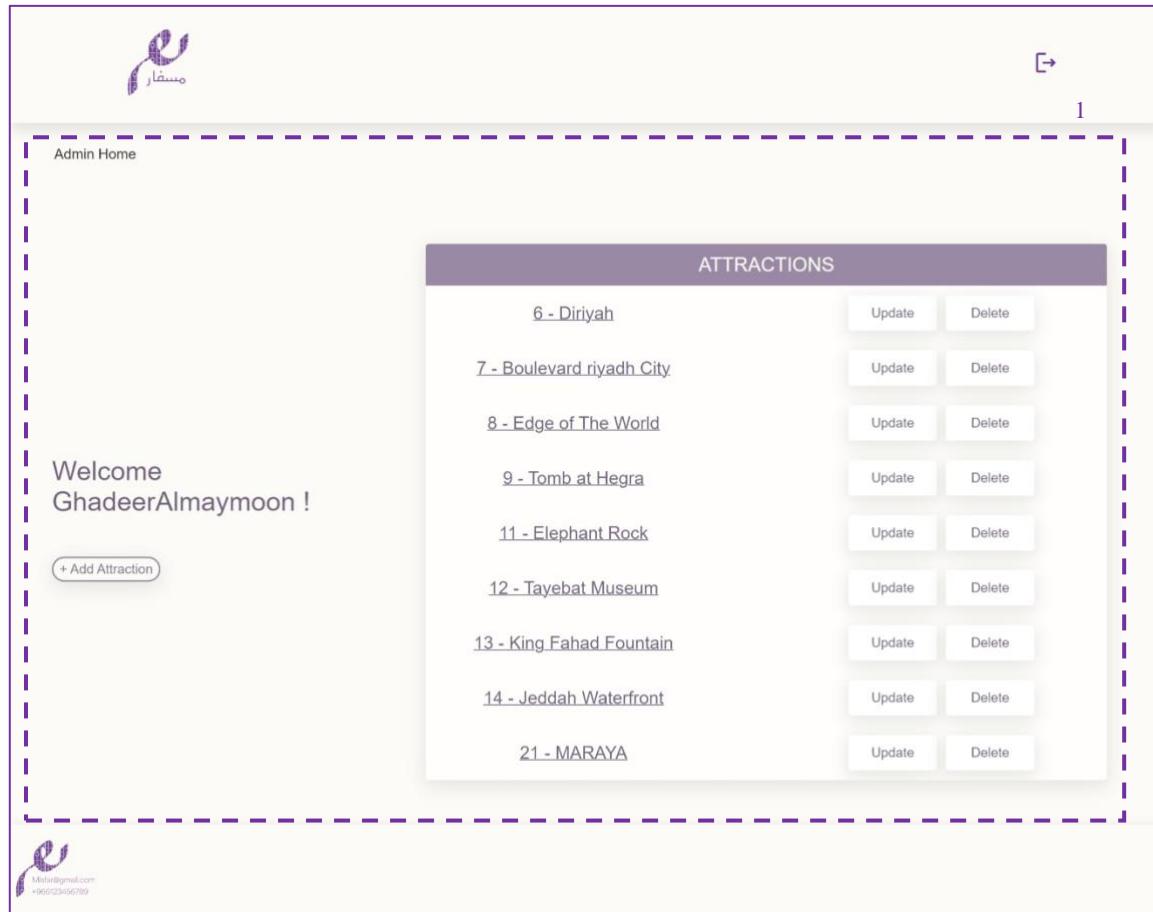


Figure 26 Admin Home Page

#	Description
1	The admin will be transferred to the admin homepage.

Table 32 When the Admin Logs-in Successfully Description

2.2 If the user clicks on the sign-up link -#4 from table 24-

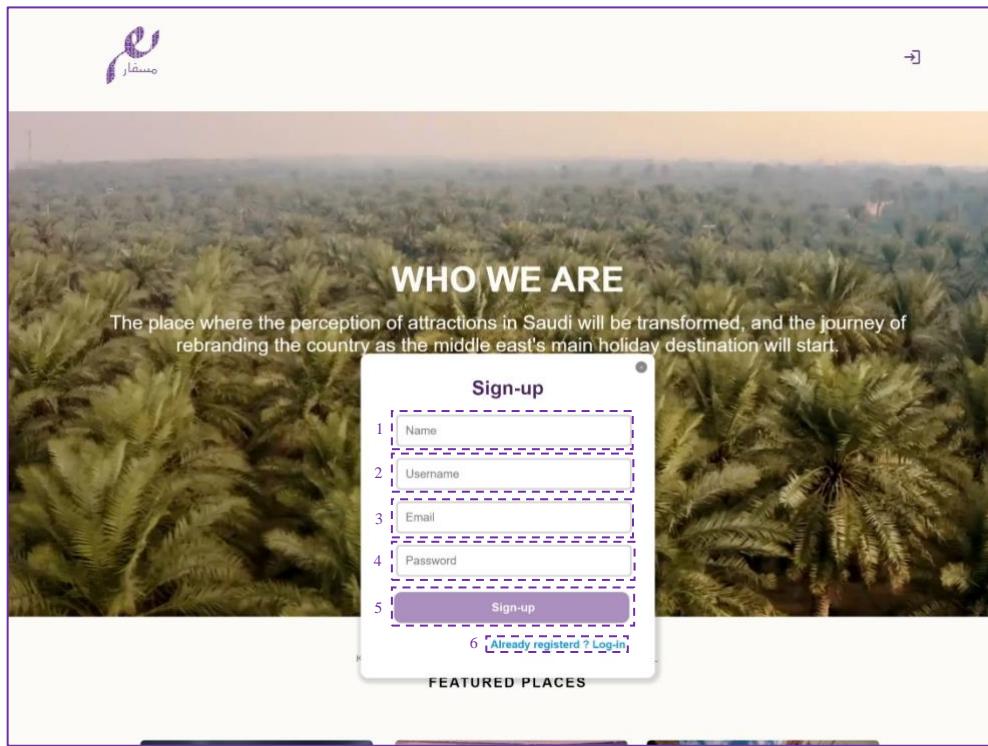


Figure 27 the Admin Sign-up Form

#	Description
1	An input text field for users to write their names. A name must not contain digits.
2	An input text field for users to write their username. A username must not contain digits
3	An input text field for users to write their emails. An emails must be in this format: ****@****.***
4	An input text field for admins to write their password. A Password should be at least 8 characters long. A password should contain at least one number. A password should contain at least one capital letter. A password should contain at least one small letter.
5	A button to sign up and transfer you to the admin homepage.
6	A link that transfers you to the admin log-in form.

Table 33 the Admin Sign-up Form Description

- 2.2.1 If the admin clicks on the sign-up button -#5 from table 33- and any of the following fields (name, username, email, or password) are empty

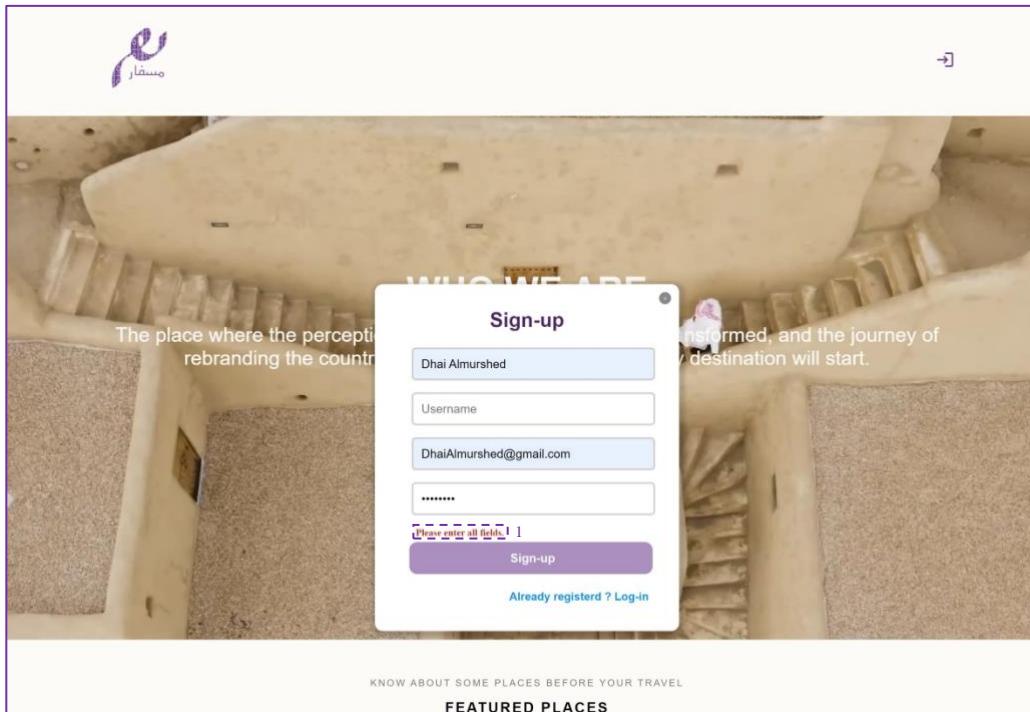


Figure 28 System Error Message When the Admin Sign-up with an Empty Filed

#	Description
1	A system error message is shown when the admin tries to sign-up with an empty name, username, email, or password.

Table 34 System Error Message When the Admin Sign-up with an Empty Filed Description

- 2.2.2 If the admin clicks on the sign-up button -#5 from table 33- and the entered username already exists in the database



Figure 29 System Error Message When the Admin Sign-up with an Already Existing Username

#	Description
1	A system error message is shown when the admin tries to sign-up with an already existing username.
2	A button that transfers you back to the home page.

Table 35 System Error Message When the Admin Sign-up with an Already Existing Username Description

- 2.2.3 If the admin clicks on the sign-up button -#5 from table 33- and the entered email already exists in the database

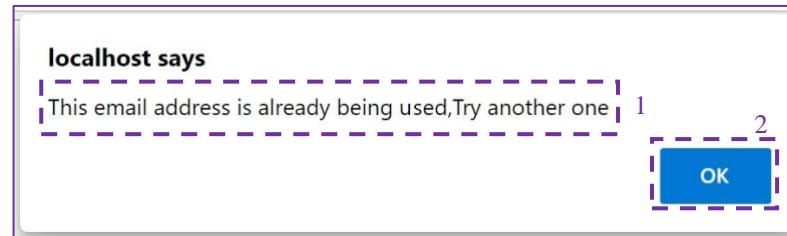


Figure 30 System Error Message When the Admin Sign-up with an Already Existing Email Address

#	Description
1	A system error message is shown when the admin tries to sign-up with an already existing email address.
2	A button that transfers you back to the home page.

Table 36 System Error Message When the Admin Sign-up with an Already Existing Email Address Description

2.2.4 If the admin clicks on the sign-up button -#5 from table 33- and the entered name contain digits

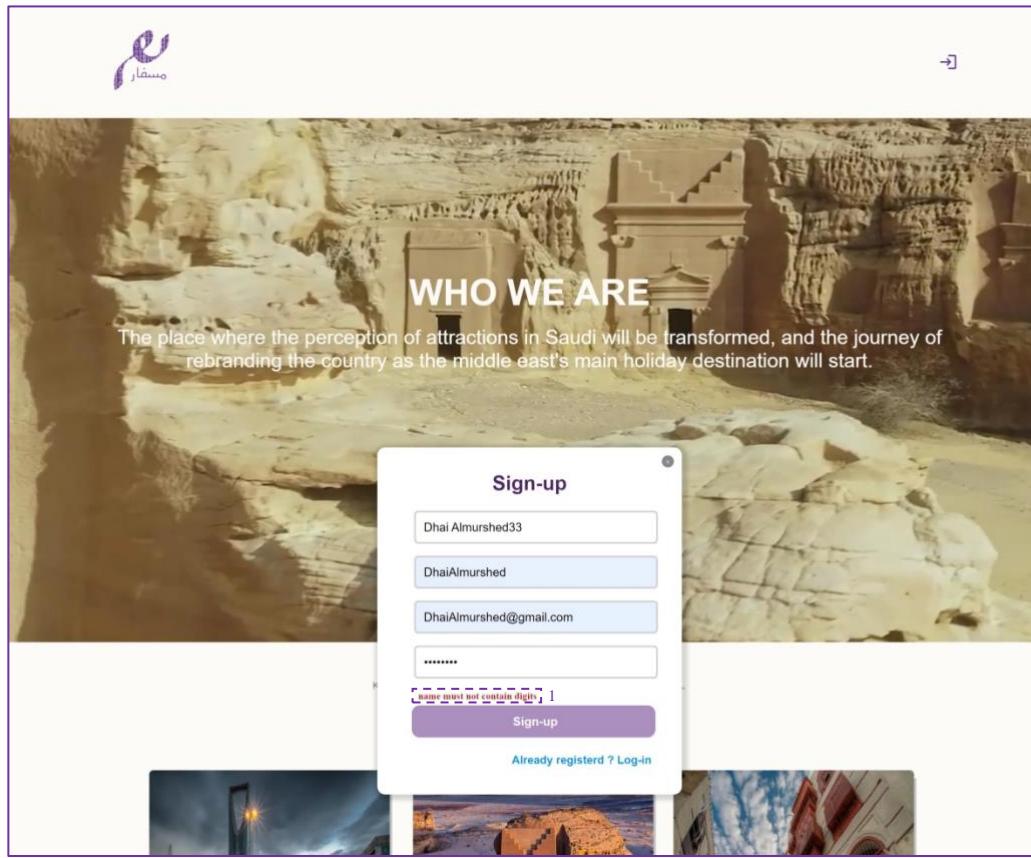


Figure 31 System Error Message When the Admin Sign-up with a Name that Contains Digits

#	Description
1	A system error message is shown when the admin tries to sign-up with a name that contains digits.

Table 37 System Error Message When the Admin Sign-up with a Name that Contains Digits Description

2.2.5 If the admin clicks on the sign-up button -#5 from table 33- and the entered username contain digits

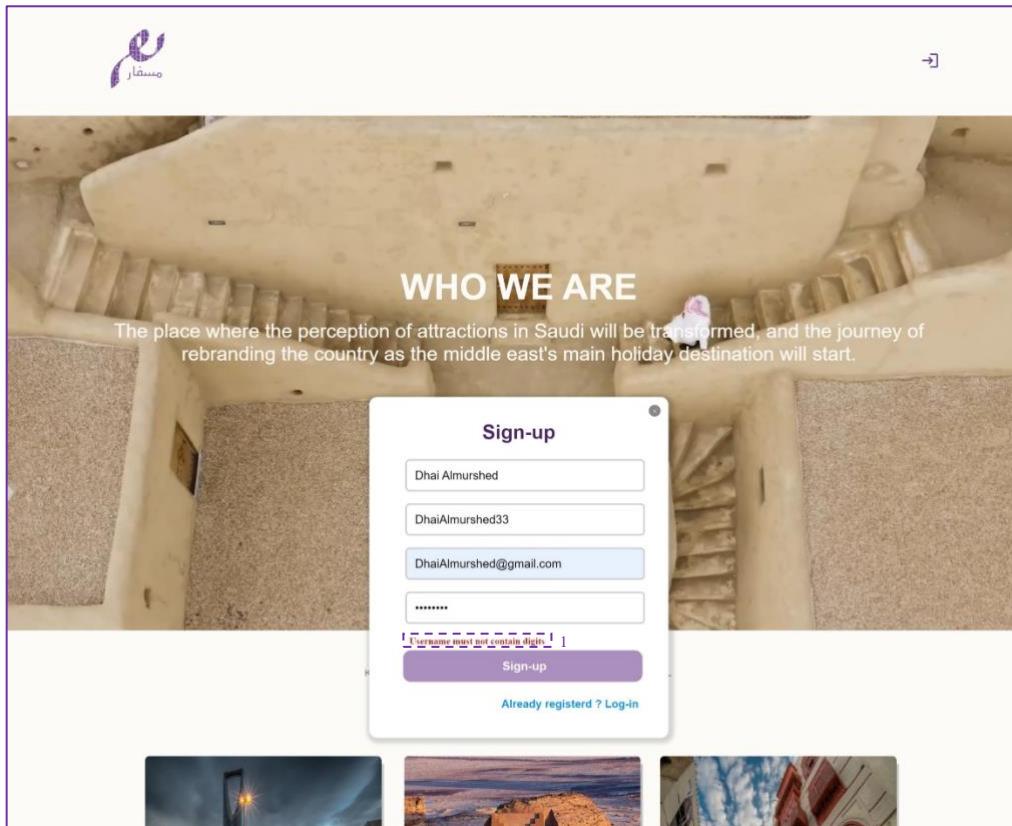


Figure 32 System Error Message When the Admin Sign-up with a Username that Contains Digits

#	Description
1	A system error message is shown when the admin tries to sign-up with a username that contains digits.

Table 38 System Error Message When the Admin Sign-up with a Username that Contains Digits Description

- 2.2.6 If the admin clicks on the sign-up button -#5 from table 33- and the entered email does not match the correct format (*****@****.***)

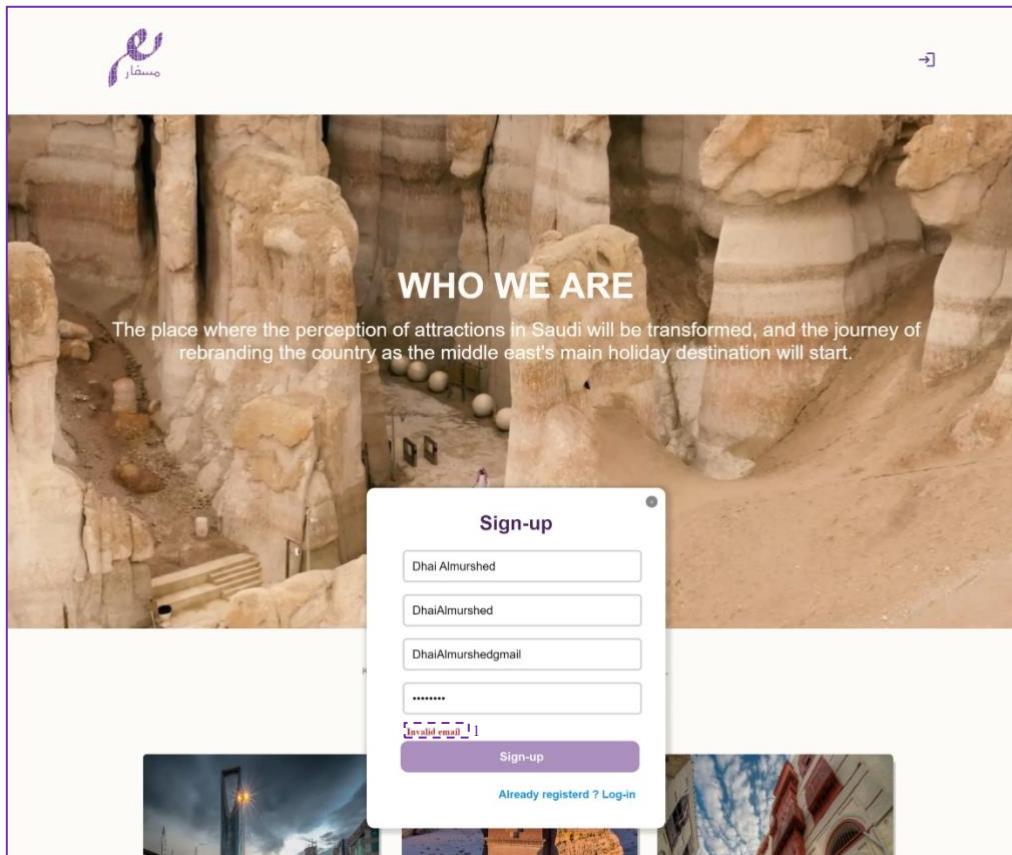


Figure 33 System Error Message When the Admin Sign-up with an Email That does not Match the Correct Format

#	Description
1	A system error message is shown when the admin tries to sign-up with an email that does not match the correct format.

Table 39 System Error Message When the Admin Sign-up with an Email That does not Match the Correct Format Description

- 2.2.7 If the admin clicks on the sign-up button -#5 from table 33- and the entered password is less than 8 characters

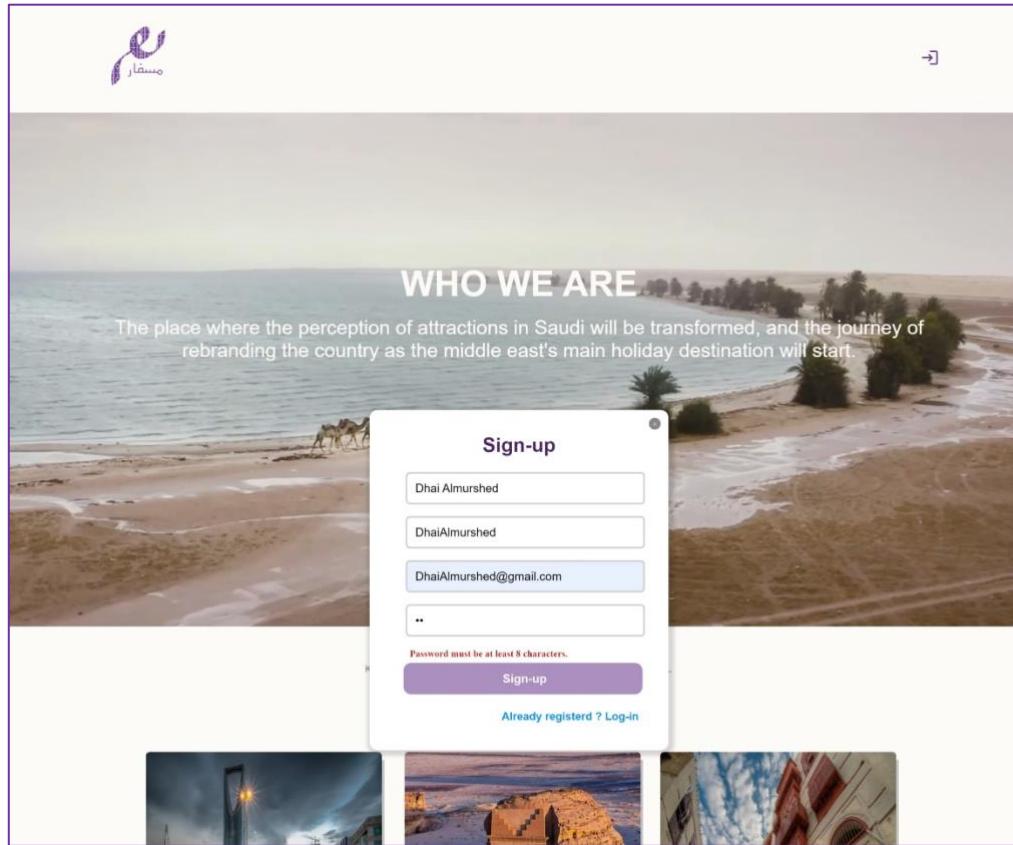


Figure 34 System Error Message When the Admin Sign-up with a Password that is Less than 8 Characters

#	Description
1	A system error message is shown when the admin tries to sign-up with a password that is less than 8 characters.

Table 40 System Error Message When the Admin Sign-up with a Password that is Less than 8 Characters Description

- 2.2.8 If the admin clicks on the sign-up button -#5 from table 33- and the entered password does not contain a capital letter

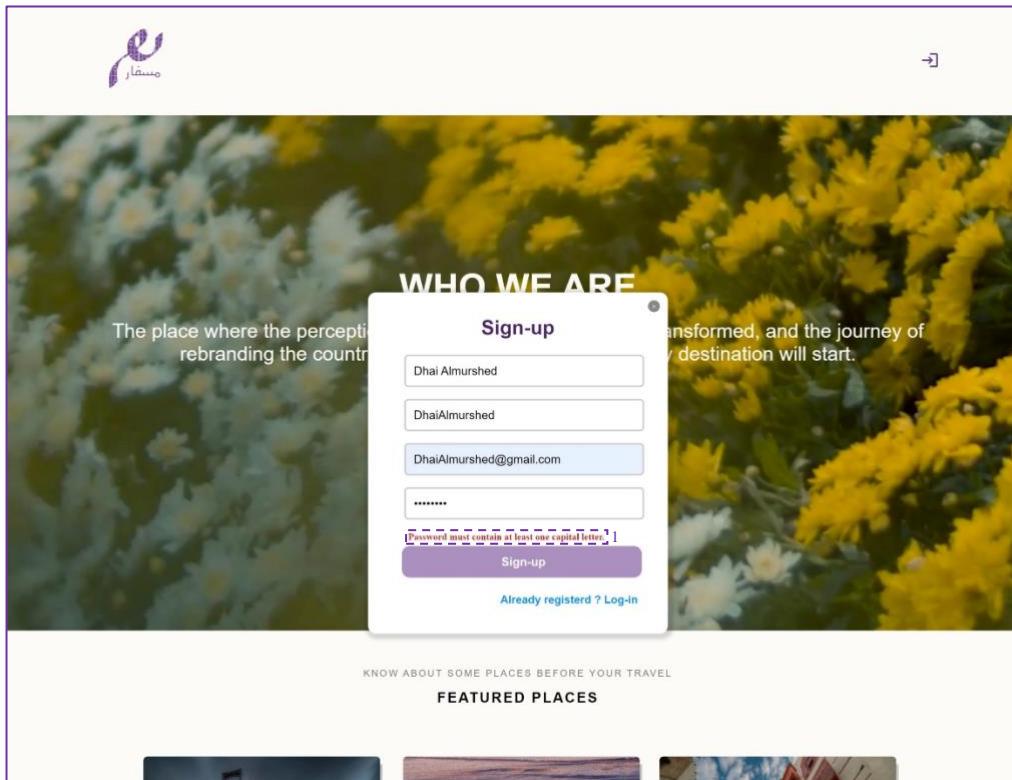


Figure 35 System Error Message When the Admin Sign-up with a Password that does not Contain a Capital Letter

#	Description
1	A system error message is shown when the admin tries to sign-up with a password that does not contain a capital letter.

Table 41 System Error Message When the Admin Sign-up with a Password that does not Contain a Capital Letter Description

- 2.2.9 If the admin clicks on the sign-up button -#5 from table 33- and the entered password does not contain a small letter

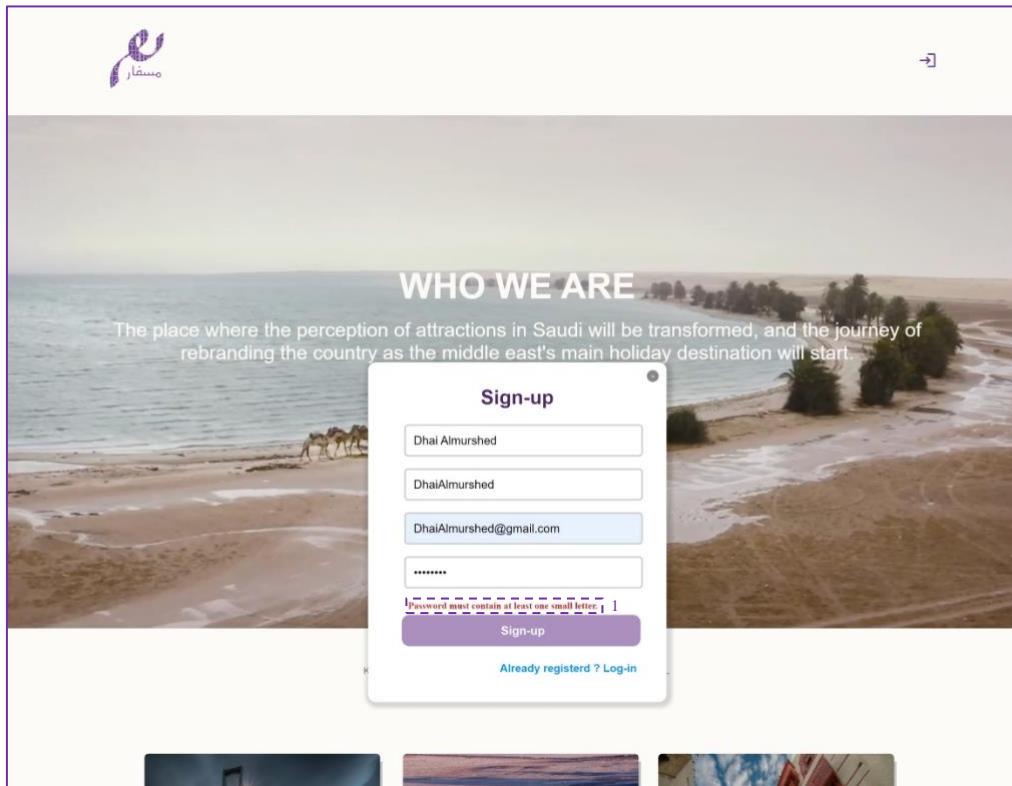


Figure 36 System Error Message When the Admin Sign-up with a Password that does not Contain a Small Letter

#	Description
1	A system error message is shown when the admin tries to sign-up with a password that does not contain a small letter.

Table 42 System Error Message When the Admin Sign-up with a Password that does not Contain a Small Letter Description

2.2.10 If the admin clicks on the sign-up button -#5 from table 33- and the entered password does not contain a digit

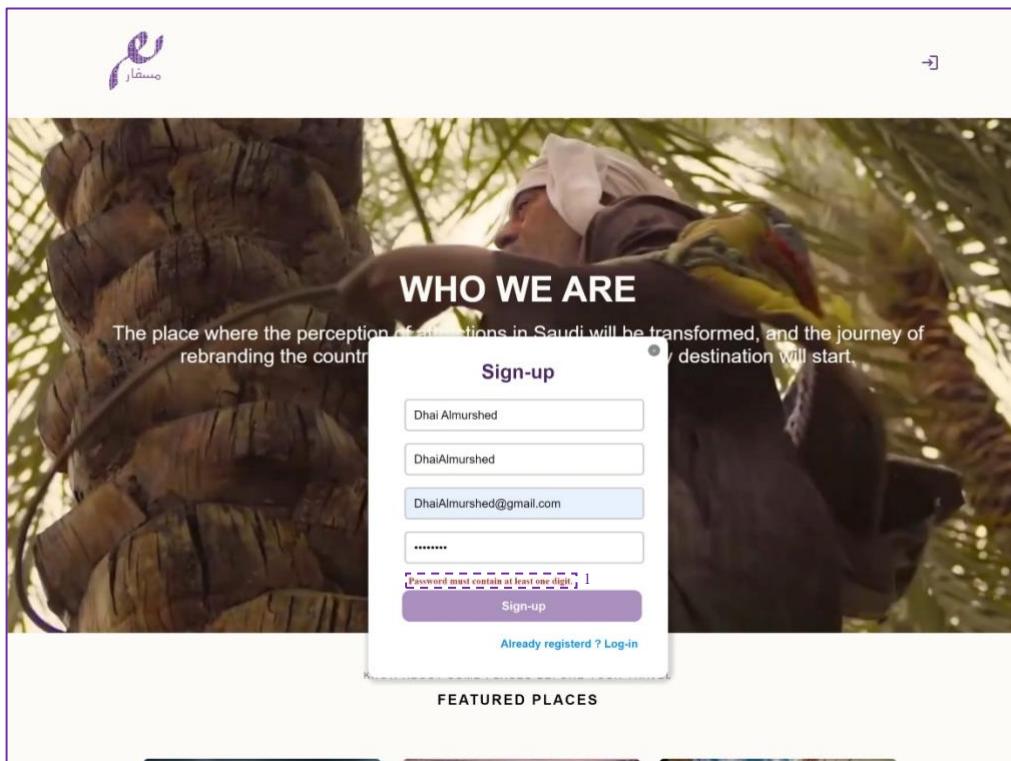


Figure 37 System Error Message When the Admin Sign-up with a Password that does not Contain a Digit

#	Description
1	A system error message is shown when the admin tries to sign-up with a password that does not contain a digit.

Table 43 System Error Message When the Admin Sign-up with a Password that does not Contain a Digit Description

2.2.11 If the admin clicks on the sign-up button -#5 from table 33- and sign up successfully

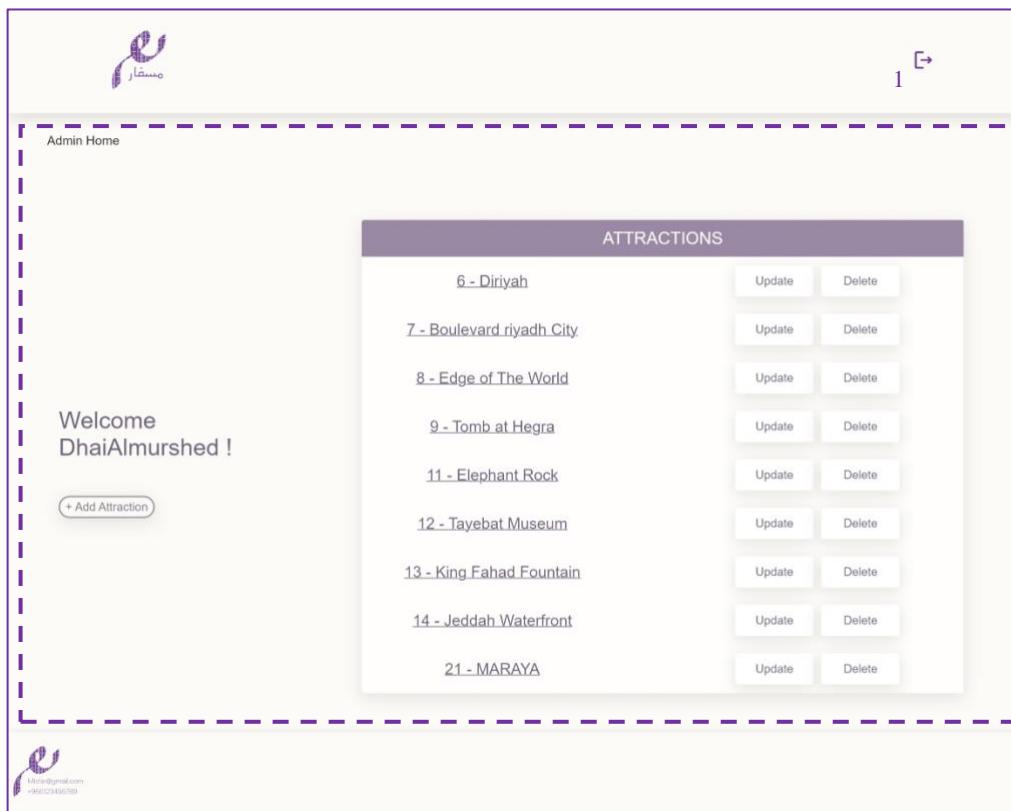


Figure 38 the Admin Home Page

#	Description
1	The admin will be transferred to the admin homepage.

Table 44 When the Admin Sign-up Successfully Description

2.3 The admin home page

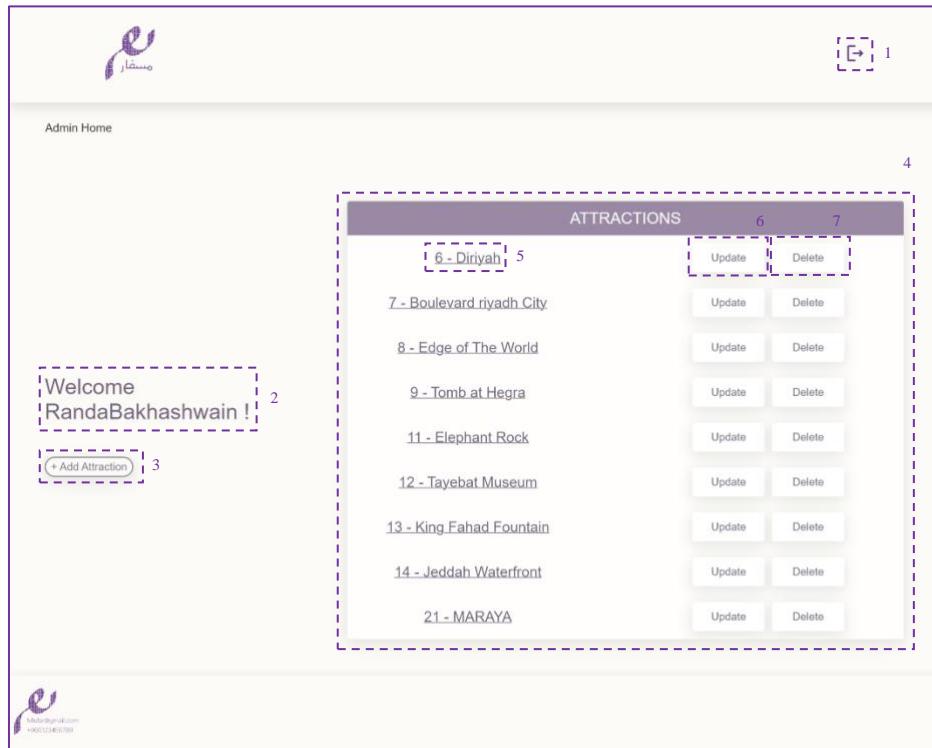


Figure 39 the Admin Home Page

#	Description
1	A button that allows the admin to log out of the website, thus losing access to admin functions (add, update, and delete attractions). It transfers the admin to the main home page.
2	A text field that shows a welcoming message for the admin.
3	A button that transfers you to the add attraction form page.
4	A table that displays all the attractions in the database.
5	A link that shows the attraction's ID and name. It transfers you to the attraction review page.
6	A button that allows the admin to update the attraction. It transfers you to the update attraction form page.
7	A button that allows the admin to delete the attraction from the database.

Table 45 the Admin Home Page Description

2.3.1 If there are no attractions added on the admin home page



Figure 40 Admin Home Page When There aren't Any Attractions

#	Description
1	A system response message is shown when there are no attraction attractions.

Table 46 Admin Home Page When There aren't Any Attractions Description

2.3.2 If the admin clicks on the add attraction button -#2 from table 45-.

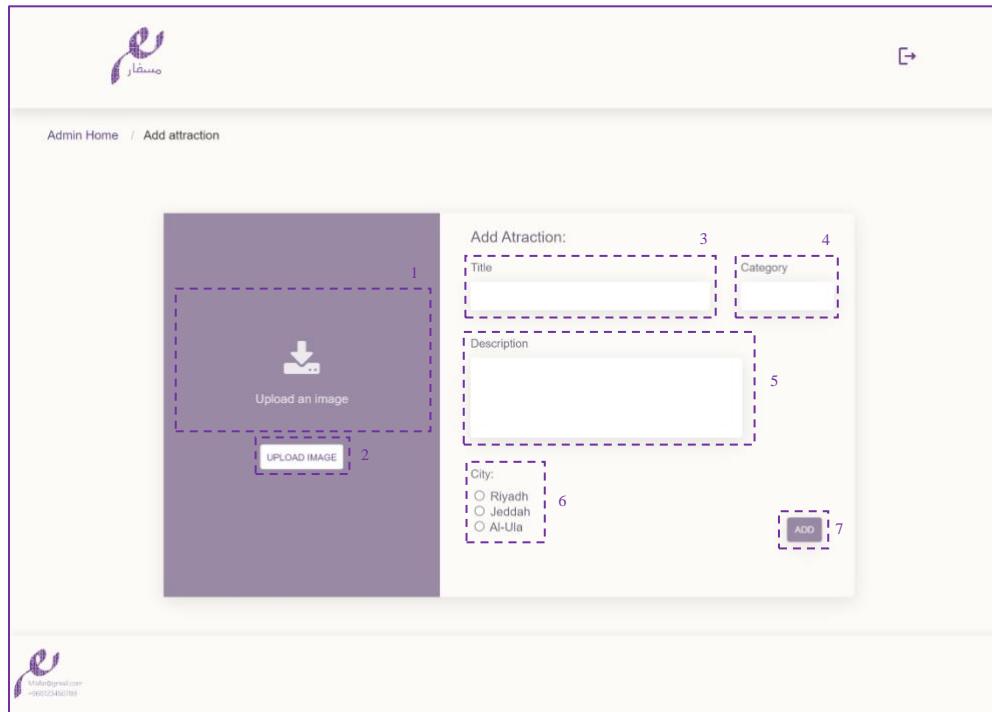


Figure 41 the Add Attraction Form Page

#	Description
1	An area to preview the attraction image if the user uploaded one.
2	A button that allows the user to upload only one image.
3	An input text field for the admin to enter the attraction title.
4	An input text field for the admin to enter the attraction category.
5	An input text field for the admin to enter the attraction description.
6	A collection of radio buttons describing a set of city options (Riyadh-Jeddah-Al Ula). The admin can only choose one city.
7	A button that allows the admin to add the attraction to the database. It transfers you to the admin homepage.

Table 47 the Add Attraction Form Page Description

2.3.2.1 If the admin clicks on the upload image button -#2 from table 47-

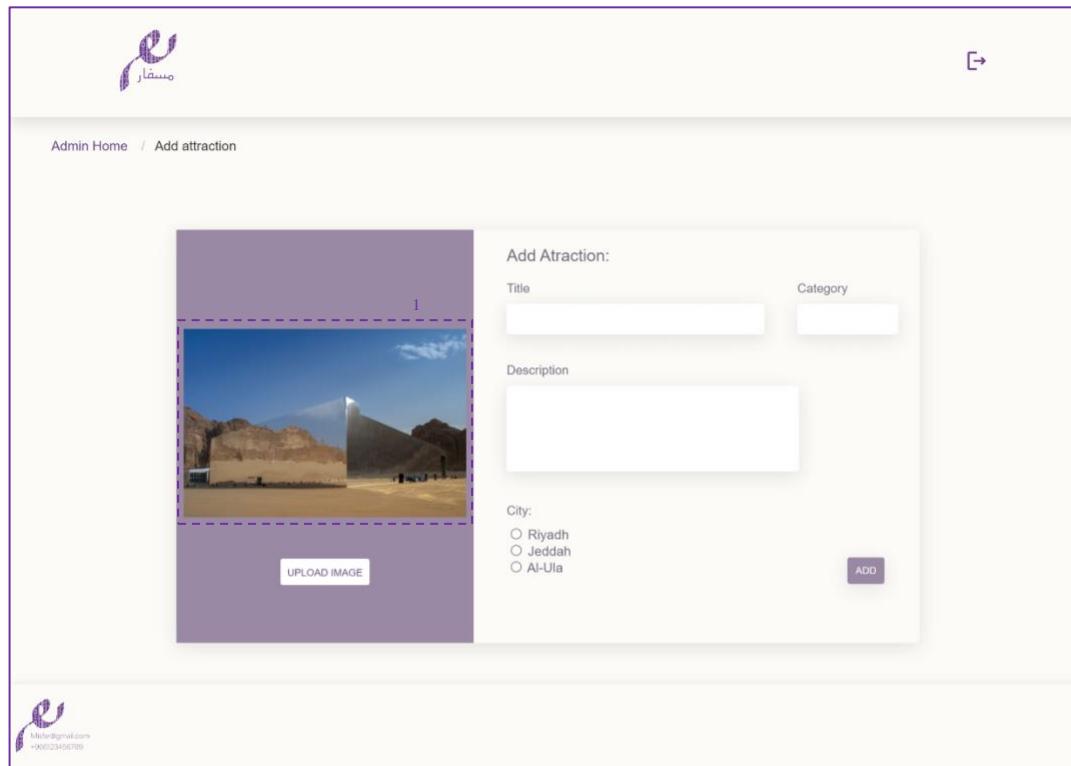
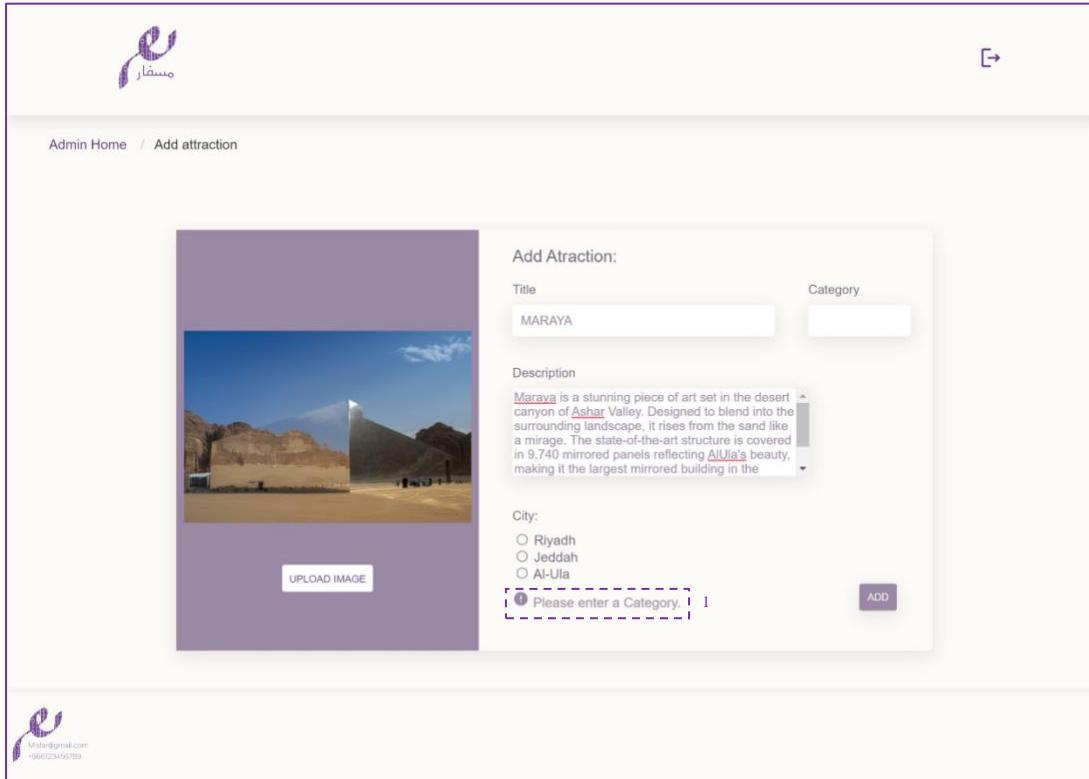


Figure 42 the Add Attraction Form Page When Admin Uploads an Image

#	Description
1	The preview area will display the uploaded attraction image.

Table 48 the Add Attraction Form Page When Admin Uploads an Image Description

2.3.2.2 If the admin clicks on the add button -#7 from table 47- and any of the following fields (image, title, category, description, or city) are empty -#2 to #6 from table 47-.



The screenshot shows the 'Admin Home' page with a navigation bar at the top. Below it, a sub-navigation bar shows 'Admin Home / Add attraction'. On the left, there's a placeholder image for an attraction with a 'UPLOAD IMAGE' button below it. On the right, a modal window titled 'Add Atraction:' is open. It contains fields for 'Title' (containing 'MARAYA'), 'Category' (empty), 'Description' (containing a detailed paragraph about Maraya), and 'City' (with three radio button options: Riyadh, Jeddah, Al-Ula). At the bottom of the modal, there's an 'ADD' button and an error message box containing the text 'Please enter a Category.' with a red border around the 'Category' input field.

Figure 43 System Error Message When the Admin Adds an Attraction with an Empty Input Field

#	Description
1	A system error message is shown when the admin tries to add an attraction with an empty image, title, category, description, or city.

Table 49 System Error Message When the Admin Adds an Attraction with an Empty Input Field Description

2.3.2.3 If the admin clicks on the add button -#7 from table 47- and the attraction already exists in the database.

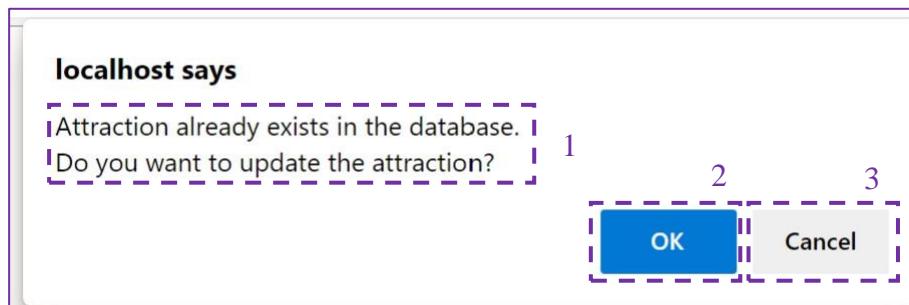


Figure 44 System Conformation Message When the Admin Adds an Attraction that Previously Exists

#	Description
1	A system conformation message is shown asking the admin whether he or she would like to update the attraction or not.
2	A button that will transfer the admin to the update attraction form page
3	A button that will transfer the admin to the admin homepage

Table 50 System Conformation Message When the Admin Adds an Attraction that Previously Exists Description

2.3.2.4 If the admin clicks on the add button -#7 from table 47- and successfully adds the attraction

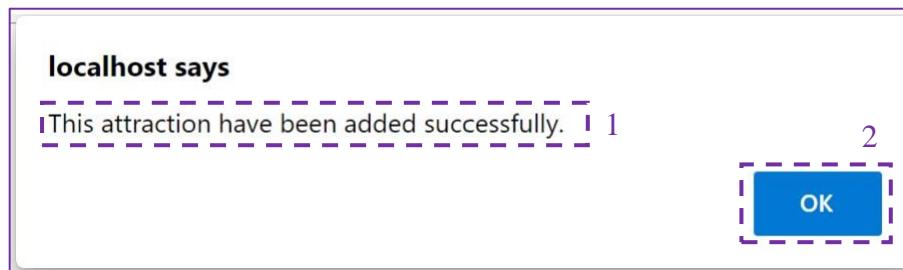


Figure 45 System Response Message When the Admin Adds an Attraction Successfully

#	Description
1	A system response message is shown when the admin successfully adds an attraction.
2	A button that transfers you back to the admin home page.

Table 51 System Response Message When the Admin Adds an Attraction Successfully Description

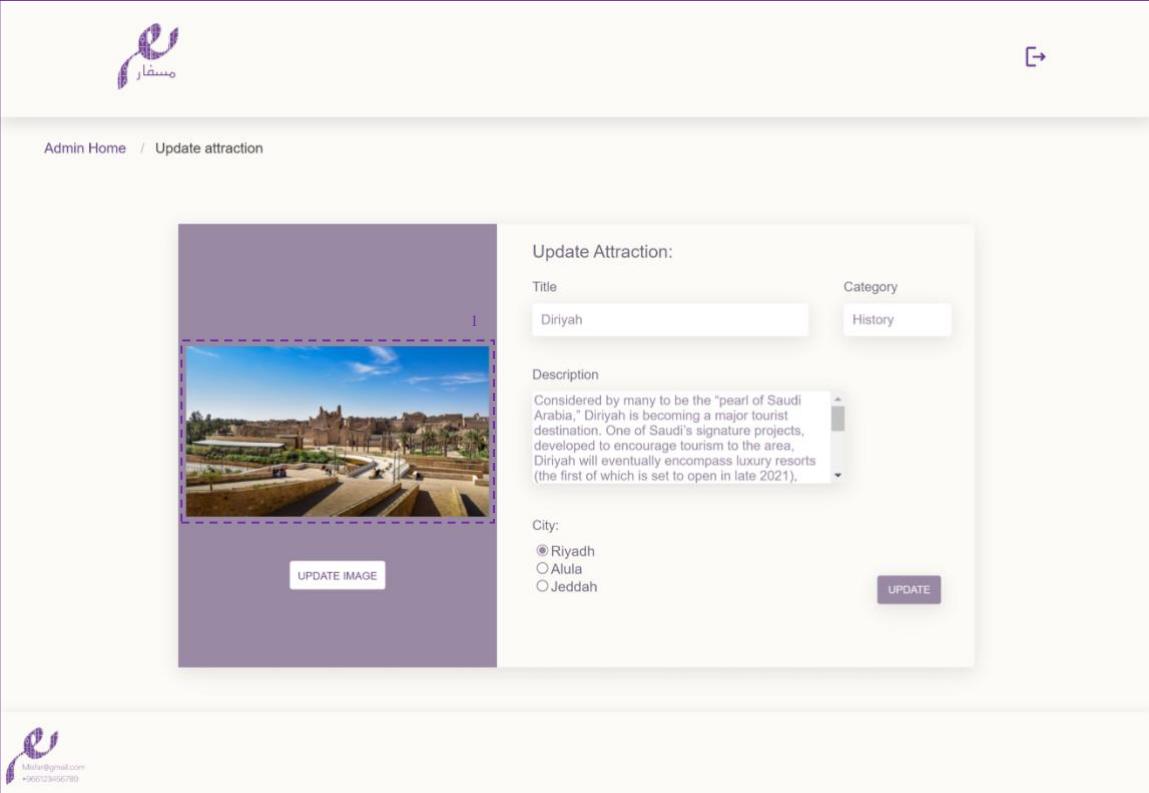
2.3.3 If the admin clicks on the update attraction button -#6 from table 45-.

Figure 46 Update Attraction Form Page

#	Description
1	An area to preview the attraction image that the admin uploaded before.
2	A button that allows the admin to change the uploaded image to a new one.
3	An input text field for the admin to change the attraction title to a new one.
4	An input text field for the admin to change the attraction category to a new one.
5	An input text field for the admin to change the attraction description to a new one.
6	A collection of radio buttons describing a set of city options (Riyadh-Jeddah-Al Ula). The previously chosen city is checked. The admin can change the city by choosing a new one.
7	A button that allows the user to update the attraction in the database.

Table 52 Update Attraction Form Page Description

2.3.3.1 If the admin clicks on the update image button -#2 from table 52-



The screenshot shows the 'Update attraction' form. On the left, there is a preview area with a purple background containing a small image of a landscape and a 'UPDATE IMAGE' button below it. On the right, there is a form with fields for 'Title' (containing 'Diriyah'), 'Category' (with a 'History' button), 'Description' (containing a detailed paragraph about Diriyah's development), and 'City' (with radio buttons for Riyadh, Alula, and Jeddah, where Riyadh is selected). A purple border highlights the 'UPDATE IMAGE' button.

Figure 47 Update Attraction Form Page When Admin Update the Attraction Image

#	Description
1	The preview area will display the new uploaded attraction image.

Table 53 Update Attraction Form Page When Admin Update the Attraction Image Description

2.3.3.2 If the admin clicks on the update button -#7 from table 52- and any of the following fields (title, category, description, or city) are empty -#3 to #6 from table 52-.

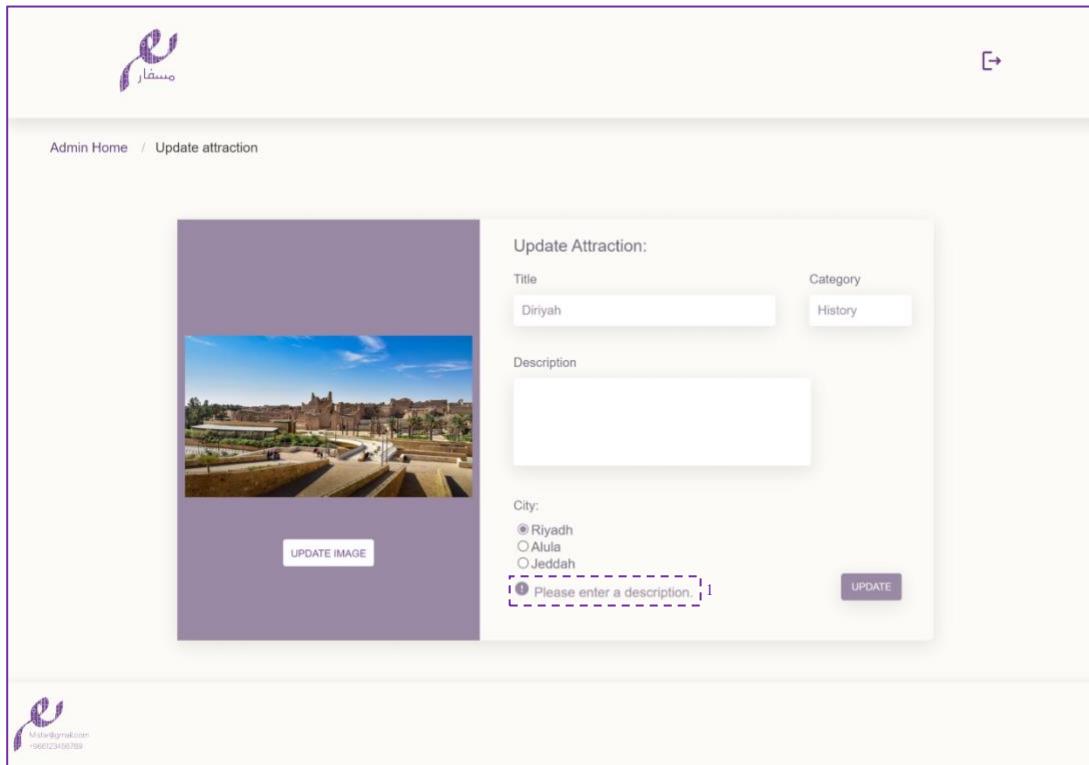


Figure 48 System Error Message When the Admin Updates an Attraction with an Empty Input Field

#	Description
1	A system error message is shown when the admin tries to update an attraction with an empty title, category, description, or city.

Table 54 System Error Message When the Admin Updates an Attraction with an Empty Input Field Description

2.3.3.3 If the admin clicks on the update button -#7 from table 52- and successfully updates the attraction.

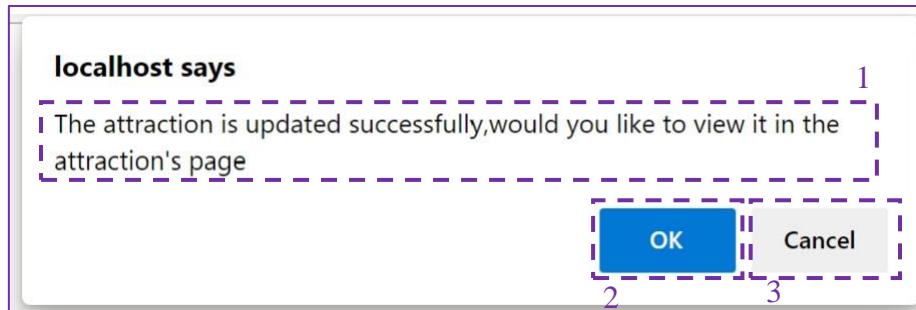


Figure 49 System Conformation Message When the Admin Updates an Attraction Successfully

#	Description
1	A system confirmation message is shown, asking the admin whether she or he would like to view the updated attraction on the attractions page or return to the admin homepage.
2	A button that will transfer the admin to the attractions page
3	A button that will transfer the admin to the admin homepage

Table 55 System Conformation Message When the Admin Updates an Attraction Successfully Description

2.3.4 If the admin clicks on the delete button -#7 from table 45-



Figure 50 System Conformation Message When the Admin Deletes an Attraction

#	Description
1	A system confirmation message is shown, asking if the admin wants to delete the attraction.
2	A button that will delete the attraction and transfer the admin to the admin homepage.
3	A button that will not delete the attraction and transfer the admin to the admin homepage.

Table 56 System Conformation Message When the Admin Deletes an Attraction Description

2.3.4.1 If the admin clicks on the ok button -#2 from table 56-

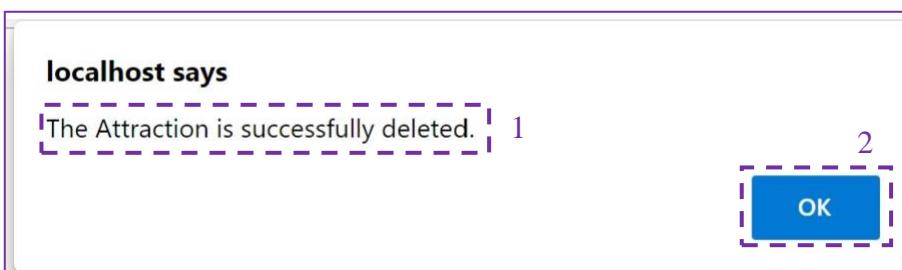


Figure 51 System Response Message When the Admin Successfully Deletes an Attraction

#	Description
1	A system response message is shown when the admin successfully deletes an attraction.
2	A button that transfers you back to the admin home page.

Table 57 System Response Message When the Admin Successfully Deletes an Attraction Description

2.3.5 If the admin clicks on the log out button -#1 from table 45-

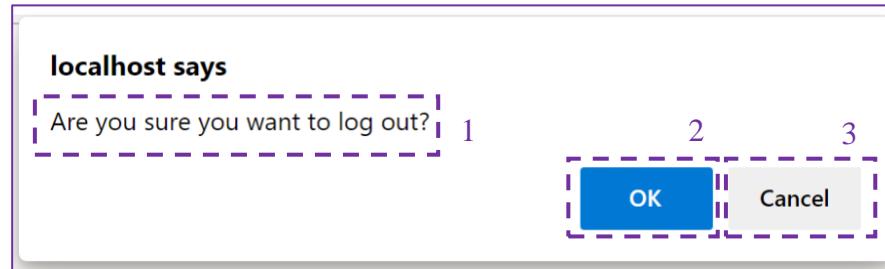


Figure 51 System Conformation Message When the Admin Logs Out

#	Description
1	A system confirmation message is shown, asking if the admin wants to log out.
2	A button that will log out the admin and transfer her or him to the main homepage.
3	A button that will keep the admin logged in and transfer her or him to the admin homepage.

Table 58 System Conformation Message When the Admin Logs Out Description



CHAPTER 5

IMPLEMENTATION

5 Chapter 5: Implementation

In this chapter we are going to show the Elements that we've used in our software system, the Steps of developing the system using the mentioned elements and the Challenges that we came across during the development of the system, The chapter will also include the consolations we've made to reach the finest version of our software system. A GitHub repository link is also included at the end of this chapter.

To meet the project requirements No hardware components was needed, the focus was on the software tools that was helpful in implementing 'مسفار'.

The table below shows the elements that have been used:

Elements	Version	Description
Visual Studio	1.66.2	An IDE made by Microsoft for Windows, Linux and macOS. It is a tool for writing computer programs, websites, web apps, and web services.
Jira	-	Jira is a project management software tool that can be used for scrum management.
MAMP	5.0.4.3940	MAMP is a solution stack composed of free and open-source and proprietary commercial software used together to develop and run dynamic websites on Windows or macOS.
phpMyAdmin	-	phpMyAdmin is a free and open source administration tool for MySQL and MariaDB. it is one of the most popular MySQL administration tools especially for web hosting services.
Apache NetBeans	12.6	Apache NetBeans IDE can be installed on all operating systems that support Java. Apache NetBeans provides editors, wizards, and templates to help in creating applications in different programming languages.
jsSocials	1.4.0	A simple social network sharing jQuery plugin.
GitHub	-	A code hosting platform used to manage and integrate source code

Table 59 Software Tools Description

Steps:

First of all, we start working on sprint-1 for the Front-end part of the system using *Visual Studio (VS)* since it's considered to be an easy and flexible software tool for developing websites, VS offers many different programming languages and the languages that we needed for developing our website was HTML5 – CSS – JavaScript.

We start writing the code using HTML5 which is a markup language used for structuring and presenting content on the World Wide Web, along with CSS which is a style sheet language used to style and describe the presentation of our document that have been written before using HTML5, before the end of the Front-end development we also used *JavaScript* to create interactive effects within website such as: validation. For the rest of sprint-1 we used *Jira*, we've created an account and a scrum project in *Jira* to be able to create a product backlog and add our user stories on it, then we've created a sprint and a sprint backlog so the team can track the project progress.

Secondly, we start creating the database using *phpMyAdmin* by identifying the tables and each table structure then we moved our previous work on sprint-1 to *Apache NetBeans* to start working on the backend parts of the website, our goal now is to have a dynamic website rather than a static one we achieved this goal mainly by adding PHP segments to the previous code.

Code Description	this code shows the connection to the database which is named (misfar), the hostname (localhost) and the username (root) and password (root) are offered by MAMP and the database is accessible via <i>phpMyAdmin</i> which is also can be accessed after starting the server through MAMP.
Code Segment	<pre> 2 <?php 3 4 define('DBHOST', 'localhost'); 5 define('DBNAME', 'misfar'); 6 define('DBUSER', 'root'); 7 define('DBPASS', 'root'); 8 9 //Create connection 10 \$connection = mysqli_connect(DBHOST, DBUSER, DBPASS, DBNAME); 11 12 // Check for error connection 13 if (!\$connection) { 14 die("Connection failed: " . mysqli_connect_error()); 15 } ?> </pre>

Table 60 Database Connection Code Description

The reason why we moved our code to *Apache NetBeans* is to be able to run it in a local host using *MAMP* and to be able to connect to the database that we have created in *phpMyAdmin*. By starting the server using *MAMP* we can have a dynamic website and the PHP code segments can now function properly.

Last but not least, one of the important functions in our website was the (share) function which allow the user of the system to share his/her review on social media, to implement the share function, we used jQuery plugin called *jsSocials* this plugin allow us to have a custom share so we can decide which platforms we want to share the review in, also we can have the desired theme with a pre-defined message that appears with the link of the shared review.

The table below shows the parts that were included to employ the share function:

Code Description	<p>This code shows the use of <i>jsSocials</i> – jQuery Social Share Plugin- to implement the share function, where we first linked the <i>jsSocials</i> files in our HTML document, then we applied <i>jsSocials</i> to the element on the page. Share <i>jsSocials</i> is a config object that contains the following:</p> <ul style="list-style-type: none"> share array: An array specifying the social platform we would like the tourist to share our review on, these social platforms' names are from registry <i>jsSocial</i>. shares file. URL String: A string specifying URL to share. text String: A string specifying the text to share. show label: A Boolean specifying whether to show the text on the share button.
Code Segment	<pre> 217 <script type="text/javascript" src="jsocials-1.4.0/jsocials.min.js"></script> 218 <script> 219 220 function show() { 221 document.querySelector(".popup").style.display = "block"; 222 } 223 224 function hide() { 225 document.querySelector(".popup").style.display = "none"; 226 } 227 228 229 \$(".share").jsSocials({ 230 url: "http://localhost/swep/attractionReview.php?attraction_id=<?php echo \$att_id ?>", 231 text: "I just reviewed this attraction through #Misfar in #Saudi_Arabia\n", 232 233 showLabel: false, 234 235 shares: [236 "twitter", 237 {share: "facebook", label: "Like our Page"}, 238 {share: "whatsapp", label: "Send a Message"}, 239], 240 }); 241 242 </script> </pre>

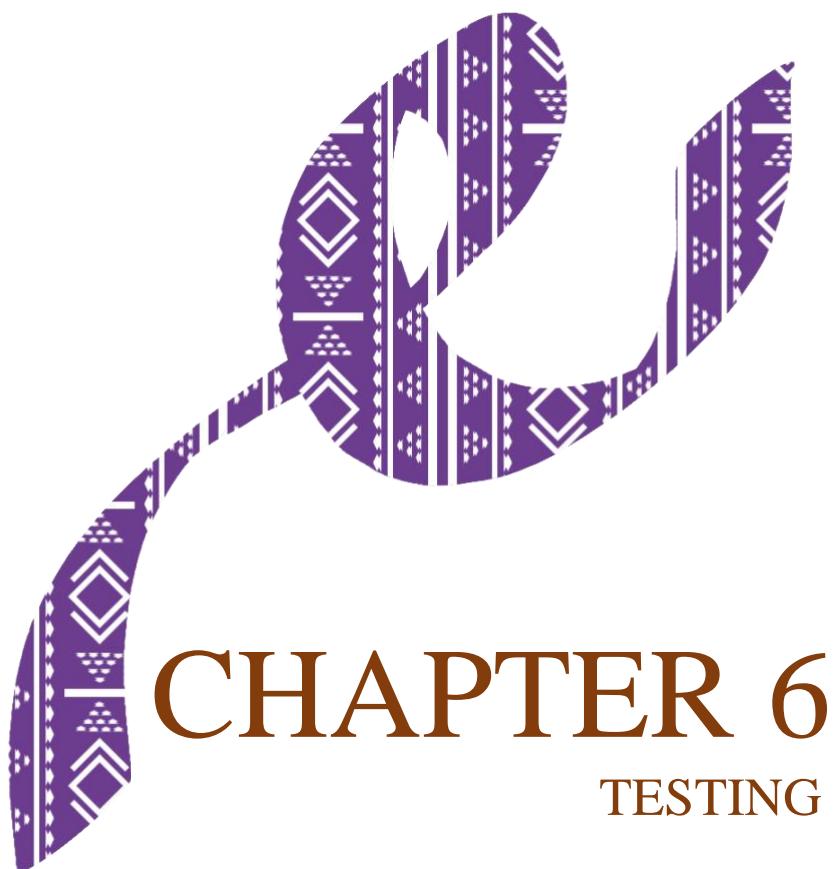
Table 61 jQuery Code Description

Finally, We used GitHub as a collaboration hosting platform so that we can upload our code and commit new changes and resolve any conflicts.

Challenges:

No doubt, the journey was full of challenges, as we start developing 'مسفار' we encountered many challenges and by exploring and learning we successfully overcome those challenges. one of the challenges we encountered was gathering data about the attractions that will be presented in the system, what we aimed to have a correct data so the system can be reliable, and this was a little bit hard since there are many sources with different data. Another challenge we ran into was while implementing the share function, it appears that there are many ways for implementing it. the challenge was in finding and choosing the best way that gets along with our system.

'مسفار' GitHub repository:
<https://github.com/Misfar-G2/Misfar.git>



CHAPTER 6

TESTING

6 Chapter 6: Testing

In this section we preformed user story acceptance testing to determine whether a user story fulfills its purpose from the user's perspective, an integration testing to check how individual components interact when integrated into 'مسفار', and a user acceptance testing to check if 'مسفار' fulfills business requirements and can be used by the end users.

6.1 User Story Acceptance Testing

In this section, we performed a user Story acceptance testing to check whether the acceptance criteria will be met upon execution of our user stories or not.

Sprint Number	User story	Acceptance criteria	Test action(s)	Pass?	Comments
2	As a new admin, I want to register for the website so that my information will be saved in the website database.	As a new Admin, If I go to the register page and enter my name, username, email, and password, and click on the "register" button, then my information should be saved to the website database.	Registered on the website by entering all the required information correctly and then checked out the database	Yes	
		If I go to the register page and enter any of the following information incorrectly: name, username, email, or password, then register fails and a detailed error message will be displayed.	Registered on the website using existing admin information	Yes	
			Registered on the website with leaving empty fields	Yes	
			Registered on the website using wrong email format	Yes	
			Registered on the website using wrong password format	Yes	
			Registered in the website username, name format	Yes	
		If I go to the register page and enter my name, username, email, and password, and click on the "register" button, then the user register session is loaded in less than ten seconds.	Ran performance test on the register function	Yes	

Sprint Number	User story	Acceptance criteria	Test action(s)	Pass?	Comments
2	As an admin, I want to log in to the website so that it grants me access to perform admin-specific tasks which are add, update, and delete tourist attractions.	As a registered admin, If I go to the log in page and enter my username and password, and click on the "log in" button, then my information should be retrieved from the website database.	Logged in using combination of correct username and password	Yes	
		If I go to the log in page and enter either my username or password incorrectly, then log in fails and a detailed error message will be displayed.	Logged in using combination of incorrect username and password	Yes	
			Logged in using a combination of correct username and incorrect password	Yes	
			Logged in using combination of incorrect username and correct password	Yes	
		If I go to the log in page and enter my username and password, and click on the "log in" button, then the user's log in session is loaded in less than eight seconds.	Ran performance test on the log in function	Yes	
2	As an admin, I want to log out of the website so that I can prevent anyone from performing admin-specific tasks which are add, update, and delete tourist attractions.	As a registered admin, If I click on log out button, Then the system should prevent me from doing admin specific tasks.	Clicked on the log out button	Yes	The last two acceptance criteria did not pass due to some changes we performed in the implementation of the website. Therefore, Entering the URL of the website in the browser and trying
			Clicked on the log out button and then pressed the back button of browser	Yes	
			Clicked on the log out button and then typed the URL of the admin page	Yes	
		As a registered admin, If I click on log out button, Then the system should redirect me to website home page.	Clicked on the log out button	Yes	
2	As an admin, I want to view tourist attractions and their reviews so that I can ensure that the website is working correctly	As a registered admin, If I go to the log in page and enter my username and password and click on "log in", then the site will redirect me to the homepage where all the attractions are presented.	Logged in the system	Yes	The last two acceptance criteria did not pass due to some changes we performed in the implementation of the website. Therefore, Entering the URL of the website in the browser and trying
		As an admin, In the homepage of the site I will be able to view the attractions and all the information about it.	Enter the URL of the website in the browser	No	

		As an admin, In the homepage of the site I will be able to view the reviews associated with a specific attraction.	Enter the URL of the website in the browser	No	to view attractions and review is not possible for admins, because it should be through the admin homepage
--	--	--	---	----	--

Sprint Number	User story	Acceptance criteria	Test action(s)	Pass?	Comments
2	As an admin I want to upload new attractions so that the website includes new emerging attractions where tourists can post their reviews of it.	As a registered admin, If I have the attractions displayed, then I should be provided with an upload button after choosing a specific category to upload the new attraction to	logged in to the admin home page and clicked "Add Attraction" button	Yes	
		As a registered admin, If I click "upload" and entered all the required information (such as: attraction name, short description, photos, location, opening hours, capacity and price), then the new attraction must be uploaded, and a confirmation message should appear	Uploaded an attraction by filling in all the required information correctly	Yes	
		As a registered admin, if uploading a new attraction successfully done, then the new attraction must be visible on the user side in the correct category.	Uploaded an attraction by filling in all the required information correctly and then clicked on the new attraction name that appears in the table in the admin home page	Yes	
		As a registered admin, If I upload the new attraction and the attraction's required information haven't been fulfilled, then I should get an error message indicating the failure of the uploading process.	Tried to upload an attraction and leave empty required fields.	Yes	
2	As an admin, I want to update tourist attraction information so that it becomes up-to-date and avoid displaying incorrect information	As a registered admin, If I have the attractions displayed, then I should be provided with an update button next to each attraction to be able to update it.	logged in to the admin home page and clicked "update" button.	Yes	
		As a registered admin, If I choose the attraction that is to be updated then I should have the current attraction's information displayed and also, I should be provided with options to update these information (such as: attraction name, short description, photos, location,	clicked "Update" button in admin home page.	Yes	

		opening hours, capacity and price).			
		As a registered admin, If I update the attraction's post, then I should view the attractions current information updated.	Updated an attraction post	Yes	Due to not hosting the website we couldn't test the last criteria.
		As a registered admin, If I update the attraction's post and the attraction's information did not change, then I should get an error message indicating the failure of the process.	logged into the system and when the "Update" button clicked the internet connection failed	No	

Sprint Number	User story	Acceptance criteria	Test action(s)	Pass?	Comments
2	As an admin, I want to delete tourist attractions from the website so that it only displays attractions that are currently available.	As a registered admin, If I have the attractions displayed, then I should be provided with a delete button next to each attraction to be able to delete it.	logged in to the admin home page and checked if there is "Delete" button next to the attractions.	Yes	Due to not hosting the website we couldn't test the last criteria.
		As a registered admin, If I click on the "delete" button, then I should receive a confirmation message whether I want to proceed with the process or not.	logged in to the admin home page and clicked on the "Delete" button	Yes	
		As a registered admin, If I click on the agree button in the confirmation message, then the attraction should disappear, and I should be informed of the success of the process.	logged in to the admin home page and clicked on the "Delete" button then confirmed the deletion process	Yes	
		As a registered admin, If I click on the "agree" button in the confirmation message and the attraction didn't disappear then I should be informed of the failure of the process.	logged into the system and when the "Delete" button clicked the internet connection failed	No	
2	As a tourist, I want to search for tourist attractions by city so that I can speed up the process of finding the desired attraction.	As a tourist, If I enter the website URL to search or to read reviews about an attraction, the homepage must be shown where each attraction resides in its category based on the city it is in.	Entered the URL of the website	Yes	
		As a tourist, If I click on one city from the homepage to look for an attraction, another linked page will appear with	Clicked on a category than clicked on an attraction's post	Yes	

		all the attractions in this city, then I can choose any attraction to check its reviews or to write one.			
--	--	---	--	--	--

Sprint Number	User story	Acceptance criteria	Test action(s)	Pass?	Comments
2	As a tourist, I want to view tourist attractions and reviews of them so that I can gain real information and recommendations about the places that will help me plan my trip easily	As a tourist, If I have the website open, then I should view the attractions categories	Entered the URL of the website	Yes	
		As a tourist, If I choose the attraction's category and click on it, then I should view the attraction's posts belonging to that category	Clicked on a category	Yes	
		As a tourist, If I click on the attraction's post, then I should view the attraction along with the description of it which includes (attraction name, short description, photos, location, opening hours, capacity and price), and the attraction's reviews should be displayed.	Clicked on a category then clicked on an attraction's post	Yes	
		As a tourist, if no reviews are available for a specific attraction, then "there is no review" message will display.	Clicked on a category then clicked on an attraction's post with no reviews yet	Yes	
2	As a tourist, I want to post reviews of attractions I have visited before so that they can help other tourists make decisions and plan their trip.	As a tourist, If I click on the attraction's post in the attraction's category page, then I should have a text area to be able to post my review.	clicked on an attraction's post	Yes	
		As a tourist, If I post reviews, then it must be visible for all users.	Posted a review in attractions' post.	Yes	
2	As a tourist, I want to share my posted reviews on social media so that people can see my latest experience through 'مسفار' site	As a tourist, If I choose an attraction to write a review about, a clickable share icon for sharing the review will be shown next to the post review button.	clicked on an attraction's post and viewed the review text area	Yes	
		As a tourist, If I choose an attraction and write a review about it and then click the share icon, social media options will appear to choose where to share the review.	Wrote a review in attractions' post and clicked on the share icon.	Yes	
		As a tourist, If I choose an attraction and write a review about it and then click the share icon and choose the specific platform to share the review in, a predefined text will be shared with the review with the option to keep or delete the text	Shared review of all the platforms provided	Yes	

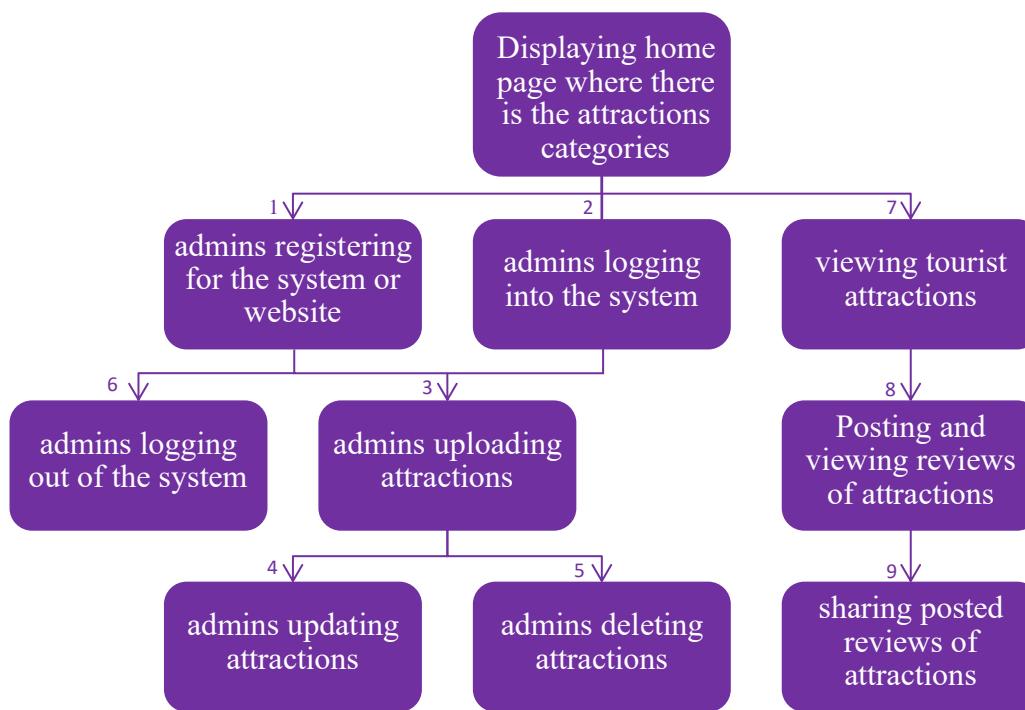
Sprint Number	User story	Acceptance criteria	Test action(s)	Pass?	Comments
2	As a user, I want to be able to use all of the website's functions within 20 minutes so that I don't get overwhelmed and browse another site.	As a user, If I have the website open, then it should take me 20 minutes at most to navigate around the website and understand its functions.	Run performance test on using the website	Yes	
2	As a user, I want the tourists' attractions to be displayed in range between 2 to 45 seconds while having 3G connection so that I don't keep refreshing the page	As a user, If I have the website open and the attraction's category is clicked, then the attractions should be displayed within 2 to 45 second while having a 3G connection.	Run performance test on search function	No	Due to not hosting the website we couldn't test the last criteria.
2	As an admin, I want my password to be hidden while logging in so that I can ensure that no one knows my password.	As an admin, If I start typing the password in the specific text box then, I want stars to be shown instead of my password	Registered in the website / Logged in the website	Yes	
		As admin, If I enter my password while login in or register process in the specific text box, then the password must not be written as plain text	Registered and then checked out the password text in the database	Yes	
		As admin, If I start typing the password while login in, then the password must be shown as stars to ensure security	Typed password in log in page	Yes	

Table 62 User Story Acceptance Testing

6.2 Integration Testing

In this section, we will examine how individual components interact when a new component is integrated into the website by providing an integration hierarchy and an integration testing plan. Our system components are: admins registering for the website, admins logging into the website, admins logging out of the website, viewing tourist attractions and reviews, admins uploading attractions, admins updating attractions, admins deleting attractions, searching for attractions, posting reviews of attractions, and sharing posted reviews of attractions.

- integration hierarchy.



- integration testing plan.

System components	New component	Test case	Pass?	Comments
- Displaying home page where there are the attractions categories.	Admins registering for the website	1. The user can see the attractions categories. 2. Admin can register to the website successfully	Yes	
- Displaying home page where there are the attractions categories. - Admins registering for the website.	Admins logging into the system	1. The user can see the attractions categories. 2. Admin can register to the website successfully. 3. Registered Admin can log in successfully.	Yes	
- Displaying home page where there are the attractions categories. - Admins registering for the website. - Admins logging into the system.	Admins uploading attractions	1. The user can see the attractions categories. 2. Admin can register to the website successfully. 3. Registered Admin can log in successfully. 4. The logged in Admin can insert attractions to the website	Yes	
- Displaying home page where there are the attractions categories. - Admins registering for the website. - Admins logging into the system. - Admins uploading attractions.	Admins updating attractions	1. The user can see the attractions categories. 2. Admin can register to the website successfully. 3. Registered Admin can log in successfully. 4. The logged in Admin can insert attractions to the website. 5. When Admin upload attraction he can update it successfully.	Yes	
- Displaying home page where there are the attractions categories. - Admins registering for the website. - Admins logging into the system. - Admins uploading attractions. - Admins updating attractions.	Admins deleting attractions	1. The user can see the attractions categories. 2. Admin can register to the website successfully. 3. Registered Admin can log in successfully. 4. The logged in Admin can insert attractions to the website. 5. When Admin upload attraction he can update it successfully. 6. The admin can delete the admin attraction successfully.	Yes	Admin can delete from the admin home page
- Displaying home page where there are the attractions categories. - Admins registering for the website. - Admins logging into the website.	Admins logging out of the website.	1. The user can see the attractions categories. 2. Admin can register to the website successfully. 3. Registered Admin can log in successfully.	Yes	

- Admins uploading attractions. - Admins updating attractions. - Admins deleting attractions.		4. The logged in Admin can insert attractions to the website. 5. When Admin upload attraction he can update it successfully. 6. The admin can delete the admin attraction successfully. 7. Logged in admin can log out from the website.		
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System components	New component	Test case	Pass?	Comments
- Displaying home page where there are the attractions categories. - Admins registering for the website. - Admins logging into the website. - Admins uploading attractions. - Admins updating attractions. - Admins deleting attractions. - Admins logging out of the website.	Viewing tourist attractions	1. The user can see the attractions categories. 2. Admin can register to the website successfully. 3. Registered Admin can log in successfully. 4. The logged in Admin can insert attractions to the website. 5. When Admin upload attraction he can update it successfully. 6. The admin can delete the admin attraction successfully. 7. Logged in admin can log out from the website. 8. The user can view the available tourist attractions of the selected category.	Yes	
- Displaying home page where there are the attractions categories. - Admins registering for the website. - Admins logging into the website. - Admins uploading attractions. - Admins updating attractions. - Admins deleting attractions. - Admins logging out of the website. - Viewing tourist attractions.	Posting and viewing reviews of attractions	1. The user can see the attractions categories. 2. Admin can register to the website successfully. 3. Registered Admin can log in successfully. 4. The logged in Admin can insert attractions to the website. 5. When Admin upload attraction he can update it successfully. 6. The admin can delete the admin attraction successfully. 7. Logged in admin can log out from the website. 8. The user can view the available tourist attractions of the selected category. 9. The user can post a review of the selected attraction and view it on the attraction review page.	Yes	

System components	New component	Test case	Pass?	Comments
<ul style="list-style-type: none"> - Displaying home page where there are the attractions categories. - Admins registering for the website. - Admins logging into the website. - Admins uploading attractions. - Admins updating attractions. - Admins deleting attractions. - Admins logging out of the website. - Viewing tourist attractions. - Posting and viewing reviews of attractions. 	Sharing posted reviews of attractions	<ol style="list-style-type: none"> 1. The user can see the attractions categories. 2. Admin can register to the website successfully. 3. Registered Admin can log in successfully. 4. The logged in Admin can insert attractions to the website. 5. When Admin upload attraction he can update it successfully. 6. The admin can delete the admin attraction successfully. 7. Logged in admin can log out from the website. 8. The user can view the available tourist attractions of the selected category. 9. The user can post a review of the selected attraction and view it on the attraction review page. 10. The user can share her or his review on social media platforms 	Yes	

Table 63 Integration Testing

6.3 User Acceptance Testing

In this section, we will check if the system fulfills business requirements and if it can be used by our end users (tourists and admins). Our testing team is composed of 5 participants (2 admins and 3 tourists) who are describe more in details in the demographic sub section. By the end of each test, we gave the participants a questionnaire composed of 5 questions. to provide feedback on the website and the testing process.

User's name	Rana (Admin)		
Task	# of errors	Time needed min:sec:msec	Completion status
Register for the website.	0	01:58:63	Pass
Log in to the website.	0	00:28:86	Pass
Log out of the website.	0	00:10:78	Pass
View tourist attractions and their reviews.	0	00:00:86	Pass
Upload new attractions.	0	00:50:19	Pass
Update tourist attraction information.	1	00:45:85	Not pass
Delete tourist attractions from the website.	0	01:22:81	Pass
Search for tourist attractions by city.	0	00:23:27	Pass
Total time (must be within 20 minutes)	06:01:30		

Table 64 User Acceptance Testing for Admin I

User's name	Wail (Admin)		
Task	# of errors	Time needed min:sec:msec	Completion status
Register for the website.	0	01:18:10	Pass
Log in to the website.	0	00:46:16	Pass
Log out of the website.	0	00:08:59	Pass
View tourist attractions and their reviews.	0	00:06:29	Pass
Upload new attractions.	0	1:39:29	Pass
Update tourist attraction information.	0	00:24:45	Pass
Delete tourist attractions from the website.	0	00:36:24	Pass
Search for tourist attractions by city.	0	00:23:44	Pass
Total time (must be within 20 minutes)	05:23:10		

Table 65 User Acceptance Testing for Admin 2

User's name	Asun (Tourist)		
Task	# of errors	Time needed min:sec:msec	Completion status
Search for tourist attractions by city.	0	00:09:70	Pass
View tourist attractions and their reviews.	0	00:18:77	Pass
Post reviews of attractions.	0	00:57:25	Pass
Share my posted reviews on social media.	0	00:01:04	Pass
Total time (must be within 20 minutes)	02:08:51		

Table 66 User Acceptance Testing for Tourist 1

User's name	Muna (Tourist)		
Task	# of errors	Time needed min:sec:msec	Completion status
Search for tourist attractions by city.	0	00:14:29	Pass
View tourist attractions and their reviews.	0	00:08:71	Pass
Post reviews of attractions.	0	00:46:59	Pass
Share my posted reviews on social media.	0	00:28:85	Pass
Total time (must be within 20 minutes)	1:32:06		

Table 67 User Acceptance Testing for Tourist 2

User's name	Pendo (Tourist)		
Task	# of errors	Time needed min:sec:msec	Completion status
Search for tourist attractions by city.	0	00:12:37	Pass
View tourist attractions and their reviews.	0	00:10:93	Pass
Post reviews of attractions.	0	01:23:19	Pass
Share my posted reviews on social media.	0	00:18:80	Pass
Total time (must be within 20 minutes)	2:05:31		

Table 68 User Acceptance Testing for Tourist 3

After the testing process we have observed from our testers that our website was compatible to use, However in task " Update tourist attraction information" we found that the admin didn't notice the back button so he click the "Home" link in the breadcrumbs thinking that it will return to the Admin home page which is the reason of marking this feature as Not pass, according to that we made the " Home " link to be redirected to the admin home page rather than the home page and provided log out icon throughout all pages for the admin while logged in . Also an Admin got frustrated when registering to the website since the instructions of the passwords didn't show at once , so we decide to not make the registration / logging in processes a free-form input in future work, one last observation that an Admin was unsatisfied that the website didn't give a confirmation message when clicking log out button so we reflect that in our website and added a confirmation message if the admin want to log out. On the other hand, users found the website very informative and structured well they master it from the first use so we decided to not change anything for the user side.

6.3.1 Demographics of participants

We will provide in this sub section a statistical data relating to the audience who is going to use our system 'مسفار'.

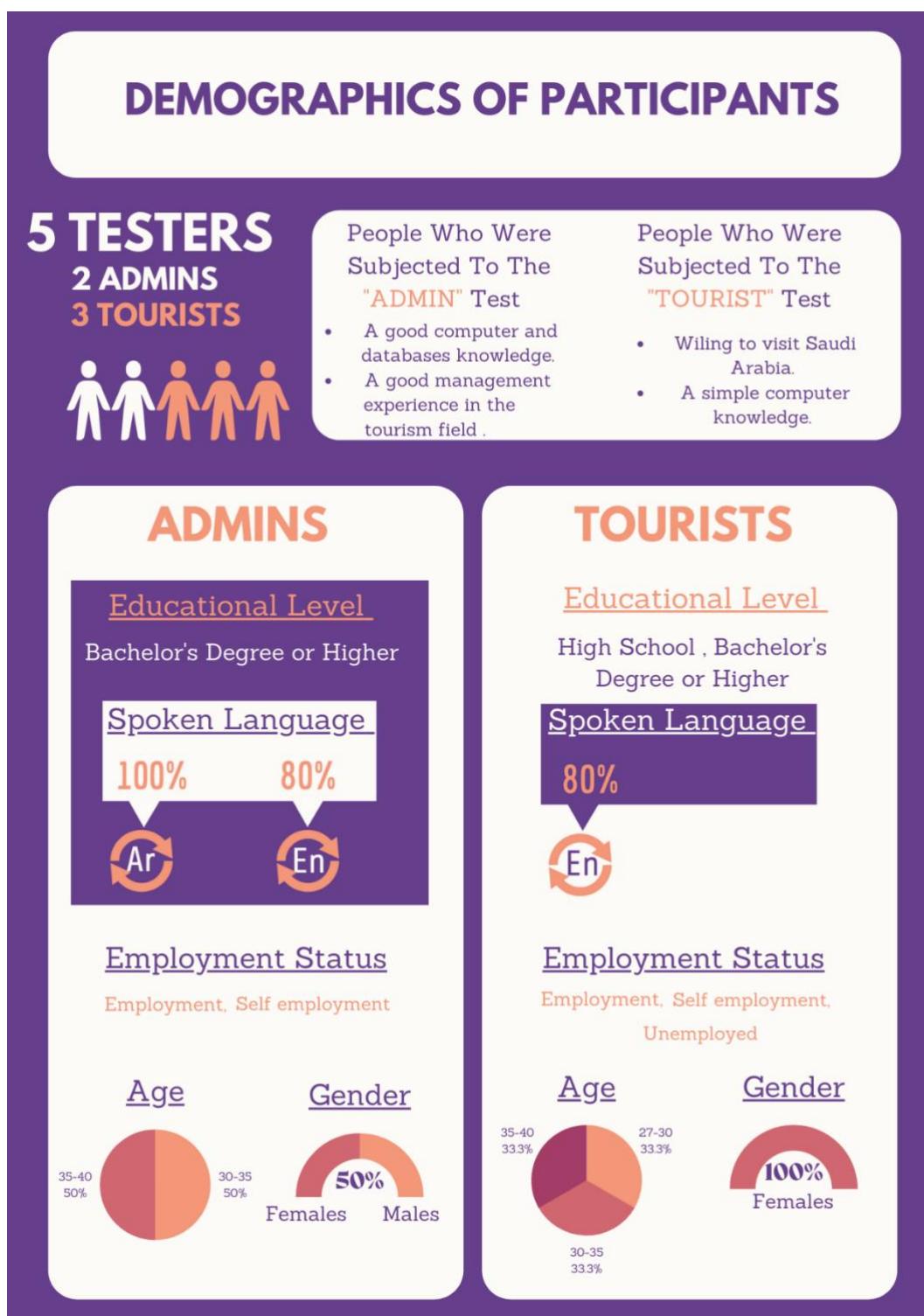


Figure 52 Demographic of Participants

6.3.2 Questionnaire

In this section we give a list of questions using google form to gather the testers feedback about 'مسفار'.

I need someone to show me how to use the website.

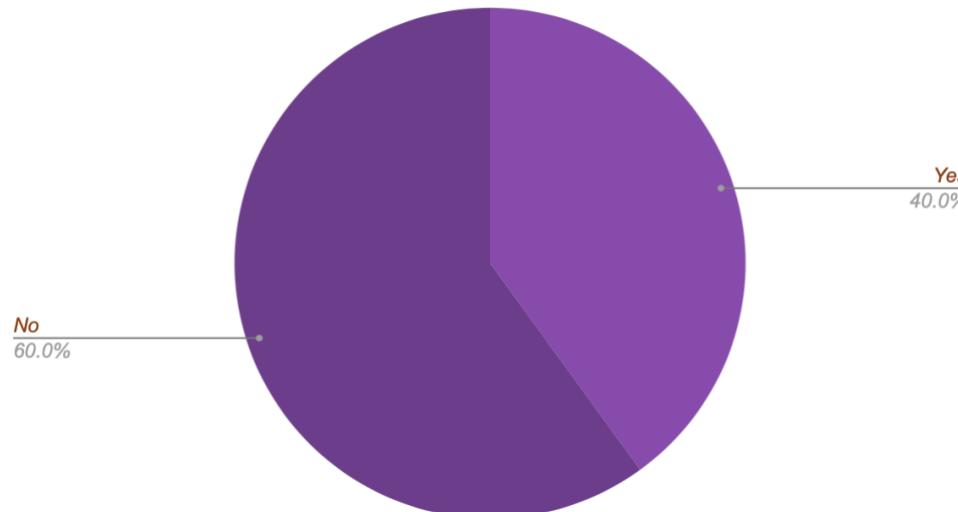


Figure 53 Testing Question 1

- 60% of our testers believe that they don't need anyone to show them how to use the website.

I need someone to show me how to use certain features.

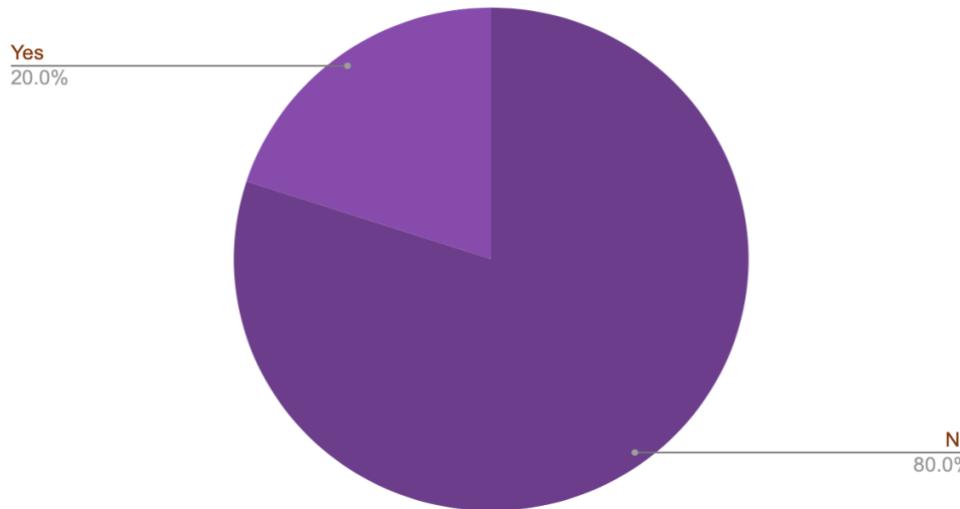


Figure 54 Testing Question 2

- 80% of the testers believe that they don't need someone to guide them on how to deal with any feature in our website.

It will take me a few uses to master the website.

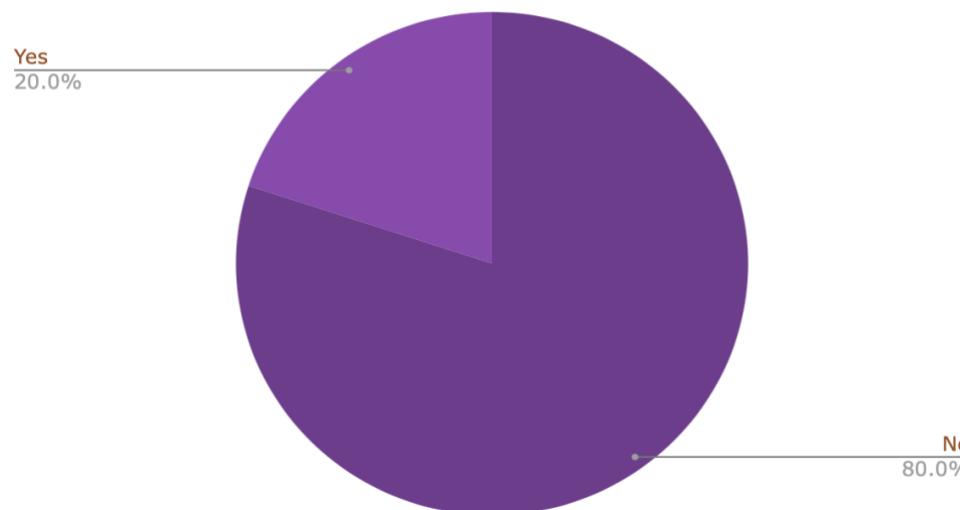


Figure 55 Testing Question 3

- 80% of the testers agree that they don't need multiple times to fully understand the website behavior.

It felt like I've been using it all my life.

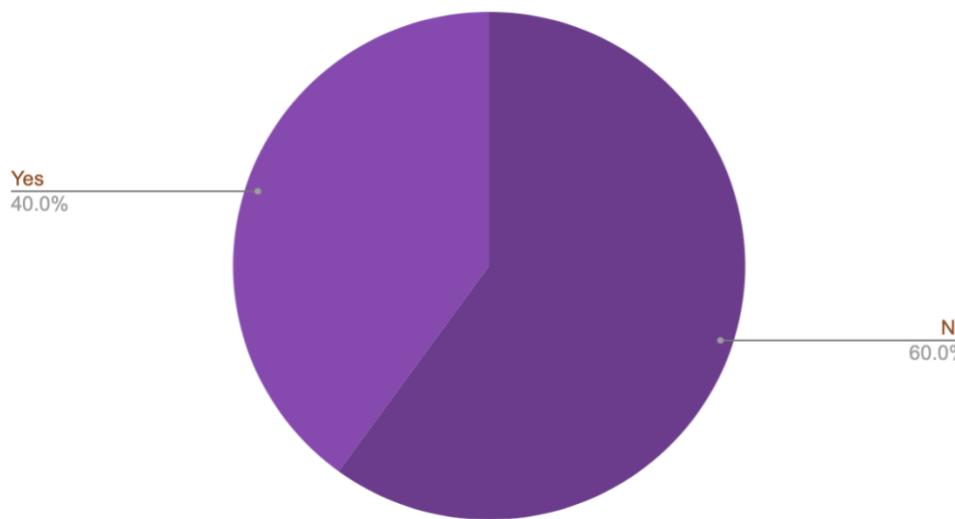


Figure 56 Testing Question 4

- 40% of the testers seem that they master the website from the first time and get into it easily.

Next time I use it, I'll know exactly what to do

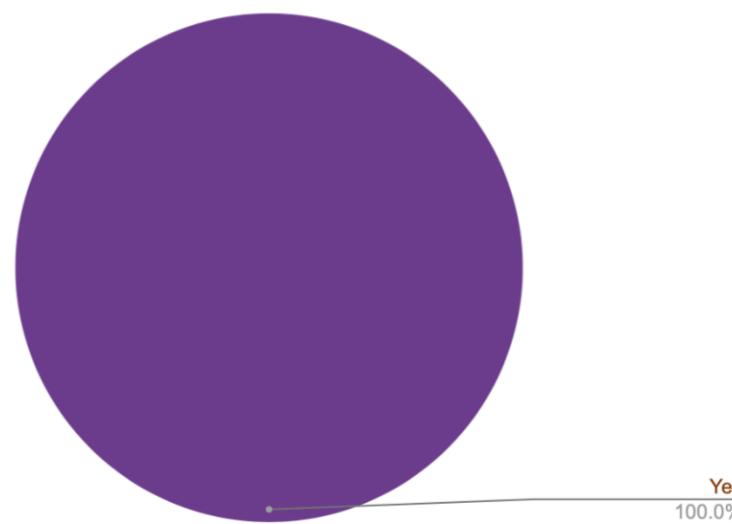


Figure 57 Testing Question 5

- All of the testers agree that they can do the tasks without errors in the next time.

The city and it's information was comprehensive

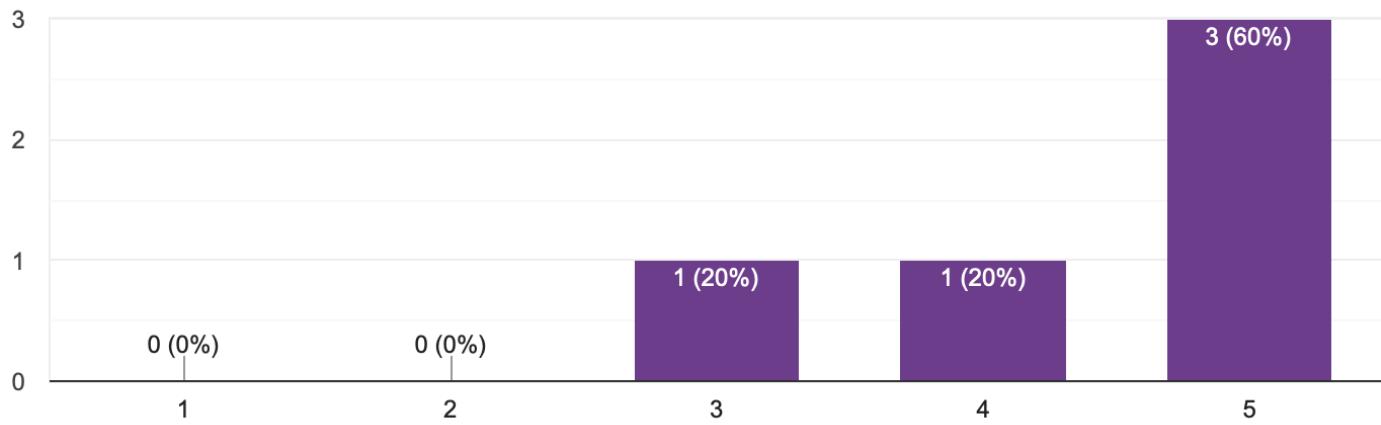


Figure 58 Software Feedback Question 1

- Most of the testers think that the city and its information was easy to read, where 5 represent "Strongly agree" and decreases till 1 which represent "Strongly Disagree".

The review label was found effortlessly, and it was uncomplicated to use

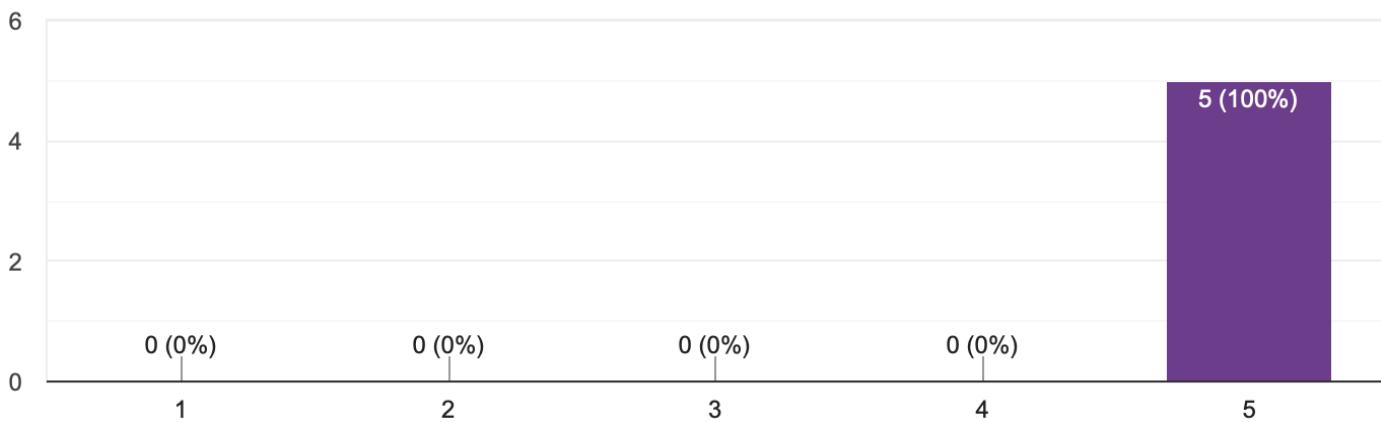


Figure 59 Software Feedback Question 2

- All of the testers strongly agree that the review label was in its right place and easy to post one, where 5 represent "Strongly agree" and decreases till 1 which represent "Strongly Disagree".

Share button gave me the indication that I can post my review in social media from the first time

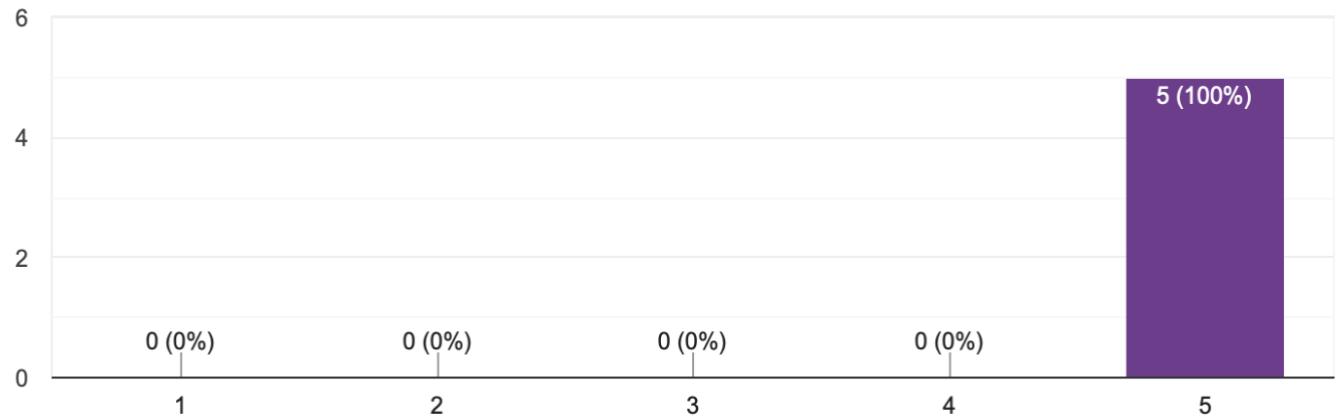


Figure 60 Software Feedback Question 3

- All of the testers believe that the share button was a great indicator for its use without the need to guess other uses, where 5 represent "Strongly agree" and decreases till 1 which represent "Strongly Disagree".

Attractions information displayed in readable way

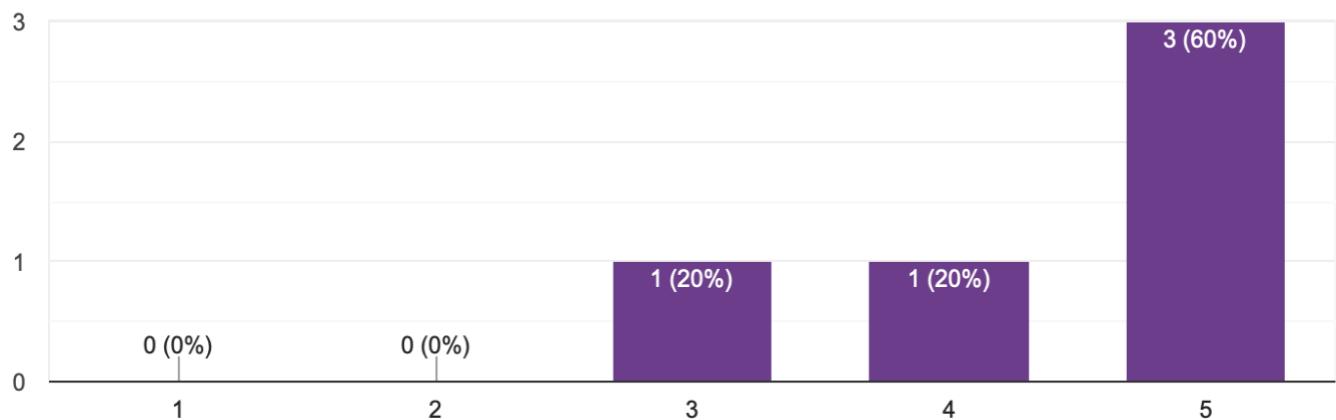


Figure 61 Software Feedback Question 4

- 60% of our testers like how attractions information displayed, where 5 represent "Strongly agree" and decreases till 1 which represent "Strongly Disagree".



CHAPTER 7

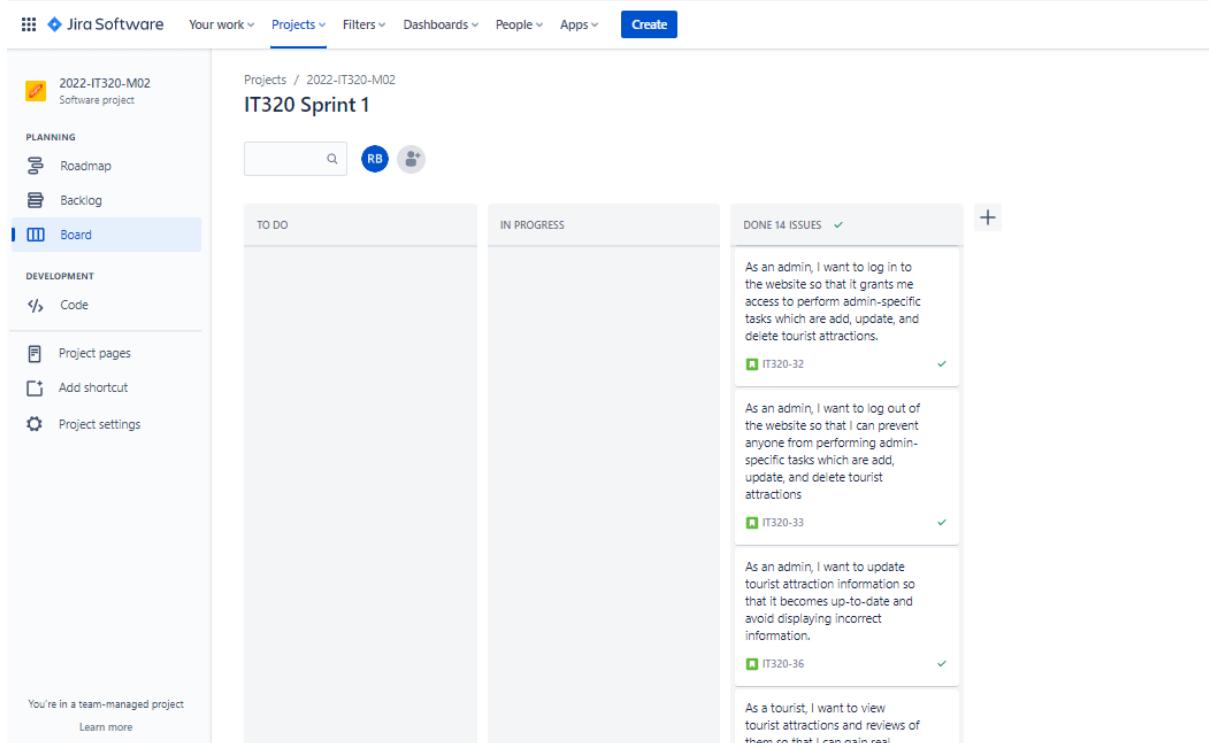
CONCLUSION

7 Chapter 7: Conclusion and Future Work

7.1 Conclusion

This document represents what we did for the 'مسفار' project. To begin with, we provided the introduction, where we identified the problem along with the solution and wrote the main objectives. On the other hand, to understand the problem domain, we did a domain analysis, where we examined the domain in detail. At this stage, we now have a better understanding of how we formulate our requirements and the users of 'مسفار'. The next stage was designing 'مسفار' architecture which represents the core functional work such as the class diagram, data structure, component and interface design. Now that we have all the essential units to implement 'مسفار', we implement it using HTML, CSS, JavaScript, jQuery, SQL, and PHP. After that, to ensure that 'مسفار' works as expected, we look back to the user stories in the requirements and check if they fulfill their purpose from the user's perspective by performing user story acceptance testing followed by integration testing each time we add a new feature to 'مسفار'. At last, we performed user acceptance testing to check if 'مسفار' could be used by our end-users.

Now that we are done with testing, we went back to our definition of a done chick list- table 5- and made sure that all the items on it had been completed. We also updated our user stories on the Jira platform.



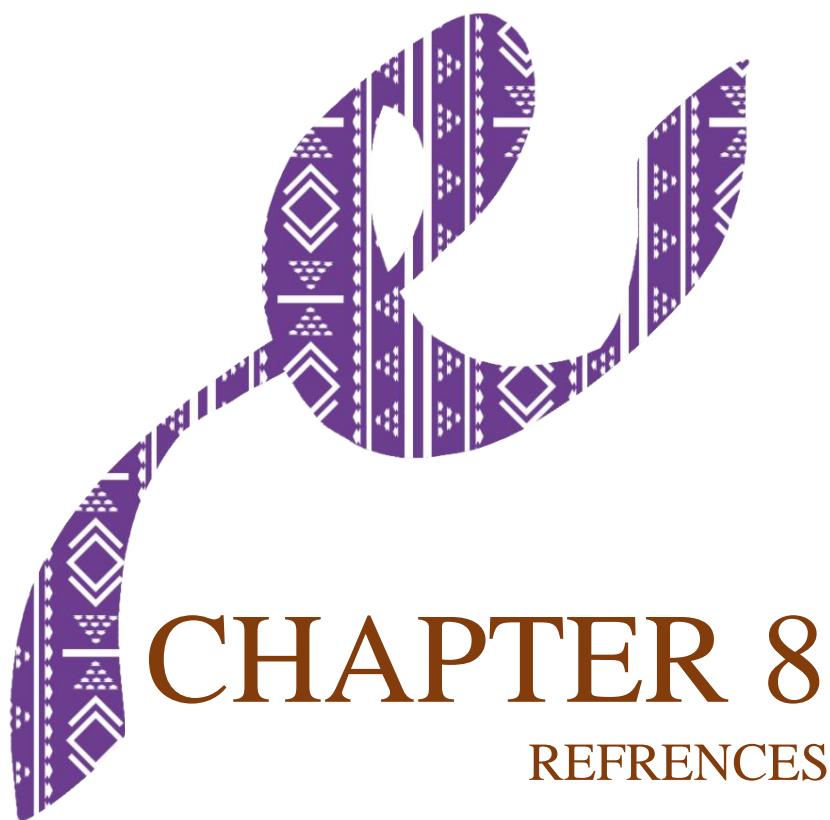
The screenshot shows the Jira Software interface for the project '2022-IT320-M02'. The left sidebar includes links for 'Roadmap', 'Backlog', and 'Board' (which is currently selected). The main area displays a Kanban board for 'IT320 Sprint 1' with three columns: 'TO DO', 'IN PROGRESS', and 'DONE 14 ISSUES'. The 'DONE 14 ISSUES' column contains four user stories:

- 'As an admin, I want to log in to the website so that it grants me access to perform admin-specific tasks which are add, update, and delete tourist attractions.' (Issue ID: IT320-32)
- 'As an admin, I want to log out of the website so that I can prevent anyone from performing admin-specific tasks which are add, update, and delete tourist attractions.' (Issue ID: IT320-33)
- 'As an admin, I want to update tourist attraction information so that it becomes up-to-date and avoid displaying incorrect information.' (Issue ID: IT320-36)
- 'As a tourist, I want to view tourist attractions and reviews of them so that I can gain real information.' (Issue ID: IT320-37)

Figure 62 Jira User Story Progress

7.2 Future Work

Due to lack of time, many features have been left as future work for 'مسفار'. Firstly, we will focus on the issues that the testers noticed while testing 'مسفار', one of them was having a free-form input while registration/logging in which was very stressful to the testers. Then we will try to cover all the cities in Saudi Arabia. Also having credibility in reviews such as liking or replying to a specific review will be such a great feature to include and we might think of the option of giving the reviewer the ability to post a review with a videos not only photos. In addition to that, we are considering the idea of creating an application version of the site, because the native experience is much better than just mobile-optimized sites and we can also push notifications to the user when a new attraction is added. Finally, we are thinking of widening the scope of what we are reflecting about tourism in Saudi Arabia by providing information about the Saudi seasons that are held recently, along with booking, and tour planning features.



CHAPTER 8

REFRENCES

8 References

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APPENDICES

9 Appendix A: Interview

- **Interview Questions:**

- 1- What is your name, and where are you from?
- 2- If you have the chance to visit Saudi Arabia and discover its attractions, what would be the information that you would like to know about these attractions?
- 3- Have you used any travel review sites before? What do you like or dislike about these sites?
- 4- When searching for an attraction in a specific country, how would you like it organized?
- 5- Can you describe the kinds of difficulties you might come across while choosing a specific attraction to visit?
- 6- From your point of view, what criteria do you rely on that raise the credibility of a review?
- 7- Do you think having a platform that is provided with all the attractions in Saudi Arabia and their photos with tourist reviews on them would give you a better experience in the country? If so, explain how.

- Interviews' Transcriptions

Table A.1: Interview 1:

Interview outline				
Interviewee: Nazrena Robin	Interviewer: Randa Bakhshwain			
Location/Medium: WhatsApp chat	Appointment Date: 09-03-2022			
	Start Time: 03:12 P.M.	End Time: 03:32 P.M.		
Objectives: Collect useful tips about the website functions.	Reminders: The interviewee has family			
Agenda: Introduction Background about the website Overview of the interview Topics to be covered Permission to record Questions from Interviewee Summary of Major points Closing	Approximate Time: 1 minute 2 minutes 1 minute 12 minutes 3 minutes 1 minutes			
General Observation: The interviewee was a little bit late, and because of that, I think she was nervous during the interview.				
Unresolved Issues, Topics Not Covered: None.				
Interviewee: Nazrena Robin	Date: 09-03-2022			
Questions:	Notes:			
Questions 1: What is your name, and where are you from?	Answer: My name is Nazrena Robin, and I am American. Observations: None.			

<p>Questions 2: If you have the chance to visit Saudi Arabia and discover its attractions, what would be the information that you would like to know about these attractions?</p>	<p>Answer: Usually when I travel, I look for the history of that place and the stories behind it, so I think mainly I would like to know the history of the attractions.</p>
<p>Questions 3: Have you used any travel review sites before? What do you like or dislike about these sites?</p>	<p>Answer: The only travel site I have used is priceline.com and I like it because it's easy to use.</p> <p>Observations: She took a while to think of an answer.</p>
<p>Questions 4: When searching for an attraction in a specific country, how would you like it organized?</p>	<p>Answer: I would like the sites organized by historical, cultural, religious and any other category.</p> <p>Observations: She prefers the sites organized by attraction type.</p>
<p>Questions 5: Can you describe the kinds of difficulties you might come across while choosing a specific attraction to visit?</p>	<p>Answer: A difficulty would be lack of information meaning they only give partial information.</p> <p>Observations: None.</p>
<p>Questions 6: From your point of view, what criteria do you rely on that raise the credibility of a review?</p>	<p>Answer: I trust other people's reviews that include rates and photos if possible.</p> <p>Observations: She said "if possible" meaning that she may trust reviews that don't have any rates or photos.</p>
<p>Questions 7: Do you think having a platform that is provided with all the attractions in Saudi Arabia and their photos with tourist reviews on them would give you a better experience in the country? If so, explain how.</p>	<p>Answer: Yes, I would like to have one platform that has all the information especially if it is organized well that would be convenient.</p> <p>Observations: She seemed excited when answering the question.</p>

Table A.2: Interview 2:

Interview outline		
Interviewee: Sophia	Interviewer: Randa Bakhshwain	
Location/Medium: WhatsApp chat	Appointment Date: 10-03-2022	
	Start Time: 03:00 P.M.	End Time: 03:23 P.M.
Objectives: Collect useful tips about the website functions.	Reminders: The interviewee is an employee	
Agenda: Introduction Background about the website Overview of the interview Topics to be covered Permission to record Questions from Interviewee Summary of Major points Closing	Approximate Time: Introduction: 1 minute Background about the website: 2 minutes Overview of the interview: 1 minute Topics to be covered: 15 minutes Permission to record: 3 minutes Questions from Interviewee: 1 minutes	
General Observation: None.		
Unresolved Issues, Topics Not Covered: None.		
Questions:	Notes:	
Questions 1: What is your name, and where are you from?	Answer: My name is Sophia, and I am from Netherlands. Observations: None.	
Questions 2: If you have the chance to visit Saudi Arabia and discover its attractions, what would be the information that you would like to know about these attractions?	Answer: History, cultural relevance, fun facts, reviews/experiences from other travelers' entry price, opening times, popular times, and recommended transportation. Observations: She was very precise about what information she wants to be displayed.	

<p>Questions 3: Have you used any travel review sites before? What do you like or dislike about these sites?</p>	<p>Answer: Yes. I appreciate a clean and simple layout. That way you can easily get the information. I like it when I can read about experiences from other travelers. I don't like it if I have to subscribe to a mailing list.</p> <p>Observations: Our website does not require tourists to subscribe to a mailing list, but the interviewee does not know this.</p>
<p>Questions 4: When searching for an attraction in a specific country, how would you like it organized?</p>	<p>Answer: Well, I think it will save me a lot of time if it is organized by location such as city, that way I can best plan my trip around the entire country.</p> <p>Observations: She is very supportive of organizing attractions based on location.</p>
<p>Questions 5: Can you describe the kinds of difficulties you might come across while choosing a specific attraction to visit?</p>	<p>Answer: Mostly first time to visit there we don't know their language well to communicate, took some time to eco-friendly with the culture. in addition to that I don't like big crowds. But when I go to popular attractions I try to visit at a time when it's not too crowded. But sometimes it's hard to find this out.</p> <p>Observations: She demonstrated her difficulty with language, culture, and crowds.</p>
<p>Questions 6: From your point of view, what criteria do you rely on that raise the credibility of a review?</p>	<p>Answer: Mainly, Honest review, good tips and trick, also I like a review with photos taken by travelers because they show a place as it is, instead of advertisement photos from an attraction.</p> <p>Observations: She is particularly fond of reviews that include images.</p>
<p>Questions 7: Do you think having a platform that is provided with all the attractions in Saudi Arabia and their photos with tourist reviews on them would give you a better experience in the country? If so, explain how.</p>	<p>Answer: Of course, because honestly, I only know Saudi Arabia as a place to do religious stuff. I never knew they have that attraction side, and it is also good to have everything in one place to make planning a trip easier.</p> <p>Observations: She was a strong supporter of this idea.</p>

10 Appendix B: Questionnaire

Questionnaires questions

Table B.1:

Questionnaires		
Q1- Your age: <ul style="list-style-type: none"> <input type="radio"/> Less than 18 <input type="radio"/> 18-22 <input type="radio"/> 23-30 <input type="radio"/> Above 30 	Q2- What are the most challenging problems that you face when choosing an attraction to visit? <ul style="list-style-type: none"> <input type="checkbox"/> Language difficulties <input type="checkbox"/> Price <input type="checkbox"/> Quality of services 	Q3- When visiting an attraction, would you like to share your review on other platforms, such as Instagram, Snapchat, and Twitter? <ul style="list-style-type: none"> <input type="radio"/> Yes <input type="radio"/> No
Q4- Do you trust people's reviews when thinking of visiting an attraction? <ul style="list-style-type: none"> <input type="radio"/> Yes <input type="radio"/> No 	Q5- What kind of information about an attraction do you most care about? <ul style="list-style-type: none"> <input type="checkbox"/> Price <input type="checkbox"/> Capacity <input type="checkbox"/> Short description 	Q6- Do you think adding photos to the review gives it more credibility? <ul style="list-style-type: none"> <input type="radio"/> Yes <input type="radio"/> No

- **Questionnaires Results**

Figure B.1:

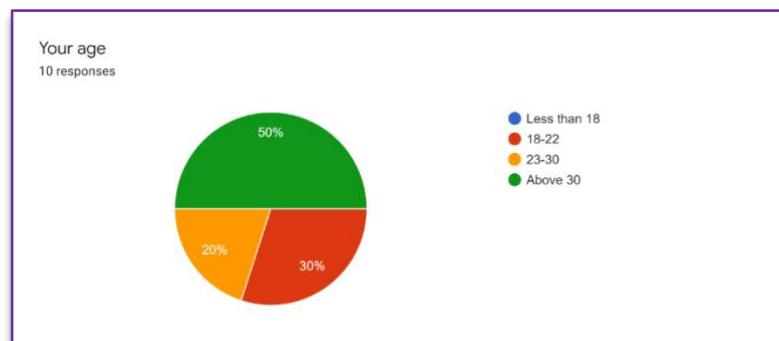


Figure B.2:



Figure B.3:

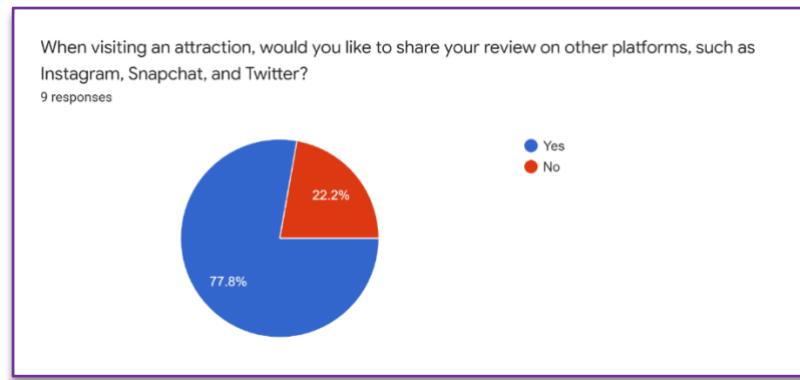


Figure B.4:

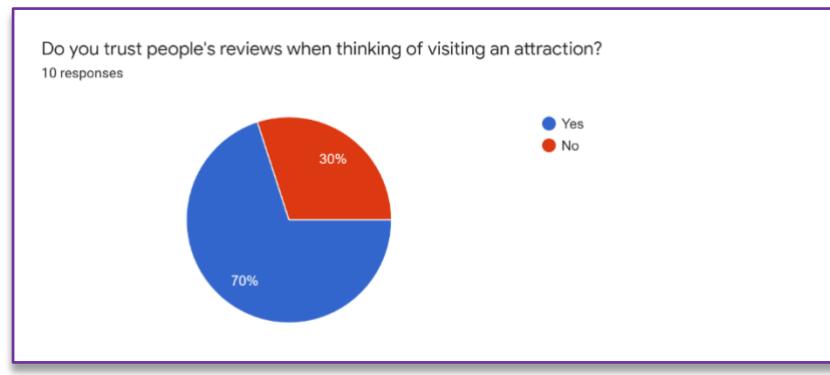


Figure B.5:

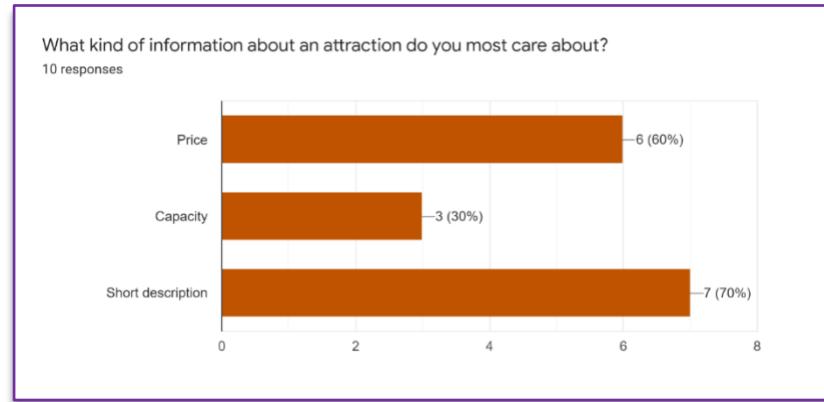


Figure B.6:

