School of Science and Engineering
Capstone Final Report
EGR 4402

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MOROCCAN OUTDOOR SPIRITS

Capstone Report

Student Statement:
“I, Yousra GAIMES, have applied ethics to the design process and in the selection of the final proposed design. And that, I have held the safety of the public to be paramount and have addressed this in the presented design wherever may be applicable.”

Yousra GAIMES

Approved by Supervisor

Dr. Nasser Assem
ACKNOWLEDGEMENTS

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I would like to thank my parents and my family for all their love and support as well as for their sacrifices that enabled me to arrive to where I am now.

Last but not least, I would like to thank Nabila Daya and Oumaima El Hazzat for their emotional support and valuable help.

Thank you all for taking part of my journey and making it worth all the stress and struggle.
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I. ABSTRACT

With the spike of online services offered in all fields, people are becoming more online oriented in their daily lives. Moreover, people are getting more passionate about travelling and discovering hidden beauties of the universe. For these reasons, Moroccan Outdoor Spirits, an eco-travel company mainly oriented towards national landscapes, opted for improving their service and upgrading it to a mobile application that will at the same time cope with the technological progress as well as push people to unleash their outdoor spirit and dare to discover.

The agency has a desktop application already built, that is used to manage internal data (e.g. Managing trips). My capstone’s mission is to implement a mobile application, on top of what is already built, which will consist of a mobile user platform where users can at all-time have access all the agency’s offers, can have all descriptions and details regarding the trips, and have an online booking option if they are interested in a given offer.

The goal of this capstone project is to have a user-friendly, trustworthy, and complete e-travel agency platform that is expected to facilitate the user experience and have an added value to the Moroccan Outdoor Spirits agency.
II. INTRODUCTION

Moroccan Outdoor Spirits are a Moroccan company operating in the tourism field. The agency’s mission is to enhance the local tourism and get Moroccan and foreign customers to know more about the hidden beauty of the country all while being ecofriendly. Moroccan Outdoor Spirits are more focused on online communication means to reach their customers. Moroccan Outdoor Spirits are a travel agency offering multiple, mainly national, and ecofriendly trips options.

Being one of the most reputed travel agencies in Morocco, Moroccan Outdoor Spirits spoils its customers and tries to always get them the best services possible. The agency’s policy is customer directed, it focuses on its clients wellbeing and satisfaction. This is the secret behind its success. The agency offers customized trips that can fit Moroccans as well as non-Moroccans, of various ages, desires. The services Moroccan Outdoor Spirits offer enable them to reach a diverse market. Moroccan Outdoor Spirits are investing all their efforts, time and money in upgrading their services to meet their customers’ expectations.

To keep the customer always updated and aware of the latest trips offerings and for suppliers to easily contact the agency, Moroccan Outdoor Spirits decided to implement a mobile user friendly application. Targeting smart phones users will allow the travel agency to get to a wider market and keep its customers’ value high. The application will be an interactive one. It will allow the customers to give different suggestions to the agency -which will allow the improvement of the services provided- as well as work as a shared platform between the suppliers and the agency which will ease the transactions and will be time efficient. Customers
thanks to the new implemented solution by Moroccan Outdoor Spirits, will keep their expectations high and will always be satisfied.

The system I am implementing in my capstone project is an e-travel agency mobile application for the Moroccan Outdoor Spirits travel agency.
III. STEEPLE ANALYSIS

\textit{a. Social:}

New technologies are impacting our life styles on a daily basis. Mobile phones for instance have altered the way individuals perceive their life priorities. One can accomplish all tasks, that needed much efforts, in few seconds with all the applications offered nowadays. Societies lately are more online services oriented. They are becoming addicted to being connected to the information flow and being constantly able to check on new travel opportunities. Here comes the usefulness of my mobile application. My e-travel agency will keep the customers, the suppliers, and the physical travel agency always connected. The physical agency will have a positive impact on society and will give a chance to travelers to flourish their spirits by living new breath taking trips.

\textit{b. Technological:}

Technology is rapidly changing customers’ idea of physical services. Using phone applications enables travel agencies to reach out to larger markets and suppliers as well as improves its services based on customers’ feedback. An e-travel agency will be the ultimate solution to flourish the tourism domain and get rid of the old travel constraints. The Moroccan Outdoor Spirits mobile application will keep its customers updated and pioneers at discovering new places. The physical agency will be easily able to keep up the technological advancement and profit from it.
c. Economical:

My capstone project – which will consist of an e-travel agency – will be a free application available for download to all customers. The application is developed using open source tools and programming languages. The agency will generate profit from the trips sold. The user friendly e-travel agency will allow the physical agency to gain customers trust and loyalty. Customer satisfaction is the application’s main objective. This will consist of a new gate for customers to discover the world and get the most of their lives. Moroccan Outdoor Spirits will offer personalized trips which will increase the market occupancy and competition.

d. Environmental:

Developing this e-travel agency will positively affect the environment. Moroccan Outdoor Spirits application will save the energy in such a way that customers will be required to ride any transportation means in order to get to the physical agency which will reduce the fuel consumption as a result this will prevent both air pollution and the use of nonrenewable sources of energy. Moreover, all procedures that were paper based will become digitalized thanks to the application which will reduce paper waste.

e. Political:

Morocco’s political system is nowadays more oriented towards technological improvement. The government encourages the use of new technologies. In this frame, Moroccan Outdoors Spirits e-travel agency will only have positive impact politically speaking. The application can allow the physical agency to get grants for the Moroccan government.
**f. Legal:**

Moroccan Outdoor Spirits mobile application obeys all law of the Moroccan constitution. Moroccan Outdoor Spirits will be a none harmful, secure, and privacy respecting of all customers. Only the managers of the physical agency will be allowed to have access to the personal information of the user. The physical agency will pay all its due duties and will not infract any laws of any kind.

**g. Ethical:**

Moroccan Outdoor Spirits application will strictly follow the code of ethics. It will be 100% secure and safe for customers, suppliers, the physical agency, and the whole society. All parties’ rights will be preserved and well respected. All descriptions and content within the application will be conform to what the travel agency is truly offering, no manipulated information is allowed. The encryption of the user’s information will be the agency’s main motivation. All information provided and generated will be stored in secure databases. Furthermore, the mission and vision of the e-travel agency will be clearly stated at the welcoming page of the platform.
IV. REQUIREMENTS SPECIFICATIONS

1. Functional Requirements

a. Introduction:

The travel agency has an already build desktop application connected to a backend database (MySQL). The mobile application will be linked to a backend database (SQLite) to manage the users and read the synchronized trips from the database of the desktop application.

b. Functional Requirements:

The mobile application will have the following functional requirements:

Splash:

Moroccan Outdoor Spirits application must have a splash activity containing its logo and photos of some activities offered.

Login:

Moroccan Outdoor Spirits application must have a login activity with a username and a password field.

The user should be able to login if he confirmed his email address. After logging in, the user should be able to:

- View/modify his personal info.
- View latest trips.
- Book a trip
- Get more information about the agency
Register:

The user of Moroccan Outdoor Spirits application must be able to create an account. Users must provide their personal information while creating their account (Full name, email address, phone number etc.) The user must receive a confirmation email to the email he entered.

Reach Us:

Supplier of Moroccan Outdoor Spirits travel agency should be able to reach to the agency to offer their services.

About Us:

Moroccan Outdoor Spirits application should have a screen devoted for general information about the physical travel agency, it should include the mission and vision of the travel agency as well as the contact information.

User Account:

Users must be able to view their personal information and modify them as well as view booked trips.

Available Trips:

Users must be able to view the list of the trips offered by Moroccan Outdoor Spirits.

Trip Details:

Every trip must have details and booking option.
**Booking:**

Every user must be able to book desired trips.

## 2. Nonfunctional Requirements

### a. Introduction:

After several meetings with Moroccan Outdoor Spirits physical agency, we settled, for the well-functioning of the mobile application, on a list of nonfunctional requirements. The application should respect operational, revision, and transition requirements.

### b. Nonfunctional requirements:

Moroccan Outdoor Spirits application should have the following nonfunctional requirement:

**Operational Requirements:**

How well Moroccan Outdoors Spirits must perform.

**Availability Requirements:**

Moroccan Outdoor Spirits application must be always available for use. In case of backups, all users must be notified beforehand.

**Performance requirements:**

Moroccan Outdoor Spirits application should guarantee a high execution speed and a minimized response time. This can be granted by using good and efficient algorithms.
Usability requirements:

Moroccan Outdoor Spirits application will be a user friendly mobile application available in French as well as in English to target Moroccan as well as foreign markets.

Security requirements:

Moroccan Outdoor Spirits application deals with users’ personal information so it must be highly secure. High levels of security might be attained by using the right encryption of data. The application must respect the given security rules:

- Confidentiality: The administrator only can access users’ records and information.
- Authenticity: Administrator only can modify or delete a user account.
- Integrity: Users only can modify their data.

Revision Requirements:

Moroccan Outdoor Spirits should allow correcting errors and adding new functions.

Extensibility requirements:

Moroccan Outdoor Spirits application should be extensible. The architecture, design, and implementation should allow future changes depending on the business needs.

Scalability requirements:

Moroccan Outdoor Spirits application should be scalable; in the sense of handling and accommodating the growing amount of work the physical agency will be doing and the growing amount of users.
**Maintainability requirements:**

Moroccan Outdoor Spirits application should be maintainable. It should allow upgrades and future changes depending on the needs of the physical travel agency.

**Transition Requirements:**

Moroccan Outdoor Spirits should adapt to technical and environment changes.

**Reusability requirements:**

Moroccan Outdoor Spirits application should be reusable. The application’s components should be implemented in such a way they can be reused in other applications.

**Installability requirements:**

Moroccan Outdoor Spirits application should be easy to install on all necessary platforms.
V. FEASIBILITY STUDY

Feasibility study is a crucial phase that has for purpose to assess the positive and negative aspects of the application and help improve the overall process. It is a very critical phase that can predict the degree of success of the application. My capstone project consists of an e-travel agency mobile application for my clients the physical travel agency “Moroccan Outdoor Spirits”.

a. Product Feasibility:

Moroccan Outdoor Spirits is a mobile platform implemented to reach out to a wider market and to attract the attention of more people. This application serves its purpose. The physical travel agency will get the most of it. It will allow them to communicate their offerings to more people not only Moroccans but also foreigners.

b. Technical and Operational Feasibility:

Moroccan Outdoor Spirits mobile application will be implemented in Java and XML using the IDE Android Studio.

The backend will be implemented using SQLite database engine. This choice was based on the fact that SQLite is full-featured, reliable, self-contained, and very compatible with Android Studio.
c. Social and Market Feasibility:

Mobile services are becoming the most commonly used services. That is why I believe that Moroccan Outdoor Spirits mobile application will be of great use and will serve the community.

After multiple meetings with Moroccan Outdoor Spirits physical agency, I concluded that the mobile application is feasible in terms of implementation, cost constraints, objectives and goals expected by the physical agency and will achieve their goals and objectives as well as it will keep them in touch with both users and suppliers. I predict that Moroccan Outdoor Spirits application will enable its users to make their dream trips come true.
VI. METHODOLOGY:

Following the request of my clients who needed rapid implemented application, I opted for Rapid Application Development methodology. This option, allows my clients, Moroccan Outdoor Spirits physical travel agency, to have real time updates about the improvement of the mobile application. Throughout the development of “Moroccan Outdoor Spirits” the client was always involved; he gave me instant feedback about my work. Moroccan Outdoor Spirits and I worked as a homogeneous group, the whole process was as smooth as it could be. I had different parts of the project ready and submitted them to my clients for testing and returning feedback; based on this feedback I made the necessary improvements to the application. This process insured failure rate, better performance, and client satisfaction.

Moreover, the deadlines imposed by my capstone syllabus in addition of the involvement of my client throughout the project go along with the basic principles of Rapid Application Development because RAD requires timeboxes and client involvement.
My choice of this methodology was mainly based on the strengths it has. Following some of these strengths (SELECTING A DEVELOPMENT APPROACH, 2017):

- “The operational version of an application is available much earlier than with Waterfall, Incremental, or Spiral frameworks.”
- “Because RAD produces systems more quickly and to a business focus, this approach tends to produce systems at a lower cost”
- “Concentrates on essential system elements from user viewpoint.”
VII. ARCHITECTURE

To ensure the nonfunctional requirements agreed on with my client, I chose a 3 tiers architecture for Moroccan Outdoor Spirits mobile application.

The architecture I chose has 4 main benefits:

**Maintainability:**

Changes and updates can be easily done because every tier is independent so in case of change no other tier will be affected.

**Scalability:**

Every tier is based on the deployment of layers; as a result, scaling out Moroccan Outdoor Spirits is straightforward.

**Flexibility:**

Flexibility is ensured because each tier can be managed independently.

**Availability:**

Moroccan Outdoor Spirits desktop application will have multiple backup servers and databases to ensure availability of the mobile application at all time.
Presentation Tier:

Moroccan Outdoor Spirits mobile application will be a user interface interacting with the physical agency clients.

Logic Tiers:

Desktop Application: an application already built by the physical agency that enables administrators to manage users, bookings and trips; it connects to MySQL database where it stores Trips.

Web Server (PHP): it will enable the synchronization of the SQLite database and the MySQL one.

Data Tier:

SQLite Database: to reduce response time and make Moroccan Outdoor Spirits time efficient, I opted for a close to the application lite database.

MySQL Database: Database to store trips, users, and their bookings.
VIII. DESIGN

1. Use Case Diagram:

![Use Case Diagram](image)

*Figure 3 Moroccan Outdoor Spirits Use Case*
Moroccan Outdoor Spirits system will interact with three users:

**User:**

All new user must be able to register by entering their information to create an account.

**Customer:**

All registered users can:

- Authenticate:
  - Customers can login, after confirming their email address, to access and manipulate the application.
  - Customers can logout when done with manipulating Moroccan Outdoor Spirits mobile application.

- Every user must be able to check his account information as well as all the trips he booked.

- Every user must be able to manage his account information by either adding, modifying, or editing information.

- Every user must be able to book desired trips.

- Every user must be able to view the list of all offered trips by the physical agency.

**Supplier:**

Any supplier with any given offer can reach out to the agency and describe his offer.
2. Activity Diagram:

![Activity Diagram](Figure 4 Moroccan Outdoor Spirits Activity Diagram)
The figure above represents the activity diagram of Moroccan Outdoor Spirits mobile application system. It describes the overall overflow of the interaction with the system. The table below gives the description of every activity:

Table 1 Moroccan Outdoor Spirits Activities’ Details

<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Login</td>
<td>The user in this activity enters his username and password</td>
</tr>
<tr>
<td>Register</td>
<td>The user in this activity enters his login and personal information</td>
</tr>
<tr>
<td>About Us</td>
<td>The user in this activity can get general information about Moroccan Outdoor Spirits</td>
</tr>
<tr>
<td>Check Account</td>
<td>The user in this activity can access his personal account where he can find booked trips and personal information</td>
</tr>
<tr>
<td>Manage Account</td>
<td>The user in this activity can check his personal information and modify them if desired</td>
</tr>
<tr>
<td>Check Booked Trips</td>
<td>The user in this activity can check his booked trips</td>
</tr>
<tr>
<td>Check Available Trips</td>
<td>The user in this activity can check the list of available trips offered by the travel agency</td>
</tr>
<tr>
<td>Check Trip Description</td>
<td>The user in this activity can have specific information about the trip he selected</td>
</tr>
</tbody>
</table>
3. Data Model

![Data Model Diagram]

*Figure 5: Moroccan Outdoor Spirits ERD*
The following ERD represents Moroccan Outdoor Spirits database after applying normalization techniques which include:

**First Normal Form:**

All rows have column with only one value. Data is stored separately in multiple rows.

**Second Normal Form:**

We have no none prime attributes depends on a subset of the primary key or candidate key. All attributes depend on the whole primary key because in this case we have an atomic one.

**Third Normal Form:**

We have no transitive dependency in the database. No nonprime attribute depends on another nonprime attribute; it only depends on the primary key.

**Boyce-Codd Normal Form:**

No prime attribute depends on a none prime attribute.

**Fourth Normal Form:**

No independent relationships are implemented in the same bridge table.
### a. Attributes Description

<table>
<thead>
<tr>
<th>Table</th>
<th>Attribute</th>
<th>Data Type</th>
<th>Attribute Description</th>
<th>Table Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Users</td>
<td><strong>UserName</strong></td>
<td>String</td>
<td>Primary key of Users table and foreign key of Bookings table.</td>
<td>The table Users stores all needed information (Personal as well as authentication information) about Moroccan Outdoor Spirits users</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Chosen by the user</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Password</strong></td>
<td>String</td>
<td>Authentication password chosen by the user</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Email</strong></td>
<td>String</td>
<td>Email of the user. To this address the confirmation email is sent.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>FirstName</strong></td>
<td>String</td>
<td>First Name of the user.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>LastName</strong></td>
<td>String</td>
<td>Last Name of the user.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Phone</strong></td>
<td>INT</td>
<td>Phone number of the user.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>ConfirmationFlag</strong></td>
<td>Binary</td>
<td>If the user received a confirmation email the flag is set to 1 else, it is by default 0.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Address</strong></td>
<td>String</td>
<td>The address of the user.</td>
<td></td>
</tr>
<tr>
<td><strong>Trips</strong></td>
<td>idTrips</td>
<td>INT</td>
<td>Primary key of Trips table and foreign key of Booking table. It is auto generated.</td>
<td>The Trips table stores all information linked to trips offered by the travel agency.</td>
</tr>
<tr>
<td>-------------</td>
<td>-----------</td>
<td>---------</td>
<td>------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Price</td>
<td>Decimal</td>
<td></td>
<td>Price of the trip</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>String</td>
<td></td>
<td>Name of the trip</td>
<td></td>
</tr>
<tr>
<td>Description</td>
<td>String</td>
<td></td>
<td>Description of the trip</td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>String</td>
<td></td>
<td>Type of the trip</td>
<td></td>
</tr>
<tr>
<td>Image</td>
<td>String</td>
<td></td>
<td>URL of the image of the Trip</td>
<td></td>
</tr>
<tr>
<td><strong>Bookings</strong></td>
<td>UserName</td>
<td>String</td>
<td>Primary Key and foreign key linking Users and Bookings table. Username of the user</td>
<td>The Bookings table is a bridge table between the Users table and the Trips one. It adds the date of the booking as attribute.</td>
</tr>
<tr>
<td>TripId</td>
<td>INT</td>
<td></td>
<td>Primary Key and foreign key linking Trips and Bookings table. It’s the trip Id where every trip has a unique one.</td>
<td></td>
</tr>
<tr>
<td>BookingDate</td>
<td>Date</td>
<td></td>
<td>The date of the booking</td>
<td></td>
</tr>
<tr>
<td>Table</td>
<td>Column</td>
<td>Type</td>
<td>Description</td>
<td>Details</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
<td>--------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Destination</td>
<td>idDestination</td>
<td>INT</td>
<td>Primary Key of Destination table it is auto generated.</td>
<td>Table Destination is a table that describes the destination of every trip including all the stops</td>
</tr>
<tr>
<td></td>
<td>Name</td>
<td>String</td>
<td>The name of the destination</td>
<td></td>
</tr>
<tr>
<td></td>
<td>location</td>
<td>String</td>
<td>Location the destination</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cites</td>
<td>Strings</td>
<td>The cites that are famous in that specific destination</td>
<td></td>
</tr>
<tr>
<td>City</td>
<td>IdCity</td>
<td>INT</td>
<td>Primary key of the table city it is auto generated</td>
<td>City table includes all information related to the address of the users</td>
</tr>
<tr>
<td></td>
<td>PCode</td>
<td>INT</td>
<td>The post code of the city</td>
<td></td>
</tr>
<tr>
<td></td>
<td>region</td>
<td>String</td>
<td>The region of the city</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Name</td>
<td>String</td>
<td>Name of the city</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Country</td>
<td>String</td>
<td>The country of the city it is a foreign key of the table Country where we will find more details</td>
<td></td>
</tr>
<tr>
<td>Image</td>
<td>idImage</td>
<td>INT</td>
<td>Primary key of the table Image it is auto generated</td>
<td>Table Image is a table storing all details</td>
</tr>
<tr>
<td></td>
<td>URL</td>
<td>String</td>
<td>The URL of the image linked to the images of the application</td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>--------------</td>
<td>-------------</td>
<td>---------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Uploading_date</td>
<td>DATE</td>
<td>The date when was the image uploaded to the database</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Country</strong></td>
<td>idCountry</td>
<td>INT</td>
<td>Primary Key of the table Country it is auto generated</td>
<td></td>
</tr>
<tr>
<td></td>
<td>indicator</td>
<td>String</td>
<td>The phone indicator of the country</td>
<td></td>
</tr>
<tr>
<td></td>
<td>currency</td>
<td></td>
<td>The currency of the country</td>
<td></td>
</tr>
<tr>
<td></td>
<td>name</td>
<td></td>
<td>The name of the Country</td>
<td></td>
</tr>
</tbody>
</table>

In my database:

- every user can book multiple trips
- every country has multiple cities
- every trip has multiple destination
- every trip has multiple images
- every user has one city address
- every trip can be booked multiple times
IX. IMPLEMENTATION

1. Database Implementation:

The database was implemented using MySQL Workbench. All the steps of implementing an efficient database was followed.

Following are the tables I worked with in the database of Moroccan Outdoor Spirits:
2. Mobile Application:

Moroccan Outdoor Spirits client side was implemented using Android Studio. Java based language using XML for layouts design. After multiple meetings with Moroccan Outdoor Spirits physical agency we settled on the design of the layout and the flow of activities within the mobile application. I made use of Google Forms because they are easy to handle and auto generate the needed results. I used the Google forms for both the Reach us option and the Booking option. I followed what the physical agency works with. They did not want to change their work flow at this first version of the mobile application.

Below some results of the Moroccan Outdoor Spirits mobile application implemented and ready to deliver to the physical agency:
Figure 12 Splash Activity

**Splash:**
Moroccan Outdoor Spirits application splash activity containing its logo and photos of some activities offered.
Figure 13 Login Activity

Login:

Moroccan Outdoor Spirits application login activity with a username and a password field.
Register:

Moroccan Outdoor Spirits application registration activity where users provide their personal information while creating their account (Full name, email address, phone number etc.)

The user after receive a confirmation email to the email he entered.
Confirmation Email:

The user receives an email to the email he entered when registering with his User name and Password to confirm the availability of his email address.
Reach Us:

Reach us activity where supplier can reach Moroccan Outdoor Spirits travel agency to offer their services. It is a google doc form where supplier can fill in the needed information. URL: https://docs.google.com/forms/d/e/1FAIpQLSdX0RylEoJ6j_JK6Q500zz

Figure 15 Reach Us Activity
About Moroccan Outdoor Spirits

Moroccan Outdoor Spirits is a community that, through its activities, aims to let the participants discover themselves, the others, and the outdoor life.

Contact Us: @MoroccanOutdoorSpirits
Call 0622-969561
outdoorspirits.ma@gmail.com

Figure 16 About Us Activity

About Us:

Moroccan Outdoor Spirits application screen devoted for general information about the physical travel agency.
Figure 17 Available Trips Activity
Figure 18 Available Trips Activity
Figure 19 Available Trips Activity

**Available Trips:**

All trips offered by Moroccan Outdoor Spirits.
Figure 20 Trip Description Activity

Trip Details:

Trip details and booking option.
Booking:

Booking process goes through a google form.

Figure 21 Booking Activity
Booking Confirmation Email:

The user receives an email to confirm his booking of a given trip.
User Account:

After confirmation of his booking of a certain trip, the trip gets added to the user’s account. He can enter his account and check his booked trips.
## X. TECHNOLOGY ENABLERS

### 1. Desktop Application:

<table>
<thead>
<tr>
<th>C#</th>
<th>C# was used to develop the desktop application I needed to build on top of the mobile application</th>
</tr>
</thead>
<tbody>
<tr>
<td>MySQL</td>
<td>The database of Moroccan Outdoor Spirits was managed using MySQL, Backup database is built using MySQL as well.</td>
</tr>
</tbody>
</table>

### 2. Mobile Application:

<table>
<thead>
<tr>
<th>SQLite</th>
<th>Used as a lite database linked directly to the mobile application to ensure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Android Studio</td>
<td>Standard IDE for android development</td>
</tr>
</tbody>
</table>
### 3. Other tools

<table>
<thead>
<tr>
<th>Tool</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adobe Photoshop</td>
<td>Used to design the logos and some interfaces</td>
</tr>
<tr>
<td>Draw.io</td>
<td>Used to draw diagrams</td>
</tr>
</tbody>
</table>
XI. CONCLUSION & FUTURE WORK

It was a good experience to get the opportunity to build an application from scratch and practice all the knowledge that I acquired throughout my Computer Science pathway. This helped me to go over the software development steps as in real life projects. To learn Android on my own without any prior knowledge or professional experience, was a very challenging but enriching experience. Throughout the semester, I divided the work and built the needed features little by little. In this process, I got to learn how to efficiently look for a specific information and get to deploy it within my project. I followed YouTube tutorials that helped me a lot, as well as reused some pieces of already build codes from some online open sources code websites (i.e. StackOverflow).

Moroccan Outdoor Spirits from an idea to a concrete mobile application. I had the chance to practice how to gather requirements, design, implement, and test.

Concerning future work, it is more data mining oriented. My idea is to build an algorithm that will take the best offers for a given trip based on the offers the mobile application gathered from different suppliers. More than that, I am projecting a more advanced version of the same application, this capstone was the first step towards learning the basics so within near future I will have enough time to perfect Moroccan Outdoors Spirits. One of the features I did not had the chance to implement it in my capstone and will implement it in few coming days is the online payment option using PayPal; unfortunately, the physical agency is still dealing with cash solutions with its clients.

This project allowed me to had a simulation of what is like to build a project that will help me in my future career.
XII. RESOURCES


3. MySQL Documentation Used Overall the project: https://dev.mysql.com/doc/

4. SQLite Documentation used overall the project: https://sqlite.org/docs.html