**Dissertation (Major Computing Project)**

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1. **Abstract**

This "TRAVEL XYZ" project is used to automate all of the processes involved in travel and tourism, including creating, booking, and confirming reservations and user data. This project utilizes the Android native framework and Firebase as its database server. It is meant to be compatible with all modern browsers and mobile applications. Kotlin was the language that was utilized for the coding. The travel and tourism application is used to book a tour from anywhere globally via a single dynamic application. This will assist the user in knowing everything there is to know about the areas they are visiting and the specifics of the trip on a single website. By generating a tour page, the authority running the application or the organization working behind the scenes of the business may add vacation packages to the website from certain travel agencies and hotels. After that, the users will be able to sign in and book each project, and the admin will be able to confirm their bookings on the manage booking page. In addition to the specific destination's costs, locations, and hotels, the user may see the confirmation in their "my booking" tab. It is the most convenient passenger platform since reservations can be made quickly and thoroughly researched.

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# 2 Introduction

Since we are now living in the age of automation, mobile applications, and post-pandemic survival, our dependence on software only stands to grow. It's not terrible, considering how useful apps can be in improving our daily lives. Businesses that want to compete in today's high-tech environment must prioritize software development. A smartphone app or a website is just the tip of the iceberg regarding what is involved in software development. The most important reason for creating this software was to fill a market need. Considering that most people travel at least once throughout their lifetime, a program like Tourism would greatly help in planning the perfect vacation (Flightslogic.com, 2019). In this application, the user has complete access to all data, including where and when an incident occurred. The main goal is to assist tourism-related enterprises in taking care of their clients and running their hotels and other facilities efficiently. The software may also be used by business people and leisure vacationers alike

**Background**

Humans have an insatiable need for new and exciting adventures, and travel is one of the most imaginative ways to fulfill this craving (flexiprep.com, 2022). Individuals' experiences when traveling are often the most memorable parts of their lives. These excursions usually consist of going to places that identify locations and taking pictures at those places to use as waypoints throughout a trip in the thoughts of tourists. Reasons, why people travel, are discussed in this section. Specifically for seeing historic sites and visual documentation. Opportunities to learn about and appreciate other cultures are abundant when you travel. They are taking stock of one's inner thoughts. The background research aims to give a unique experience to the users of this application with smooth performance and flexibility

# 3 Existing system and problem identification.

Within the most current online systems, every activity must be carried out manually, and the processing is a laborious effort. Travelers had to keep track of their timetable data using pen and paper, which was both time-consuming and expensive. Passengers cannot meet their requirements in the allotted amount of time. Several challenges and flaws in the system require human upkeep.

* A higher volume of transactions results in a more significant number of source documents, which makes maintenance more challenging.
* The maintenance process will become much more complex if any admin or user input is done incorrectly (Shen, 2011).

# 4 Literature Review

I have analyzed several apps to determine existing application issues and their characteristics. The answer that helps travelers better manage their time in these programs is essentially electronic sticky notes. And all applications were available in the google play store, and the apple app store is also free to use. So here are some descriptions of these applications and their issues:

**Hopper**

Hopper is a travel booking service that provides users with color-coded calendars highlighting the cheapest and most costly days to fly to their desired locations (Sitejabber.com, 2022). After that, Hopper will advise them on whether they should go ahead and make the purchase now or postpone it until the rates become more favorable. They concentrate on forecasting fares and overnight rates so that tourists may pick when to go to get the most bang for their buck, financially speaking.

**Problem identification of Hopper**

Because the service is only available via mobile applications, prospective customers of Hopper should investigate the quality of the company's customer support before making any commitments to book a ticket or a week's stay at a hotel through the company (Sitejabber.com, 2022). Users must submit any complaints or concerns directly via the booking process on the app if they have any issues or concerns. This is the sole method that allows direct communication with the support staff. Because of this, users are virtually required to purchase before they may communicate with anybody. Be aware that to make changes or adjustments to users' tickets with a low-cost carrier, they need to contact that particular airline directly.

So the main issue is they have to buy application services to use their support, and even though everything is virtual, customers also need to contact the airlines, which is a big annoyance.

**Roadtrippers**

The Roadtrippers trip planner software was developed specifically for those passionate about taking road trips and looking for a helpful guide to enhance their traveling experience (Roadtrippers.com, 2021). Since its establishment in 2012 by James Fisher and Tatiana Parent, the firm has evolved to become one of the significant road travel applications, with over 25 million journeys. Tatiana Parent and James Fisher are the founders of the company.

Roadtrippers is a tool travelers can use to plan their journey and get directions to their preferred locations (data. ci, 2022). They can view it on their website and download their Roadtrippers app, making it even handier for them to check their travel plans while on the go.

**Problem identification of Roadtrippers**

This review of Roadtrippers found a few users who mentioned this, and one of them said that Roadtrippers is "nothing more than Google Maps [with] a better U.I." Another user chimes in and say, "I should have just used Google Maps instead of wasting my money on the upgrade." Do not throw away both your time and your money.

Some users have voiced dissatisfaction that maps include recommendations for eateries and motels that have since closed their doors or moved to other locations. Due to the lack of updates, essential information, such as opening hours and addresses of specific sites, is likely incorrect.

It is essential to remember that Roadtrippers is not 100 percent dependable, even if this may not be the case with most of the suggestions.

**Hotel Tonight**

Now that the tourists have booked that last-minute ticket, they are attempting to find out where they will sleep that night. During an exciting road trip and looking for a place to stay as soon as possible? HotelTonight searches for last-minute discounts on a wide variety of nearby hotels, from those classified as "basic" to those classified as "luxury," including one-of-a-kind boutique hotels (Hoteltonight.com, 2022).

Users can select results using criteria such as location, dates, the number of guests, pet-friendly alternatives, and facilities like a gym.

**Problem identification of Hotel Tonight**

HotelTonight allows its customers to pick a room type from a list, but there is no assurance that they will be able to locate the specific sort they want when looking for it. Similarly, no legally obligatory stipulation stipulates the room user's book must accommodate two people.

When making same-day reservations, it is common knowledge that the platform will not provide a refund if passengers decide they no longer want the reservation.

**App in the Air**

The "frequent travelers" or "aviation geeks" who need help with their flights are the target audience for the smartphone application App in the Air. It calls itself a "personal travel assistant app," It monitors all the information about flights to help travelers have the best possible experience throughout their journeys. Think of it as a central repository of information from which users can access everything from the ability to book flights to the information on the carbon impact of their travels.

App in the Air will also provide the user with up-to-date information on the most recent specifics of their air travel, so assuring that the user will not miss a flight or arrive too early for a trip that has been delayed!

**Problem identification of App in the Air**

As it's a most used and preferable application for most travelers, they get too many messages and notifications. Even some users said that the day they decided to travel, they got almost hundreds of reports from their journey from day to day. So, it's an annoying thing. On the other hand, the application's user experience is not so good, and people lose interest because of its complex usability.

**TripAdvisor**

Before someone makes a reservation at a hotel, makes a meal reservation, or even plans a day at the museum, they may go through the more than 700 million reviews that TripAdvisor has compiled for over 8 million different places. The all-encompassing software can be downloaded on iOS and Google Play and is localized into 28 other languages.

Users cannot only follow their friends and travel professionals for advice that is relevant to their interests, but they can also see travel videos, read articles for inspiration, and even submit their evaluations if they are so inclined.

**Problem identification of TripAdvisor**

Even though the fact that it contains millions of reviews on different properties is one of TripAdvisor's most essential qualities, absolutely anybody who has access to the internet and an email account may submit a review. There is no way to determine the accuracy of any individual assessment, and it is even conceivable that property owners have added favorable evaluations for their lodgings to increase their ratings (ConsumerAffairs.com, 2022).

The option to make reservations directly via the TripAdvisor app is a relatively recent addition to the platform. As a result, its functionality is not nearly on par with that of competing booking services. If consumers want to ensure they obtain the most excellent pricing and discounts, they should probably select a booking service that has been around for a while.

**Proposed Solutions:**

I've done a lot of research and even downloaded the app occasionally to see whether the customer complaints are justified. Unexpectedly, I've found the majority of the difficulties to be reliable. Because of this problem, I created the "Travel XYZ" app to help users when they travel. This application's features will be developed with these concerns in mind.

# 5 Preliminary Project Planning

## 5.1 Objectives:

The objectives of the project are:

* Organizational Structure Definition and Performance Motivation.
* Coordination between business people and tourists.
* Clients may talk to the innkeepers or tour guides in person with the app.

## 5.2 Project development tools and application language requirements

**5.2.1 Programming language:**

* Kotlin
* XML

**5.2.2 Tools:**

* Native Platform
* Firebase
* Firestore
* Firebase authentication

## 5.3 Initial Project Schedule

|  |  |  |
| --- | --- | --- |
| Activities | Duration (in the week) | Total Week |
| Brainstorming | Week-1, Week-2 | 2 |
| Problem identification | Week-2, Week-3 | 2 |
| Requirement analysis | Week-4 | 1 |
| Sketching | Week-5 | 1 |
| Design specification | Week-6, Week-7 | 2 |
| Database design | Week-8 | 1 |
| Implementation | Week-9, Week-10, Week-11, Week- | 4 |
|  | 12 |  |
| Testing | Week-13, Week-14, Week-15 | 3 |
| Delivery | Week-16 | 1 |

Fig: initial weeks duration of the project

## 5.4 Project Features:

The features shown here provide a high-level overview of the application to the responsible groups.

**5.4.1 Feature**

* Well structured and easy U.I. for users (both travelers and business people).
* The registration system for new users.
* Login with email, password, and Google authentication for clients who can directly log in with a Gmail account (no need to register).

* Booking hotel and destination.
* Give reviews about the food and staying places for a particular destination.
* Separate dashboard for hosts and their day-to-day data.

**5.4.2 Feature Details**

|  |  |
| --- | --- |
| Feature Title | Register User |
| Preconditions | The users complete the form by providing the required information. |
| Success end conditions | New users successfully registered. |
| Failure end conditions | The message of inaccuracy will be shown for mandatory information. |
| Trigger | Display the home page of the application |

Fig 5.4.2: New user registration feature

|  |  |
| --- | --- |
| Feature Title | Login User |
| Preconditions | The users need the login form by providing the required information (email, password). |
| Success end conditions | New users successfully logged in. |
| Failure end conditions | The message of inaccuracy will be shown for incorrect login credentials. |
| Trigger | Display the home page of the existing registered user. |

Fig 5.4.3: user login feature

|  |  |
| --- | --- |
| Feature Title | Booking hotels |
| Preconditions | The users need the login. |
| Success end conditions | Users successfully book houses and hotels available in destinations provided by local people or hotel owners. |
| Failure end conditions | Not able to book places due to late booking or already filled positions. |
| Trigger | User can book their desired hotels and houses from a particular destination. |

Fig 5.4.4: user booking feature

|  |  |
| --- | --- |
| Feature Title | No fake reviews |
| Preconditions | The users need to stay in a destination physically to give reviews. |
| Success end conditions | Users can give reviews while they stay in a place and stay confirmed by hosts only. |
| Failure end conditions | Not able to give feedback. |
| Trigger | Users can review if the host confirms to the app that customers book it. |

Fig 5.4.5: user booking feature

# 6 Data Collection Techniques

While surveys are a valuable tool for collecting and organizing data, their simplicity makes them vulnerable to abuse (Fabijan et al., 2015). For a survey to help gather information, its creator must choose appropriate vocabulary and steer clear of open-ended questions. The participants filling out the survey must have enough knowledge of the topic to provide accurate responses.

Also, it's a novel approach to data collecting, and it works pretty well. These days, it's simple to gather information thanks to applications that provide immediate and real-time data, as determined by experience sampling and supplementary data obtained via reality mining.

My approach to data collecting was straightforward, which was ideal for this specific travel application. Collecting information from all relevant sources is essential to solve a research problem or provide an answer to a research question (Fabijan et al., 2015). Secondary data sources may include articles, books, journals, and internet content that have been gathered and published for another purpose. The primary data sources were distinctive because they were compiled and made available only for this research. In the process of acquiring preliminary information, researchers may employ a variety of methods. The primary methods include conducting interviews, concentrating on groups, observing, surveying, and using questionnaires. There are numerous more possible sources from which we might get information.

Additionally, there are a plethora of choices when it comes to the essential data gathering techniques. The following is a list of several standard methods used to collect information, including Documents, records, archival materials, interviews, surveys, focus groups, oral histories, ethnographies, and case studies. These are examples of the types of research that have been conducted.

**6.1.1 Data collection by Surveys**

In-person surveys were used to obtain the primary survey data, which were then analyzed (Lethbridge et al., 2005). The respondent group that was being surveyed was explicitly targeted. To put it another way, I put up a set of questions and then ask people who have firsthand experience working in the tourist industry for their opinions on what those questions mean. In addition, I have conducted research via questionnaires to gather first-person accounts of travel from people hailing from a diverse range of countries and having a variety of different kinds of experiences.

**6.1.2 Data collection from Records**

Watching countless hours' worth of travel documentaries on YouTube has been the closest that many of us have come to experiencing actual travel throughout the last few years. Travel vlogs continue to provide intriguing peeks into the world of exploration and adventure, even though a worldwide pandemic is occurring.

Because video material is ideal for use in conjunction with trips because it allows viewers to experience a story visually and is an excellent tool for acquiring new insights on travel data from various viewpoints. Travel films may allow would-be explorers to connect with destinations in a way that is not always achievable with text-based forms of media. Some well-known people who have traveled, such as Drew Binsky, Hey Nadine, Mark Wiens, Sorelle Amore, and others, have shared their travel stories with the public. The responses to these video polls helped shed light on several problems plaguing location-based services and mobile apps that facilitate travel.

**Focus Groups**

Many vacationers look to social media for ideas before visiting their excursions. Photos of unique destinations shared by friends, travel bloggers, and influencers abound on social media platforms like Instagram and Facebook. These signposts have an impact on the next destination chosen by the traveler.

About half of all Facebook users liked travel-related pages. Because of this, a tour operator must maintain a high profile within this demographic. These social media communities of travelers can keep me up-to-date instantly with varied information by regularly posting photographs of their travels. They also received a variety of what makes vacations unique to individuals, for example

* Destinations.
* Accommodations.
* Travel and sightseeing.

**6.2 Critical analysis while collecting data**

Writing appropriate survey questions is difficult for novices, although there are several standards to adhere to (Newsham et al., 2007). It is crucial to consider the range of possible responses while constructing questions. Survey replies may be either open-ended or closed-ended (Singer et al., 2008). Questions might be open-ended, requiring respondents to come up with their solutions, or closed-ended, requiring them to choose from a limited number of options. According to Eriksson (2008), when asking a close-ended question, it is preferable to provide an equal number of response options so that the respondent is forced to choose the best or worse answer. Questionnaires may be self-administered in various ways, including over the internet, via the mail, or by direct delivery and pickup (White and Drew, 2011). Structured interviews and telephone surveys are examples of interviewer-administered questionnaires. Nonetheless, in compiling this information, I have focused on the following:

* the characteristics of the respondents I want to poll,
* the significance of polling a specific individual
* The importance of pollees' responses being unadulterated and undistorted.
* Sample size considerations for analysis, with an eye on the expected response rate.
* The kinds of questions I need to ask to obtain the data that need for the application;
* The total number of questions I want to ask.

A web-based survey serves as the research instrument in this study. Regarding my survey, factors 1-6 aren't all that relevant. Since a mobile app's user base is diverse and only vaguely definable, we didn't feel it was necessary to zero down on a particular demographic for Factor 1. Even though an MTIA may be aimed more at a younger generation, we believe that factor 1 will not be an issue with my questions and distribution method (I inquired as to the respondent's age group and can easily exclude particular age groups if necessary). Factor 2 is a non-factor since I do not want to target anyone specifically.

**6.3 Project technical approach and methodology**

Both the Open Weather Map API and the Travel Advisor API will be used to develop this application. By using Visual Studio Code and Kotlin, I will begin the process of developing a Native platform application at the same time as I am designing it.

**6.3.1 Requirement Specification**

The application's requirements will be gathered at this phase. Requirements come primarily from these sources:

* User Requirements
* Functional Requirements
* Non-functional Requirements

**6.3.1.1 User Requirements**

The program has very high expectations for how the experience will turn out for the final user. My experience has led me to categorize end consumers primarily into two categories. The first participant is a tourist, the second is the proprietor of a particular hotel or website, and the third is a neighborhood resident who provides content for the website.

**6.3.1.2 Functional Requirements**

All systems are required to fulfill specific functional criteria. The functional requirements for this system are outlined in the following paragraphs:

|  |
| --- |
| ID: FR - 01 |
| **Requirement Name:** Registration for new users |
| **Description:** The new users can input a valid email and password and then successfully register in-app for use. |
| **Stockholders:** System admin, new user |

Fig: 6.3.1.2.1: user registration feature

|  |
| --- |
| ID: FR - 02 |
| **Requirement Name:** Login for existing users |
| **Description:** The registered users can input an email and password. In contrast, then successfully log in in-app for use. |
| **Stockholders:** System admin, existing user |

Fig: 6.3.1.2.2: user login feature

|  |
| --- |
| ID: FR - 03 |
| **Requirement Name:** Search destination and book hotels |
| **Description:** The registered users can search their desired location to visit and book hotel rooms. |
| **Stockholders:** System admin, existing user |

Fig: 6.3.1.2.3: booking feature

|  |
| --- |
| ID: FR - 04 |
| **Requirement Name:** Register as an owner |
| **Description:** The business person who owns a hotel or cottage can register with the app by providing proper documents to the system. |
| **Stockholders:** System admin, business owner |

Fig: 6.3.1.2.4: register as an owner feature

|  |
| --- |
| ID: FR - 05 |
| **Requirement Name:** Add details of hotel |
| **Description:** The business person who owns a hotel or cottage can add necessary details the hotel room, hotel or cottage. In addition offers, facilities and others. |
| **Stockholders:** System admin, business owner |

Fig: 6.3.1.2.5: hotel details feature

**6.3.1.3 Non-Functional Requirements**

The capacity to which these requirements, which govern how well the system achieves its objectives, are met is directly proportional to the system's quality. The following are the non-functional needs that I will focus on:

|  |
| --- |
| ID: N-FR - 01 |
| **Requirement Name:** Privacy |
| **Description:** System has to protect user data and confidential information. |
| **Stockholders:** All users. |

Fig: 6.3.1.3.1: data privacy

|  |
| --- |
| ID: N-FR - 02 |
| **Requirement Name:** Data Capacity. |
| **Description:** This system needs to handle thousands of data |
| **Stockholders:** Users, Business owners. |

Fig: 6.3.1.3.2: data capacity

|  |
| --- |
| ID: N-FR - 02 |
| **Requirement Name:** Interface Requirement. |
| **Description:** The system should be user-friendly for all users. |
| **Stockholders:** All users |

Fig: 6.3.1.3.3: UI/UX requirement

**6.3.2 Use case of the proposed system**

**6.3.2.1 Use case diagram**

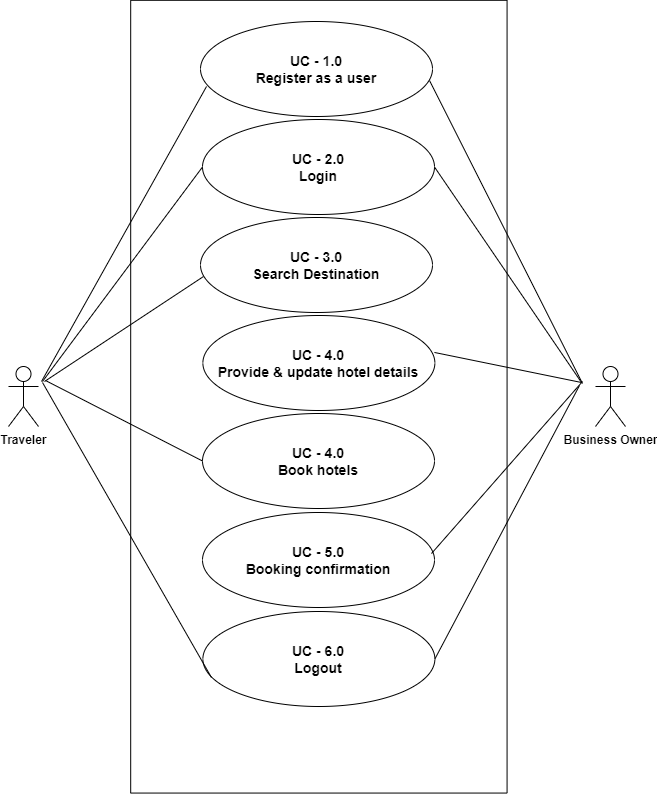


Fig: 6.2.3.1 Use case diagram

**6.3.2.1 Use case table**

|  |  |
| --- | --- |
| **Use Case Title** | Register as a user |
| **Use Case ID** | UC - 1.0 |
| **Preconditions** | Users need to install the app, and select register form |
| **Actors** | Admin, travelers, business owners |
| **Success End Condition** | Users successfully registered |
| **Failure End Condition** | Show error message for necessary data |
| **Trigger** | Show homepage by the category of users |
| **Description** | After all requirement field fill up user can register for the system. |

Table 6.3.2.1.1: Register as a user

|  |  |
| --- | --- |
| **Use Case Title** | Login |
| **Use Case ID** | UC - 2.0 |
| **Preconditions** | Users must provide the correct email and password in the login form. |
| **Actors** | Admin, travelers, business owners |
| **Success End Condition** | Users successfully logged in. |
| **Failure End Condition** | Show error message for necessary data. |
| **Trigger** | Show homepage by the category of users |
| **Description** | Already registered travelers or business owners can log in only. |

Table 6.3.2.1.2: Register as a user

|  |  |
| --- | --- |
| **Use Case Title** | Search Destination |
| **Use Case ID** | UC - 3.0 |
| **Preconditions** | Travelers should have installed the app |
| **Actors** | Admin, travelers |
| **Success End Condition** | Users can see their preferable destination and other info. |
| **Failure End Condition** | Show error message for unavailable places. |
| **Trigger** | Show destination details |
| **Description** | Users can see their preferable destination without any preconditions. |

Table 6.3.2.1.3: Search Destination

|  |  |
| --- | --- |
| **Use Case Title** | Provide update and hotel details |
| **Use Case ID** | UC - 4.0 |
| **Preconditions** | Business owners should have registered. |
| **Actors** | Admin, Business owners |
| **Success End Condition** | Business owners can set details and information about their hotels in the app. |
| **Failure End Condition** | Show error if not registered. |
| **Trigger** | Show destination details |
| **Description** | Business owners can set their hotel details. |

Table 6.3.2.1.4: Hotel Details

|  |  |
| --- | --- |
| **Use Case Title** | Booking information |
| **Use Case ID** | UC - 5.0 |
| **Preconditions** | Travelers should have a registered account to book. |
| **Actors** | Admin, Travellers |
| **Success End Condition** | Travelers can book their preferable destination. |
| **Failure End Condition** | Show error if not registered. |
| **Trigger** | Show booking confirmation |
| **Description** | Travelers can book their hotels with staying days and others. |

Table 6.3.2.1.5: Booking information

**6.4 System Test & Development**

**6.4.1 Introduction**

Executives will be able to monitor the development of their firm by using this mobile application on their smartphones. It accommodates a broad spectrum of users and offers comprehensive capabilities. Testing is essential to guarantee that an application is of high quality. Be mindful of any information supplied by the customer since it may include confidential details about the user. I am acquainted with the test now being administered to them at this location.

* Functional Testing
* Unit Testing
* Integration Testing
* System Testing
* Acceptance Testing

**6.4.2 Features to be tested**

|  |  |  |
| --- | --- | --- |
| Feature | \*Priority | Description |
| Login | 2 | User must be authenticated by login |
| Logout | 1 | Session must be destroyed after logout |
| Registration | 2 | To become a member organization, they need to be added by admin first. |
| Booking hotels | 3 | Travelers must log in to book hotels. |
| Add hotel details | 3 | Business owners must be registered to add hotels. |
| Manage users and business data | 3 | All requests made by passengers or owners of businesses who wish to modify the admin will handle their information. |

\* Here, 1 = Low Priority, 2 = Medium Priority, 3 = High Priority

**6.4.3 Testing Strategy:**

The testing strategy for the project will determine how the various testing activities will be carried out. That will be the first thing I examine, and after that, I will decide whether or not the other standards have been met. In addition, it provides an indicator of the total number of tests that need to be carried out over the whole process of developing software. Maintain regular operation of the software while I conduct some diagnostics. First, I carried out functional testing, covering integration and unit testing. Next, I tested the system, and lastly, I completed acceptance testing.

**6.4.4 Test case table:**

|  |  |
| --- | --- |
| **Test case #1** | **Test case name: Login** |
| System: XYZ Travel Application | Subsystem: N/A |
| Designed by: | Designed date: 20/07/2022 |
| Executed by: | Executed date: 20/07/2022 |
| Short description: If the user will be correct data input then user login successfully. | |
| Pre-conditions:   * New User must be approved by the system admin. * Assume that the email id is ‘mmmeshal96@gmail.com’ and the password is   ‘password’ | |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Step** | **Email** | **Password** | **Expected result** | **Pass/Fail** | | 1 | mmmeshal96@ | passw | These  credentials  do not match  our records. | Fail | | 2 | mmmeshal96@gmail.com |  | The  password  field is required. | Fail | | 3 |  | password | The  email  field is required. | Fail | | 4 | mmmeshal96@gmail.com | password | Successfully  login into the  application | Pass | | |

Table: Login test-case table

## Security Test Cases for Login Page

1. Check to see if there is a limit on the number of times you may try to log in but fail. A user cannot employ brute-force techniques to test each possible combination of username and password.
2. If invalid credentials are entered, the message "wrong username or password" needs to be shown. Hackers will know that the username is acceptable if they get a letter from a system administrator that says something like "incorrect password." This is an alternative to an alert that refers to the improper field. In this particular circumstance, he must alter the password combination.
3. Check how long the timeout is for the current login session. Because of this, it is impossible to re-authenticate a user who has previously signed in to the system. 4. It should not be possible for a user to log out of their account using the back button. In contrast, they are already logged in.
4. Perform SQL injection testing on the user login page. In the application, SQL injection attacks should not be feasible under any circumstances.
5. Ensure the XSS vulnerability does not allow the login page to be exploited.

**6.4.5 Test case table:**

|  |  |
| --- | --- |
| **Test case #2** | **Test case name: Log out** |
| System: XYZ Travel Application | Subsystem: N/A |
| Designed by: | Designed date: 20/07/2022 |
| Executed by: | Executed date: 20/07/2022 |
| Short description: If the travellers/admin want logout, then the user will choose logout  button and click the button. | |
| Pre-conditions: Traveler/Business owner must be logged in. | |
| |  |  |  |  | | --- | --- | --- | --- | | Step | Action | Response | Pass/Fail | | 1 | Click logout from the dropdown. | Successfully logout. | Pass | | 2 | After logout, click back and reload. | Redirect to login page | Pass | | |

Table: Logout test-case table

## 

## 

## Security Test Cases for Login Page

1. Verify Log out of email by clicking on the profile symbol and seeing whether the logout button is displayed.
2. Verify if it is correctly logged out by clicking the sign-out button and returning to the internet without an internet connection.
3. Verify that you've successfully logged out by clicking the logout button and then using the back button.
4. Make sure all of your accounts are operating correctly by logging into several browsers or mobile devices and logging out of one to see whether it also logs you out.
5. Verify Logging out and back in again with the same or a different account and seeing whether it works is an annoying experience.
6. Ensure that all UI elements are displayed.
7. The user must have logged in first for the logout option to be available.
8. Check that the Logout option's spelling is correct.
9. As long as a person is signed in, make sure they may click on the logout link.
10. Test scenarios for the security of the system To log out, follow these steps:

* Check the session logs for both logging in and logging out.
* The logs should be checked to see whether a single ID has several IP addresses.
* Check the logs to see whether a denial-of-service attack was launched during the login or logout process.
* Ensure that the illegal IP has requested a logout before attempting to log out
* Check the Log to see if there is any unusual behaviour.

**6.4.6 Test case table:**

|  |  |
| --- | --- |
| **Test case #3** | **Test case name: Registration** |
| System: XYZ Travel Application | Subsystem: N/A |
| Designed by: | Designed date: 20/07/2022 |
| Executed by: | Executed date: 20/07/2022 |
| Short description: If any traveller/business owner joins the application system, to do activity on the application they must be registered by admin/system. | |
| Pre-conditions:   * Admin must be logged in. * Admin must approve traveller/business owner to do an activity. | |
| |  |  |  |  | | --- | --- | --- | --- | | Step | Action | Response | Pass/Fail | | 1 | Admin need to login to the system/dashboard. | Enter credentials. Then find requests by app users. | Pass | | 2 | Fill out the registration form by users. | Redirect to home page | Pass | | |

Table: Registration test-case table

## 

## Test Cases for User registration Page

1. Please verify that the registration page includes all the necessary information by reading through it carefully.
2. If I want to provide a better experience for application users, I should look into replacing text boxes with other types of fields wherever it is possible to do so. Some examples of this field are dropdown menus, radio buttons, checkboxes, and the like.
3. At the very bottom of the page, I should search for a button labelled "submit" as well as a button labelled "cancel" or "reset."
4. After completing all required forms, ensure the data is successfully uploaded to the server using the "submit" button.
5. After completing all required forms, I must ensure that the submit request is cancelled when I click the Cancel/Reset option and that all fields are reset.
6. When it is practical to do so, validation should be carried out on the client's end.
7. Check whether a validation error is generated if the submit button is clicked on without the relevant forms being filled out.
8. The data will be sent to the server regardless of whether or not the optional fields are filled out and the submit button is used.
9. Verifying that the textboxes are set to their maximum length is essential.
10. Validation checks should be performed on the date and email fields to ensure they will only take truthful information.
11. If I want to be sure that the number fields are correctly verified, enter alphabets and other special characters into them.
12. Before continuing, I need to check that the leading and following spaces are trimmed to the appropriate lengths.
13. Investigate if the problem with the validation persists when blank spaces are placed into the necessary fields.
14. After I have requested the server, I should check to see whether the server will generate a server-side validation error if I make the same request to the server again using the same unique key.

**6.4.5 Test case table:**

|  |  |
| --- | --- |
| **Test case #3** | **Test case name: Booking Hotels** |
| System: XYZ Travel Application | Subsystem: N/A |
| Designed by: | Designed date: 20/07/2022 |
| Executed by: | Executed date: 20/07/2022 |
| Short description: If any traveller wants to book hotels according to their desired destination they can book. | |
| Pre-conditions:   * Traveler must be logged in. * System will notify travellers about the booking. | |
| |  |  |  |  | | --- | --- | --- | --- | | Step | Action | Response | Pass/Fail | | 1 | Traveler chooses a destination and makes a booking for the room. | If the room is available, then the booking will confirm. | Pass | | 2 | Notify business owners and travellers. | Email notifications will be sent to the traveller and business owner who owns the room. | Pass | | |

**Test cases for Booking Hotels**

1. Investigate the possibility of finding a means to incorporate newly made bookings into the system.
2. After filling out all of the essential information for a new booking, a new empty booking should be submitted into the system.
3. Make sure that users can search for a hotel by its name, from-to location, or booking code so that the status of the hotel can be monitored.
4. Check to see whether the search results contain information on how to make reservations, when such reservations may be made, and whether or not there is availability.
5. Verify that choosing the search results brings up all of the information that is required to make a reservation before you do so.
6. The user is responsible for checking the availability of rooms at the current time.
7. It is necessary to tick to guarantee that the user will be able to see the booking arrangement, seat number, and availability status. 8. Check to check whether customers can see the costs for the different types of seats.
8. Check to check whether customers have the option of selecting one or more seats.
9. Verify that the user does not have the option to choose seats that have already been booked or that are not currently open for booking.
10. After entering passenger information, selecting chairs, and making a payment, it is essential to double-check that the appropriate seats have been booked.
11. After booking the event, check that the page can be downloaded and printed.
12. After travellers have successfully made a reservation for a seat, check to see if the seat's status has been updated to "booked."
13. Ensured that the user received tickets and confirmation emails at the email addresses they provided while registering for the event.
14. An error message will be shown if the user tries to choose more seats than are permitted by the booking limit.
15. Make sure that supplemental items, such as luggage, additional legroom, food and beverage, and so on, are priced separately from the client's initial reservation if the consumer wishes to add them.
16. The user should be able to cancel the reservation as long as they provide the necessary information, and the system should validate this. After the cancellation fee has been taken from the client's refund, the remaining balance is sent back to the consumer.

**6.4.5 Test case table:**

|  |  |
| --- | --- |
| **Test case #4** | **Test case name: Add hotel details** |
| System: XYZ Travel Application | Subsystem: N/A |
| Designed by: | Designed date: 20/07/2022 |
| Executed by: | Executed date: 20/07/2022 |
| Short description: Only registered business owners who provide proper documentation to the system can add their hotel's details and others details. | |
| Pre-conditions:   * Owner of the hotel must be logged in. * System will verify documents and other details to add details to the system. | |
| |  |  |  |  | | --- | --- | --- | --- | | Step | Action | Response | Pass/Fail | | 1 | Owners will add hotels and other necessary documents to the system. | A system admin will verify the details and documents and approve the request of the owner | Pass | | 2 | Hotel owners can add a booking and hotel details to the system. | Email notifications will be sent to the business owner who owns the room if details are affordable to the current market and other owners' range matched. | Fail  **Comment:** A considerable amount of data will be needed to compare the prices and market. | | |

**Test case for Add hotel details**

1. The user must be able to navigate through the many categories of content without becoming confused.
2. Check for any banners or links that aren't working, and if the admin finds any, make sure they go to the correct information sites.
3. The system must determine whether the hotel's symbol can be read.
4. Conduct a quick visual inspection to confirm that all of the information, including destination names, pricing, and descriptions, can be viewed appropriately.
5. It should not be difficult to distinguish between each photo, including rooms and banners.
6. When users search, check that all of the hotels that correspond to the criteria they specified show on the page listing the search results.
7. Check that the hotels that are the most relevant to a certain search query are shown at the top of the page containing the results.
8. Check that the number of results shown on users' search results page is accurate for the specific search phrase they used.
9. Check to see that the filtering feature works as intended when a specific filter is applied.
10. Check that the filtering on the pages that categorize things is working correctly.
11. Check that the filtering options on the page that displays the search results are operating as anticipated.
12. After applying a filter, check that the correct total number of rooms is shown for the results.
13. After confirming that each sorting option is operating as intended, the rooms have to be arranged precisely by the chosen sorting option.

**6.4.5 Test case table:**

|  |  |
| --- | --- |
| **Test case #5** | **Test case name: Manage users and business data** |
| System: XYZ Travel Application | Subsystem: N/A |
| Designed by: | Designed date: 20/07/2022 |
| Executed by: | Executed date: 20/07/2022 |
| Short description: All data will be handled by system admin and request to change will be approved by according to specific requirement. | |
| Pre-conditions:   * Owner of the hotel must be a valid user who will provide specific change requests. * System will verify documents and other data to add details to the system. | |
| |  |  |  |  | | --- | --- | --- | --- | | Step | Action | Response | Pass/Fail | | 1 | Owners of hotels and travellers will request a change in their data. | A system admin will verify the details and documents and approve the request of the users. | Pass | | |

**Test case for Manage users and business data**

1. There must be a reliable reference implementation in addition to any extra methods that are called for by specific requests (e.g., toString and model).
2. Make sure that the default width of the changing data table is shown in a way that complies with the criteria.
3. Check whether the user can choose a date from the calendar and ensure that the selected date appears in the date field of their booking system.
4. Check that the website where you may register each new request has all the required documentation before proceeding with the registration.

**6.5 Risk Management**

Software Through identifying and managing risks, we may be able to enhance both the quality of our projects and the risk of the environment in which our businesses operate. A company needs to evaluate the risks to which it is exposed. When doing the risk assessment, we need to use extreme caution so that there is no space for error. For calculating a risk score, it is essential to know the risk's likelihood and consequence.

**6.5.1 Probability of the risk categorized**

|  |  |  |
| --- | --- | --- |
| **Probability of the risk** | | |
| Certain | 5 | It is almost guaranteed that danger will materialize (greater than 80 percent chance) |
| Likely | 4 | The threat is more probable than not to occur (between 51 percent and 80 percent chance) |
| Possible | 3 | The possibility exists ( between 21 percent and 50 percent chance) |
| Unlikely | 2 | The risk is remote but not ruled out (between 6 percent and 20 percent chance) |
| Rare | 1 | The danger is remote (5 percent likelihood). |

**6.5.2 Impact of the risk categorized**

|  |  |
| --- | --- |
| **Impact of the risk** | |
| Catastrophic | 5 |
| Major | 4 |
| Moderate | 3 |
| Minor | 2 |
| Negligible | 1 |

**6.5.3. Software Risk Matrix**

Take Charge of the Unexpected When Travel. To keep our app's users safe, I must constantly keep our global risk intelligence up to date. Using global risk information, client location data, and multi-modal communication, the Everbridge Travel Risk Management system provides a comprehensive solution. Meet our Duty of Care requirements and provide tourists peace of mind no matter where they visit.

Likability and impact/severity are the two most important considerations regarding risk management. As business professionals or travel managers, we should base most of our judgments on this likelihood vs severity judgment when evaluating all of the components that make up an entire trip risk assessment (e.g., transportation mode, cleanliness, and so on).

It's difficult to determine how much danger I can take because of the severity of the consequences and the lack of control. At the end of the spectrum comes a violent political uprising. Whether a traveller or a company owner, they can't endure this level of harm if we can't do anything to reduce the risk effectively.

We may build a risk matrix relying on this risk register, with Chance on the y-axis and Effect on the x-axis. Risk will be assigned to the matrix based on their score.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Probability/Impa** | Negligible(1 | Minor(2 | Moderate(3 | Major(4 | Catastrophic(5 |
| **ct** | ) | ) | ) | ) | ) |
| Certain(5) |  |  |  |  |  |
| Likely(4) |  |  | 6 | 4 |  |
| Possible(3) |  | 1,5 | 3 |  |  |
| Unlikely(2) |  |  |  | 2 |  |
| Rare(1) |  |  |  |  |  |
|  |  |  |  |  |  |

Table 6.5.3: Software risk matrix

15-25 Extreme Risk

8-12 High Risk

4-6 Moderate Risk

1-3 Low Risk

# 7 Findings

Here are some screenshots of the Travel XYZ application:

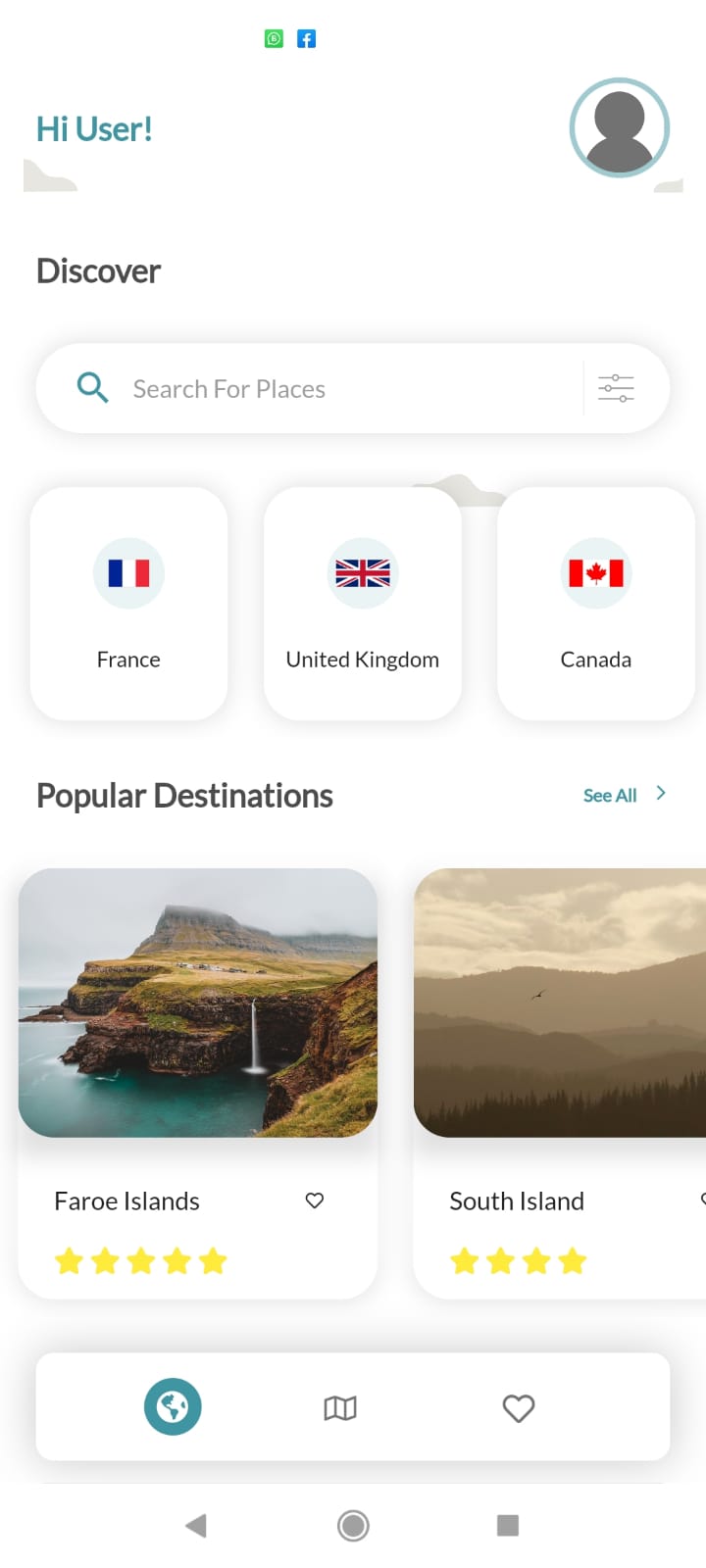


Figure: Home page screenshot of Travel XYZ application

Graphical user interface, text, application

Description automatically generated

Figure: tour details page screenshot of Travel XYZ application

Graphical user interface, text, application, chat or text message

Description automatically generated

Figure: Popular Destination page screenshot of Travel XYZ application

Graphical user interface

Description automatically generated

Figure: Tour details page screenshot of Travel XYZ application

# 8 Conclusion

After analysing the application's features first, I started with the system diagram and the database architecture. After ensuring that the chart and the system architecture were to my satisfaction, I began coding. After completing the coding phase, I proceeded to the project's testing phase. To serve as a jumping-off point, some ideas for testing have been drafted.

Despite my efforts, I was unsuccessful in meeting the requirements for sure of the application since I did not have access to the necessary data sources or accurate time client data.

I have a great deal of gratitude for the abundance of information that this venture bestowed on me. Because of this experience, I believe that I will develop a new interest in the software programs and corporate policies used, which will benefit the progression of my professional career.

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# Appendix

Application source code:

<manifest xmlns:android="http://schemas.android.com/apk/res/android"

package="com.example.travel\_app">

<uses-permission android:name="android.permission.INTERNET"/>

<!-- io.flutter.app.FlutterApplication is an android.app.Application that

calls FlutterMain.startInitialization(this); in its onCreate method.

In most cases you can leave this as-is, but you if you want to provide

additional functionality it is fine to subclass or reimplement

FlutterApplication and put your custom class here. -->

<application

android:name="${applicationName}"

android:label="Airnbn"

android:icon="@mipmap/ic\_launcher">

<activity

android:name=".MainActivity"

android:exported="true"

android:launchMode="singleTop"

android:theme="@style/LaunchTheme"

android:configChanges="orientation|keyboardHidden|keyboard|screenSize|smallestScreenSize|locale|layoutDirection|fontScale|screenLayout|density|uiMode"

android:hardwareAccelerated="true"

android:windowSoftInputMode="adjustResize">

<!-- Specifies an Android theme to apply to this Activity as soon as

the Android process has started. This theme is visible to the user

while the Flutter UI initializes. After that, this theme continues

to determine the Window background behind the Flutter UI. -->

<meta-data

android:name="io.flutter.embedding.android.NormalTheme"

android:resource="@style/NormalTheme"

/>

<!-- Displays an Android View that continues showing the launch screen

Drawable until Flutter paints its first frame, then this splash

screen fades out. A splash screen is useful to avoid any visual

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<meta-data

android:name="io.flutter.embedding.android.SplashScreenDrawable"

android:resource="@drawable/launch\_background"

/>

<intent-filter>

<action android:name="android.intent.action.MAIN"/>

<category android:name="android.intent.category.LAUNCHER"/>

</intent-filter>

</activity>

<!-- Don't delete the meta-data below.

This is used by the Flutter tool to generate GeneratedPluginRegistrant.java -->

<meta-data

android:name="flutterEmbedding"

android:value="2" />

</application>

</manifest>

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</application>

</manifest>

Flutter's first frame. -->

<meta-data

android:name="io.flutter.embedding.android.SplashScreenDrawable"

android:resource="@drawable/launch\_background"

/>

<intent-filter>

<action android:name="android.intent.action.MAIN"/>

<category android:name="android.intent.category.LAUNCHER"/>

</intent-filter>

</activity>

<!-- Don't delete the meta-data below.

This is used by the Flutter tool to generate GeneratedPluginRegistrant.java -->

<meta-data

android:name="flutterEmbedding"

android:value="2" />

</application>

</manifest>

def localProperties = new Properties()

def localPropertiesFile = rootProject.file('local.properties')

if (localPropertiesFile.exists()) {

localPropertiesFile.withReader('UTF-8') { reader ->

localProperties.load(reader)

}

}

def flutterRoot = localProperties.getProperty('flutter.sdk')

if (flutterRoot == null) {

throw new GradleException("Flutter SDK not found. Define location with flutter.sdk in the local.properties file.")

}

def flutterVersionCode = localProperties.getProperty('flutter.versionCode')

if (flutterVersionCode == null) {

flutterVersionCode = '1'

}

def flutterVersionName = localProperties.getProperty('flutter.versionName')

if (flutterVersionName == null) {

flutterVersionName = '1.0'

}

apply plugin: 'com.android.application'

apply plugin: 'kotlin-android'

apply from: "$flutterRoot/packages/flutter\_tools/gradle/flutter.gradle"

android {

compileSdkVersion 32

sourceSets {

main.java.srcDirs += 'src/main/kotlin'

}

def localProperties = new Properties()

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android {

compileSdkVersion 32

sourceSets {

main.java.srcDirs += 'src/main/kotlin'

}

lintOptions {

disable 'InvalidPackage'

}

defaultConfig {

// TODO: Specify your own unique Application ID (https://developer.android.com/studio/build/application-id.html).

applicationId "com.example.travel\_app"

minSdkVersion 21

targetSdkVersion 32

versionCode flutterVersionCode.toInteger()

versionName flutterVersionName

}

buildTypes {

release {

// TODO: Add your own signing config for the release build.

// Signing with the debug keys for now, so `flutter run --release` works.

signingConfig signingConfigs.debug

}

}

}

flutter {

source '../..'

}

dependencies {

implementation "org.jetbrains.kotlin:kotlin-stdlib-jdk7:$kotlin\_version"

}def localProperties = new Properties()

def localPropertiesFile = rootProject.file('local.properties')

if (localPropertiesFile.exists()) {

localPropertiesFile.withReader('UTF-8') { reader ->

localProperties.load(reader)

}

}

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}

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apply plugin: 'kotlin-android'

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}

}

}

flutter {

source '../..'

}

dependencies {

implementation "org.jetbrains.kotlin:kotlin-stdlib-jdk7:$kotlin\_version"

}

<https://lopezwewf-my.sharepoint.com/:u:/g/personal/ox900_office19_win/EY1vEKc5J51KkEpx012f0mwB0ZZ9qEWAVGNhwo6Pq3pVFw?e=Vfishx>

**Appendix A:**

A picture containing logo

Description automatically generated

**Ethical Approval Form**

* This form should have been completed, signed and submitted with the Project Proposal and the final approved by the supervisor version of it must be submitted with the dissertation.
* No work should have been carried out on the project until the form has been approved.
* Failure to submit the form will result in an automatic fail for the module. You may also be subject to disciplinary action.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Section 1 TO BE COMPLETED BY STUDENT** | | | | | | | |
| Name of Student: | | Amarioare Stefan George | | | | | |
| Student No: | | AMA19481452 | | | | | |
| Course: | | QA Computing Yrs 1-3 (Legacy) - Computing Technologies Extended Degree & Computing Technologies | | | | | |
| Module: | | Dissertation (Major Computing Project) - QAC040X351B | | | | | |
| Project Title: | | TRAVEL XYZ | | | | | |
| Summary of Proposed Project: | | | | | | | |
| This travel application project serves to automate all of the activities associated with travel and tourism, such as making, booking, and confirming bookings and user data. | | | | | | | |
| Planned Start Date: | | 18/05.2022 | | Planned End Date: | 05/08/2022 | | |
| **DECLARATION BY STUDENT:**   * I confirm that I have read and understood the Research Ethical Guidelines and agree to abide by them in conducting my project. * I confirm that I understand the importance of adhering to the Research Ethical Guidelines and I am aware of the penalties for breaching them. * I agree to notify my academic supervisor if there is a change to my project and/or further ethical approval is needed. | | | | | | | |
| **To the best of my knowledge, I confirm that:**   * There is no risk to any participants * There is no risk to me * There is no risk to the institution or QA in terms of liability or reputation | | | | | | | |
|  | I undertake to report all data and findings in a responsible way | | | | | | |
| **Name:** | Amarioare Stefan-George | | **Signature:** | Shape  Description automatically generated with medium confidence | | **Date:** | 05/08/2022 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Section 2 TO BE COMPLETED BY SUPERVISOR** | | | | | | |
| Name of Supervisor: | |  | | | | |
| **DECLARATION BY SUPERVISOR:**   * I undertake to review and approve any questions that the student intends to use for data collection, including interview questions and questionnaire items. | | | | | | |
| ON THE BASIS OF THE INFORMATION PROVIDED BY THE STUDENT, THE PROJECT: | | | | | | |
|  | **DOES NOT** need to be referred to the Faculty Research Ethics Committee for approval. | | | | | |
|  | **DOES** need to be referred to the Faculty Research Ethics Committee for approval. | | | | | |
| If the project needs to be referred to the Faculty Research Ethics Committee for approval, please explain why briefly: | | | | | | |
|  | | | | | | |
|  | On the basis of the information provided by the student, I confirm that the project will contain sensitive or confidential information and should **not** be placed in the public domain. | | | | | |
| **Name:** |  | | **Signature:** |  | **Date:** |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Section 3 TO BE COMPLETED BY SUPERVISOR** | | | | | |
| **CHANGES TO PROJECT – DECLARATION BY SUPERVISOR:**   * I have reviewed the proposed changes to the project. | | | | | |
| ON THE BASIS OF THE INFORMATION PROVIDED BY THE STUDENT: | | | | | |
|  | I **APPROVE** the revised project. | | | | |
|  | I **DO NOT APPROVE** the revised project. | | | | |
| If the revised project is not approved, please explain why briefly: | | | | | |
|  | | | | | |
| **Name:** |  | **Signature:** |  | **Date:** |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Section 4 TO BE COMPLETED BY STUDENT** | | | | | |
| **CHECKLIST FOR STUDENT** | | | | | |
|  | I have fully completed this Ethical Approval Form and have signed where appropriate. | | | | |
|  | I have included a copy of any research instruments I wish to use (interview questions, questionnaires, etc.) in the Appendix of my proposal. If draft versions, I undertake to have the final versions approved by my supervisor before collecting any data. | | | | |
|  | I have included this Ethical Approval Form in the Appendix of my **proposal** so that it may be reviewed by my supervisor. The proposal outlines the research methodology I will use. | | | | |
|  | I have included this Ethical Approval Form in the Appendix of my **dissertation**. My supervisor has completed Section 2 of this Ethical Approval Form and has signed where appropriate. | | | | |
| **Name:** | Amarioare Stefan-George | **Signature:** | Shape  Description automatically generated with medium confidence | **Date:** | 05/08/2022 |