Software design and architecture

For

‘Tour Guide’

Md.Al Adnan

MUH1825008M

Software Engineering
Institute of Information Technology
Noakhali Science and Technology University

1. Introduction:

The introduction of the Software Requirements Specification (SRS) provides an overview of the entire SRS with purpose, scope, references and overview of the SRS. The aim of this document is to gather and analyze and give an in depth insight of the complete Tour Guide system by defining the problem statement in detail. Nevertheless, it also concentrates onthe capabilities required by stakeholders and their needs while defining high-level product features. The detailed requirements of the Tour Guide are provided inthis document.

1.1 Purpose

The main purpose of this project named "Tour Guide" is to make a systemwhichmight be helpful for the millions of tourists to find a secure tour guide very easily and which will be affordable and will reduce your tension of exploring unknown places and also This will become a platform for the tour guide to make profit and make them employed. That's why for this certain concern we are going to develop such project.

1.2 Project Scope

The main scope of this project is to develop a web applicationbased on PC and android. This SRS is also aimed at specifying requirements of application to be developed but it can also be applied to assist the selection relation between the different stakeholders. The standard can be used to create software requirements directly or can be used as a model for defining the system requirements.

2. Architecture Requirements:

2.1 Overview of Key Objectives:

1.1 Tourists

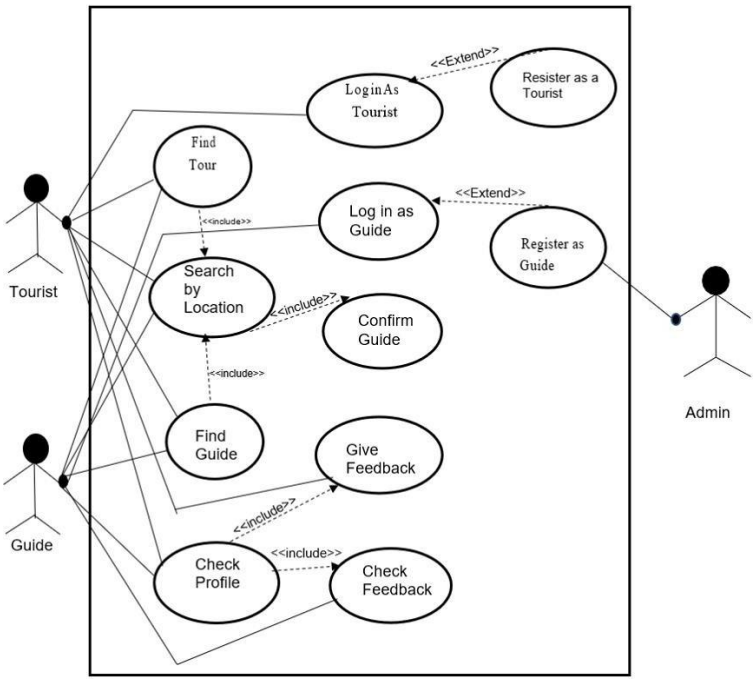
Tourists are the mass people who want to go somewhere for spending good time. They are actually the one who needs information about tourist spots and guides. They will search for spots and available guides and will hire guides in advance. They are actually our consumer for whom we are actually developing this system.

1.2 Guides

For helping the tourist for being able to complete the tour properly there might have some guides. They are also our stakeholders. People having interest on helping tourists can easily join our system and help them to visit specified places. They are our stakeholders and they are the one who will get paid by his job. Guides are kind of our workingmember who candevelop his career throughout our system and also there's no boss on whom they should work on. They are totally free in taking decisions and helping others. A guide also can give a tour with having another guide. They have the facility of becoming a tourist also and easily can go anywhere as theirpersonalinterestand alsocan search and can look up for any places.

2.1 Architecture Use Cases

Use case diagram comprises actors and use cases, where actors perform several cases or one. This also shows which actors have access to which use case. Here is the use case diagram for tour guide system.



2.2 Stakeholder Architectural Requirements

Here, Stakeholder architectural requirements are the functional requirements which is collected from client. A Functional Requirement (FR) is a description of the service that the software must offer. It describes a software system or its component. A function is nothing but inputs to the software system, its behavior, and outputs.

Table 2. 1 Find Tour

Use case	Find tour	
Goal	Tourist can find tour place successfully.	
Precondition	Search place name.	
Success End Condition	Show all details(picture ,blog, sort guide profile) about searching place.	
Failed End Condition	No places available.	
Primary Actor	Tourist, Guide	
Secondary Actor	N/A	
Trigger	Press Search button or Select dropdown (Category, division).	
Main Success Flow	**Step**	**Action**
	1	Tourist/guide Search places using 'Search box'
Alternative Flow	**Step**	**Action**
	1(a)	Tourist /guide Search place using 'Category wise'
	1(b)	Tourist /guide Search place using 'Division wise'
Quality Requirements	**Step**	**Action**
		Tourist/guide should find places within 5 seconds

Table 2.2 Search by Location

Use case	Search by Location	
Goal	Successfully search a location	
Precondition	Not applicable	
Success End Condition	Places found as searched via search box .	
Failed End Condition	Place not found	
Primary Actor	Tourist, Find Guide.	
Secondary Actor	System	
Trigger	Write in the search box and press search button .	
Main Success Flow	**Step**	**Action**
	1	Tourist/guide Search places using 'Search box'
Alternative Flow	**Step**	**Action**
		N/A
Quality Requirements	**Step**	**Action**
		Tourist/ guide should find places within 5 seconds

Table 2.3 Find Guide

Use case	Find Guide	
Goal	Tourist can find Local guide successfully.	
Precondition	Have to be logged in.	
Success End Condition	Fine guide Successfully.	
Failed End Condition	No guide available.	
Primary Actor	Tourist	
Secondary Actor	Guide	
Trigger	Press Search button	
Main Success Flow	**Step**	**Action**
	1	Using 'Search Box' search by location to get nearby guides
	2	Select the guide of your interest from several guides.
Alternative Flow	**Step**	**Action**
		N/A
Quality Requirements	**Step**	**Action**
	3	Search result should come within 5 seconds

Table 2.4 Login Tourist

Use case	Login Tourist	
Goal	Successfully log into the system as tourist.	
Precondition	Must register previously in the system as tourist.	
Success End Condition	User log in to the system as tourist	
Failed End Condition	User failed to log in as tourist.Back to log in page	
Primary Actor	Tourist	
Secondary Actor	System	
Trigger	Press login button	
Main Success Flow	**Step**	**Action**
	1	Go to the login page clicking 'Tourist Login' button
	2	Enter Username and password as the login information
	2	Click 'log in' to log in the system .
Alternative Flow	**Step**	**Action**
		N/A
Quality Requirements	**Step**	**Action**
	3	N/A

Table 2.5 Login as Guide

Use case	Login as Guide	
Goal	Successfully log into the system as guide.	
Precondition	Must register previously in the system as guide.	
Success End Condition	User log in to the system as guide	
Failed End Condition	User failed to log in to the system as guide.	
Primary Actor	Guide	
Secondary Actor	System	
Trigger	Press log in button	
Main Success Flow	**Step**	**Action**
	1	Go to the login page clicking 'Guide Login' button
	2	Enter Username and password as the login information
	3	Click 'log in' to log in the system .
Alternative Flow	**Step**	**Action**
		N/A
Quality Requirements	**Step**	**Action**
	3	N/A

Table 2.6 Check Profile

Use case	Check Profile	
Goal	Tourist/Guide can check their profile .	
Precondition	Must be logged in the system	
Success End Condition	User can see their profile and update info	
Failed End Condition	N/A	
Primary Actor	Tourist, Guide	
Secondary Actor	N/A	
Trigger	Click on the 'Profile' button .	
Main Success Flow	**Step**	**Action**
	1	From the front page click 'Profile' button
	2	User can update info clicking 'Update Info' , check feedback clicking 'Check feedback' if guide and give feedback clicking 'Give Feedback' if tourist and can check tour history clicking 'Tour History'.
	3	In the update info user can update billing info clicking 'Update Billing Info' or can update other info clicking 'Update Other Info'
Alternative Flow	**Step**	**Action**
		N/A
Quality Requirements	**Step**	**Action**
		N/A

Table 2.7 Tourist Registration

Use case	Tourist Registration	
Goal	Tourist successfully register in to the system	
Precondition	Not applicable	
Success End Condition	New tourist registered in the system	
Failed End Condition	Failed to register.	
Primary Actor	Tourist	
Secondary Actor	N/A	
Trigger	Click on 'Register' button	
Main Success Flow	**Step**	**Action**
	1	Go to registration page
	2	Enter tourist information and click register .
	3	Verify email with confirmation code sent to email
Alternative Flow	**Step**	**Action**
		N/A
Quality Requirements	**Step**	**Action**
	1	Confirmation code should sent within 10 seconds .

Table 2.8 Guide Registration

Use case	Guide Registration	
Goal	Guide successfully register in to the system	
Precondition	Not applicable	
Success End Condition	New guide registered in the system	
Failed End Condition	Rejected in 1st verification or 2nd verification .	
Primary Actor	Guide	
Secondary Actor	Admin	
Trigger	Click on 'Register' button	
Main Success Flow	**Step**	**Action**
	1	Go to registration page
	1.1	Enter guide information and click Verify Information
	2	If passed the 1st verification provide documents and click verify documents
	3	If passed the 2nd verification that is registered guide .
Alternative Flow	**Step**	**Action**
		N/A
Quality Requirements	**Step**	**Action**
	3	Each Verification should be done within 7 days

Table 2.9 Give Feedback

Use case	Give Feedback	
Goal	Give feedback to specific guide with whom tour made	
Precondition	Tour must be done	
Success End Condition	Successfully feedback to the guide	
Failed End Condition	Failed to give feedback	
Primary Actor	Tourist	
Secondary Actor	N/A	
Trigger	Clicking on 'Give Feedback' button	
Main Success Flow	**Step**	**Action**
	1	Go to tourist profile clicking on 'Profile'
	2	Go to give feedback clicking on 'Give feedback'
	3	Check the guides with whom you made tour and write a feedback
	4	Click on the 'Give Feedback' and feedback submitted
Alternative Flow	**Step**	**Action**
		N/A
Quality Requirements	**Step**	**Action**
	1	**N/a**

Table 2.10 Check Feedback

Use case	Check feedback	
Goal	Check the feedback issued by tourist with whom tour made	
Precondition	Must made tour with tourists	
Success End Condition	Check the feedback and find flaws and get appreciation .	
Failed End Condition	Failed to check the feedback	
Primary Actor	Guide	
Secondary Actor	N/A	
Trigger	Click 'check Feedback' to check the feedback	
Main Success Flow	**Step**	**Action**
	1	Go to guide profile clicking on 'Profile'
	2	Go to check feedback clicking on 'Check feedback'
	3	Check the tourists feedback that is issued by them one by one
Alternative Flow	**Step**	**Action**
		N/A
Quality Requirements	**Step**	**Action**
	3	**N/A**

Table 2.11 Confirm Guide

Use case	Confirm Guide	
Goal	Booking a guide for having the tour	
Precondition	Must be logged in	
Success End Condition	Successfully confirm the guide	
Failed End Condition	Failed to confirm	
Primary Actor	Tourist	
Secondary Actor	System	
Trigger	Click on 'confirm guide' to confirm the guide .	
Main Success Flow	**Step**	**Action**
	1	Go to Guide profile by finding guide use case and click on 'Confirm guide'
	2	System Checks availability of the guide. If not available go for another guide.
	3	Provide Billing information of credit card
	4	Pay 20% of the total amount
Alternative Flow	**Step**	**Action**
		N/A
Quality Requirements	**Step**	**Action**
	1	**N/A**

2.2 Design and Implementation Constraints

Design and implementation constraints are those that we have used to implement this project make successful. It also describes tool that enables developers and

testers to view and interact with the user interface (UI) elements of this application.

User Interface Technology

Programming Language: For developing this system, we will use HTML, CSS, JavaScript and PHP as programming languages.

Implemented Tools and Platform

- Database Server
- Web Server

2.3 Non-functional Requirements

For defining data requirements, we need to build the model. For our application maximum data would be loaded from remote user. And for that purpose, we need to focus on some major points. Such as:

- Types of entity of the system
- Route data locations
- Capacity and resources of the data requirements
- Data source sequence
- Data availability schedules
- Quantity of data
- Availability of data

Performance Requirements

It is very important to maintain performance of any software system. To ensure performance, weneed to maintain some steps. Now, I will explain some perspective by which we are going to enhance the performance of our project.

Speed and Latency Requirements

Speed and latency requirements must be ensured while retrieving data from the cloud server.

SLR-1	Search must be faster
Description	Whiletourists/guides aresearchingforalocationsorguideitmust be faster within seconds in showing results

Stake Holders	Tourist, Guide
Priority	Low

Precision and Accuracy Requirements

Resultsthat istobe shownto the enduserisneed tobe accurate. Because, wronginformation might be ruined the whole business process.

PAR-1	Search result must be accurate
Description	When tourists/guides are searching for a location then the search result must be according to the input value.
Stake Holders	Tourist, Guide
Priority	Medium

Capacity Requirements

The developed system by us must be capable to handle user data, provide accurate information, handling database, manage http request etc.

CR-1	The System will handle thousands of data
Description	The System needs to handle thousands of data at every moment It should have thecapacity
Stake Holders	N/A
Priority	Low

Dependability Requirements

The term dependability is measured based on four dimensions. Such as:

- Availability
- Reliability
- Safety
- Security

If we want to say that our application system is dependable then it must fulfill the four dimensions. But there are other tasks. Like there is no way to make mistakes or our system should have the ability to detect and then remove errors. Besides that, it is also very important to limit the damage which might be caused by system failure.

Reliability and availability Requirements

Now, I will mention requirements which is related to reliability and availability.

RAR-1	The System must be available on 24 x 7
Description	Our system must be available all day long, every day in a week • The system must be updated regularly • System must be malware free
Stake Holders	Tourist, Guide

Priority	High

Robustness or Fault-Tolerance Requirements

To ensure robustness and fault-tolerance facilities to the end users, itisurgent to ensure 0% crush. Moreover, it must show accurate results.

RFT-1	The system handles all user access without system errors
Description	Thousands ofour application system at a time. Alltheir request must be handled without any fault.
Stake Holders	Tourist, Guide
Priority	Low

Quality Attributes:

- **Performance –** shows the response of the system to performing certain actions for a certain period of time. In IIT E-Platform, to ensure performance, we need to maintain some steps.
- **Interoperability** is an attribute of the system or part of the system that is responsible for its operation and the transmission of data and its exchange with other external systems.
- **Usability** is one of the most important attributes, because, unlike in cases with other attributes, users can see directly how well this attribute of the system is worked out.
- Reliability is an attribute of the system responsible for the ability to continue to operate under predefined conditions. After a log time use, our system cannot down their service.
- **Availability** is part of reliability and is expressed as the ratio of the available system time to the total working time.
- **Security** is responsible for the ability of the system to reduce the likelihood of malicious or accidental actions as well as the possibility of theft or lossof information.
- **Maintainability** is the ability of the system to support changes.
- **Modifiability** determines how many common changes need to be made tothe system to make changes to each individual item.
- **Testability** shows how well the system allows performing tests, accordingto predefined criteria.

- **Scalability** is the ability of the system to handle load increases withoutdecreasing performance, or the possibility to rapidly increase the load.
- **Reusability** is a chance of using a component or system in other components/systems with small or no change.
- **Supportability** is the ability of the system to provide useful information foridentifying and solving problems.