OBJECT ORIENTED UML MODELING FOR TRAVELER MANAGEMENT SYSTEM

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ABSTRACT

The present paper deals with the Object Oriented designing through Unified Modeling Language (UML) for a Traveler Management System (TMS). The main aim of this paper is to provide a flexible and faithful environment for traveler, which wants to travel to see the sight scenes, shopping for business meetings, etc. The TMS provides the information to the traveler without losing the time when it needed & the system gives the proper and accurate information to the traveler. The proposed model is based upon the knowledge based system & the complete booking process of a Taxi is defined in this paper and the knowledge model is tested with different data sets. The model also suggests to the traveler that which Taxi will be suitable according as per the budget constraints. In this paper the UML Class, Sequence diagram, Activity diagram & Use Case diagram are also designed for the TMS.

Keywords: UML, TMS, Class Diagram, Activity Diagram, Use Case Diagram

1 INTRODUCTION

The Unified Modeling Language (UML) is a very dominant modeling graphical language for specifying, constructing and documenting the artifacts of software system. UML is a collection of best engineering practices that have successful in the modeling for a design of a huge and complex systems. Modeling is very important for readability and reuse of the systems. UML offers a set of notations and rules for using the same. The main task of the UML is to create a simple, well documented and easy to understand software model for the people. The
UML modeling consists of nine diagrams to model a software system & these diagrams are Use case Diagram, Class Diagram, Object Diagram, State Diagram, Activity Diagram, Sequence Diagram, Collaboration Diagram, Component Diagram & Deployment diagram. TMS has received awareness in both the public and private sectors. Nowadays knowledge based system is most popular and needed in every sector like medical sector, banking sector, engineering sector and traveling sector etc. In the traveling sector, knowledge means simply having the knowledge from expert. Knowledge modeling is the major activity used to understand the problem and sending the solution rapidly.

2 RELATED WORK

The UML is a very powerful modeling language for the visual representation of software. Using this modeling language one can develop the software in a valuable and resourceful manner [1]. The visual representations of the software are explained by the detail of programming concepts for the Object Oriented techniques and are explained by Lieberherr et al. [2]. Nowadays UML is become a standard modeling language for the Industry which is used for the software designers [3]. Modeling has plays an important role for any system and contributes to the understanding of the source inputs and outputs [4]. The development of Traveler Management System shows the different activity of steps that implemented for providing the better service to the traveler [5]. A lot of methodologies developed over a year e.g. Common KADS [6], Protégé [7], MIKE [8] and MOKA [9]. B.A. Gobin and R. K. Subramanian [10] defined the knowledge modeling concept. They give importance of modeling in the knowledge based system. Models are used for capture the important features of real system and break into parts for better understanding. Michael Blaha and William Permerlani [11] and Michael Blaha & James Rambaugh [12] describe programming concepts which are undoubtedly good. S. Barnum. & G. McGraw define the security and privacy of the software in a very smartly and clear way [13]. The Information Technology that supports the model online for the query of Traveler & described in many papers [14, 15].

In the early stage Travel Agencies did not use the computerized booking system. They are using just manual system therefore it creates a lot of problems to found. They come to the Agency and book the Taxi or simple book the Taxi on phone. By doing this they have a limited client and cover a limited area. But nowadays due to technological changes, it is necessary to accept the challenges and change according to the environment. Therefore the present paper proposes a complete and systematic model called as knowledge model for minimizing the problems of tourist.

A model for TMS has been designed & tested for the traveler who wants to travel in city or other city for the site scenes, shopping, business meetings etc. The traveler has the choice for booking a Taxi on phone & can book more than one Taxi at a time and also can cancel the Taxi after giving the cancelation charges to the Traveler management Administrator. This knowledge based model is designed by the one of most popular modeling language, Unified Modeling Language. UML class, Sequence, Activity and Use case diagrams are designed & tested for TMS. A lot of work has been done in the field of UML designing, testing but still necessary to implement the UML modeling language in every fields of research. People don’t have time to go to the agency and book the Taxi for travelling they want quick and easy way that’s why they need a technology and a lot of problem faces to design a perfect model for booking a Taxi and also the model should be secure. Now a day’s people are giving on line payments through the credit cards or other electronic services. It’s very important that the system should be compatible in every environment, flexible and secure.

3 UML OBJECT MODELING FOR TMS

The UML class diagram for TMS designed & shown below in Fig.1. The complete booking process of a Taxi, Car & Bus is shown with designed attributes. TMS model contents of five major classes which are Traveler, Traveler Agency, Taxi, and Car & Bus. Traveler class has single association with Traveler Agency class and the Traveler Agency class has multiple associations with the Traveler class. The Taxi, Car, Bus classes have a multiple association with the Traveler Agency and the Traveler has the multiple associations with these classes. In the given UML class model the Traveler can book the multiple Taxis but these request will be processed through the Traveler Agency and also Traveler has the facility that can cancel the
booked Taxi, Car & Bus after giving the cancelation charges for the service. The model is very flexible and adorable that can be easily updated by the environment.

Figure 1: UML Class model for TMS

4. DYNAMIC MODELING FOR TMS

For the TMS, a scenario is designed for the traveler which is given below Figure: 2 & 3. Figure: 2 show the scenario for the unnamed traveler while Fig. 3 consider for the couple traveler.

System >> What is the aim to book the Taxi?
Traveler>> Business Meeting
System >> What is your Nationality?
Traveler>> British
System >> What is your age?
Traveler>> 30 years
System >> Are you married?
Traveler>> No
System >> How many days Required Taxi?
Traveler>> 5 Days
System >> What is your budget?
Traveler>> 1500$

Figure 2: A Scenario for Traveler

5 USE CASE DIAGRAM FOR TMS

The use case diagram shows the connection between actor i.e. traveler & activity of the system and Actor. An Actor is a person who plays the role together to the system. A scenario is a sequence of steps that explaining the communication between system and Actor. The following Fig. 4 shows one Actor i.e. traveler which wants to hire or book a Taxi. In this use case diagram the Travel Management System has three use cases. In the first case the traveler can book the Taxi/Car/Bus and in the second case traveler can book more Taxi/Car/Bus & in third case traveler can cancel the booking according to choice, but if traveler wants to cancel booking then has to pay cancelation charges.

Figure 3: A Scenario for Couple

System >> What is the purpose of your visit?
Traveler>> Holidays
System >> What is Nationality?
Traveler>> Canadian
System >> Are you married?
Traveler>> Yes
System >> Have you any children?
Traveler>> No
System >> Are you health conscious?
Traveler>> Yes
System >> Do you like shopping?
Traveler>> Yes
System >> How many days required Taxi?
Traveler>> 7 days
System >> What is your budget?
Traveler>> 2000$

Figure 4: UML Use Case Diagram forms for TMS
6 ACTIVITY DIAGRAM FOR TMS

The activity diagram shows the various activities step by step with the carrying for both parallel and conditional behavior. An activity diagram is a modification of state diagram in which most of the states are activity state. The activity diagram of above UML class model is designed and given below.

![Activity Diagram](image.png)

Figure 5: UML Activity Diagram for TMS

In this activity diagram the traveler sends information to TMS for booking of a Taxi. Traveler Management System searches a record that the Taxi for a traveler is available on that date. If Taxi is available TMS tells the cost to the customer and collects the payment. After getting the payment the Traveler Management System books the Taxi and informs to the traveler that Taxi has been booked on that date.

7 SEQUENCE DIAGRAM FOR TMS

Sequence diagram shows the relationship between classes arranged in a time sequence. Within a sequence diagram an object is shown in a box at the top. The sequence diagram of the above UML class model is designed and used for booking of a Taxi for traveler. The communication between two objects represented by an arrow & the message on that arrow, the vertical lines show the life of the objects. In the given sequence diagram shown below in Fig.6 has four objects Traveler, Traveler Management System, Taxi Record & Taxi Book. Here traveler sends the request to the Traveler Management System to book a Taxi then Traveler Management System checks the Taxi record and if Taxi available then asks for the payment from traveler, after getting the payment from the traveler TMS book the desired Taxi & system will inform to TMS.

![Sequence Diagram](image.png)

Figure: 6 UML Sequence Diagram for TMS

8 CONCLUSIONS & FUTURE SCOPE

From the above work it is concluded that the UML modeling is a powerful language used to design for the software research problems. In this paper complete modeling is done for TMS system which is efficient & useful for the software developer to convert the above mode through Object Oriented language. The model is also test by designing a query represented in form of scenario. The present work can also be further extended for company having large database of traveler which can be further streamlined by the use of designing of data cubes model so that search can be faster therefore work can be extended in the field of data mining.

9 REFERENCES


