

Development of Web Application for Facility Reservation

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Abstract: With the advancement in technology and communication, everything can be done with much ease. In fact, any information can be accessed from anywhere at any time as per our own convenience. Facility Booking is one of its kind that can be used to book/reserve the facilities of Jigme Namgyel Engineering College (JNEC) through the use of web-based application. Those services can be made available to both the staff and students as well as to the guest/outside. In the current scenario, the JNEC family are governed with certain rules to get access to different types of facilities. In order to book any facilities, one has to call a concerned authority/person to get approval for the same. Only when one gets the approval, then only it can be shared as an information all to avoid clashes. This indeed is time consuming as well as tedious for someone who are busy with academic schedule. However, with the proposed system, booking process can be made easier and simpler for all to avail services without much hurdles. The paper mainly discusses the design process and its methodology used for the development of a system.

Keywords: Facility, Booking/Reservation, System, Web, Application

I. INTRODUCTION

Facility Booking System is a web-based application which can be used to automate the manual process. The proposed system is expected to make booking process easy as well as simple for all users. The system can be accessed by two different users, JNEC family and Outsiders. Someone has to register in a system to book or view the information of facilities available in JNEC. If one need to book any facility, one can directly access the system either through phone or computer and reserve by checking the availability of a particular facility. Even the acknowledge from a system can be received through the electronic mail. This process helps one to minimize the wastage of time as well as cost. Facilities such as meeting rooms, sports facilities, and other facilities can be reserved using the system. The main aim of the proposed system is to automate the manual process by the use of web application. The researchers expect to minimize the time and cost through the use of system. This is because, users will be able to view and check all the facilities which are available in JNEC which otherwise can be tedious or remained unknown for one to avail. The system consists of two users, one who can view and book the facilities he wanted and one who has privileges to add, delete, update all the information present in a system.

II. PROBLEM STATEMENT

Currently, there is no such system and booking of facility has never been systematic. This has led to many issues such as clashes in reservations of facilities. Moreover, having no automatic system in place, availability of facility is unknown. Moreover, even if one succeeds in reserving a facility after a long manual process, one faces the issue of clashes with others. However, with proposed system, a user who wants to book facilities need not have to make a call to the concerned authority for approval and check the availability of a facility. The users can able to view the available facilities and directly book as per one's requirement. Moreover, the system consists of a user-friendly interface, and without wasting much time, users can book and view facilities information from anywhere if internet access is there.

III. RELATED WORK

“DrukRide is a Bhutan's leading App-powered transportation service provider that was officially found in 2016” [1], in order to make the travels through a smart approach using modern technology for the Bhutanese. They provide a wide range of transportation services such as taxi and bus, payments, food delivery, tour, logistics, and many more. It provides the interface with the options for the user to select the transportation types they want to reserved and also, they have a



two option for selecting transportation ways (one way and return) wherein the case of one-way options user has to select the source place and a destination place that they want to travel. It also provides the departure date feature that the customer wants to leave. And for return option, it also gives the option to select the source place and a destination place that they want to travel, and here it gives the customer to choose the departure date and return date if they want to return after reaching the destination.

Bhutan Bookings is another application used in Bhutan to book hotels and resorts in different regions [2]. At the bottom of the page, there is a selection bar which gives the options to select different dzongkhag of Bhutan. After selecting the particular dzongkhag, the details of different type of hotels in that region is displayed with a description each. Apartelle Online Reservation System is a Philippines online hotel booking system for the foreigners who goes for vacation [3]. “With the rapid increase of visitors in the Philippines for vacation, a common sight is the establishment of sophisticated hotels for competitive advantage” [3]. “In order to attract more customers, various business strategies are used such as offering a discount, have beautiful environments and views so that customer can relax and enjoy the scenario and internet facilities” [3].

“The National University of Singapore has developed a facility booking system for different facilities of their university including academic and non-academic purposes such as sports, fitness gym, swimming pool, MPH, and also library facilities” [4]. “The facilities are made available for two different users NUS staff and their family members (i.e., spouse and children) and the Registered Guest to avail the services” [4]. “The registration is done through REBOOKS to activate their free access and the access will be via their NUS Student Matric Card. But the facilities such as Badminton courts, Squash Courts, Table, and Tennis Court can be a book only by NUS staff/students” [4].

The proposed system provides the options to view the available facilities which can be booked by the client through registration or login. If the clients want to delete their booking, they can do so from the system itself with the user-generated after a successful booking. For the outsider, those who have booked any facilities, the client will get a notification about the payment of fee in web application as soon as they have successfully booked the facility they wanted.

IV. METHODOLOGY

Web application development of the Facility Booking System is based on the modern waterfall model as this approach is “effective to work out and show outcome in each phase” [4]. Moreover, project can be easily completed within a given time bound as in this approach focus on the timeline of the task. Furthermore, it has a feature to backflow to the previous phase for modification and update the system.

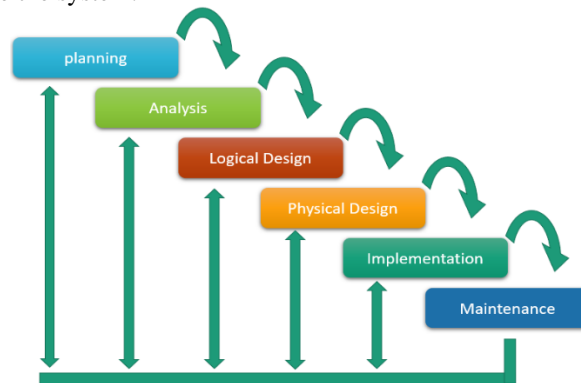


Fig. 1 Methodology

V. PROCESS MODELLING

A. Context Diagram

The Figure. 2, the context diagram of a proposed system shows the system and entities involved interacting thereby revealing the boundary and environment.

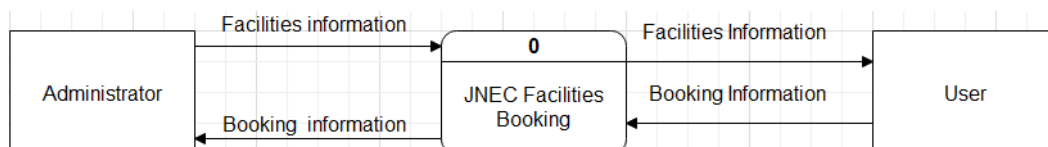


Fig. 2 Context Diagram



B. Data Flow Diagram

The figure given below, Figure.3 is Data Flow Diagram which represents the flows of the data through an information system.

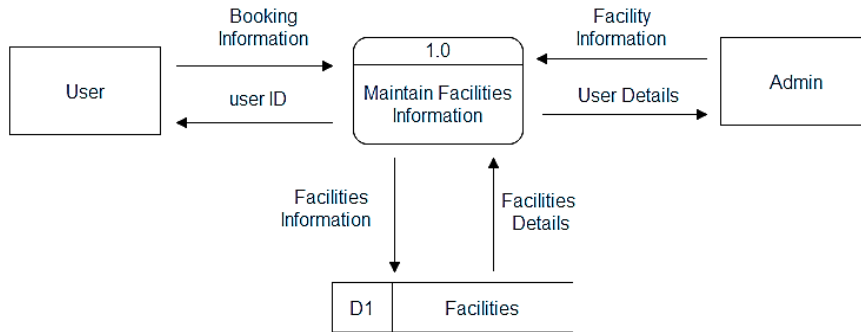


Fig. 3 Data Flow Diagram

VI. DATA MODELING

The entity-relationship diagram (ERD) portrays relationships between the data objects. It is the notation that is used to conduct the data modelling activity. Entities are represented by a rectangle. Attributes are indicated by an ellipse. The diamond represents the relationship. Connections between data objects and relationships are established using a variety of symbols that indicate cardinality and modality.

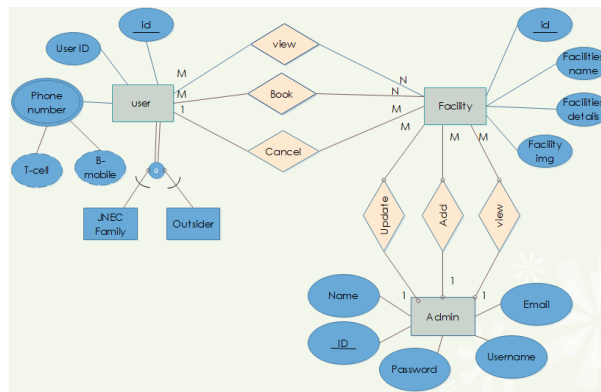


Fig. 4 ERD

VII. RESULTS

A. Backend Interface

The interface is mainly for the purpose of management the system. It is available only for someone who administer and manage the system. The administrator of the system can perform crud operation for users as well as facilities. Following figure, Fig. 5 shows the interface for administrators.



Fig. 5 Backend Interface

B. Frontend Interface

The interface can be viewed by the guest users and registered users. Though guest users can view the availability of facilities but he cannot make booking or reservations. One can only make reservations upon registering in the system. The following, Fig. 5 shows the interfaces for users.

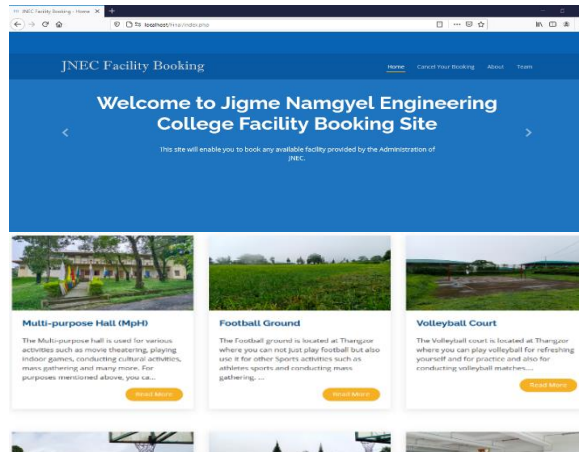


Fig. 5 Frontend Interface

VIII. LIMITATION AND FUTURE SCOPE

The system is available only as web application and development of mobile application to fulfil or bring more convenience in facility booking can be done in future. Moreover, integration of payment gateway can be incorporated in latest version of the system.

IX. CONCLUSION

This JNEC facility booking web application is purely developed to overcome the challenges faced by the users in booking the facilities available in JNEC. The services can be provided to both the JNEC families and the outsiders. The system makes a booking process simpler and easier for the users. The users can now directly book through the use of system and wastage of time and cost can be sharply minimized. Moreover, the confirmation or acknowledgement can be sent to them through email. Furthermore, the system has easier for the manager or caretaker of the facility to manage and monitor as every booking information can be accessed through the system.

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