
ONLINE EVENTS TICKETING MANAGEMENT SYSTEM A CASE STUDY OF NAMBOOLE STADIUM**Nassimbwa Fatumah¹, Ntirandekura Moses²****1,2 Metropolitan International University****Abstract.**

Currently, the event planning system available provides services only during the working days meaning that customers have limited time to make reservations for particular services and the customers take their time to travel to the event management offices to book for the event and even going to the bank and pay the money. Additionally, there is a lot of paper work pertaining the events scheduled and those pending schedules. This study therefore aimed at designing an online events ticketing system of Namboole stadium. The secondary objective was to analyze the existing management system used by Namboole stadium. The study employed qualitative approach and descriptive methods to describe the characteristics of the research variables. The existing system was studied to establish its weak and strong points and the information that was acquired from this study was given the basis for the design of the system. System investigation was carried to help the researcher gather information also about the objectives /goals of the stadium its nature of scope about the problem under taken in the study and how will it be over coming. The study constituted both female and male employees of Namboole stadium and customers from different areas. The system design was hierarchical in nature.

Key words: Management System.**Background of the study.**

Namboole stadium is stadium known as Nelson Mandela stadium a former president patriotism African leader of South Africa is an event management stadium with its main offices located in Kampala and deals in event management and planning countrywide for large volumes of people about 5000. Currently, the event planning system available provides services only during the working days meaning that customers have limited time to make reservations for particular services (Kevin et al., n.d.). The customers take their time to travel to the event management offices to book for the event and even going to the bank and pay the money (Nelson et al., 2022). There is a lot of paper work pertaining the events scheduled and those pending schedules, they also use phone calls (District et al., 2023). All these challenges require an online event management system that will enable the customer make booking, schedule events online at any preferred time.

Online Event management system is a web-based application that enhanced project management to the creation and development of large-scale events such as festivals, conferences, ceremonies, formal parties, concerts, or conventions (S.-B. Branch et al., n.d.; Jolly et al., n.d.). It involved studying the brand, identifying its target audience, devising the event concept, and coordinating the technical aspects before actually launching the event. The Online Event ticket management system (OEMS) enabled customers/ clients view various packages/products about the event and make booking through the online platform. The process of planning and coordinating the event is usually referred to as event planning and it included budgeting, scheduling, site selection, acquiring necessary permits, coordinating transportation and parking, arranging for speakers or entertainers, arranging decoration, event security, catering, coordinating with third party vendors, and emergency plans (Patrick et al., 2023; Racheal & Sarah, n.d.). Each event was different in its nature so process of planning & execution of each event differed on basis of type.

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Currently, the event ticket management system is manual and accessible only to employees. The client must travel to the company's offices to plan, book and organize an event such as concerts, sports matches, prayer events, wedding/farm events (Irumba et al., n.d.). Clients pay to book and attend the event in cash, which is inconvenient when there are many customers in the company (Jowin et al., n.d.). It takes a lot of time for customers as they have to listen on broadcast networks and read posts and flyers like event organizers and line up individually to pay and book tickets (Stephen & Vincent, 2023). So an online event ticket management system is needed to enable the customer to book and schedule events online at any time.

objectives

1. To analyze the existing management system used by Namboole stadium.
2. To gather requirements for designing an online event ticket management system.
3. To design, test, validate and implement the designed system.

Methodology.

The study employed qualitative approach and descriptive methods to describe the characteristics of the research variables. It was qualitative in that opinions of the people were sought and the researcher had to contextualize them according to his/her understanding on the case study was used at Namboole stadium. The existing system was studied to establish its weak and strong points and the information that was acquired from this study was given the basis for the design of the system. System investigation was carried to help the researcher gather information also about the objectives /goals of the stadium its nature of scope about the problem under taken in the study and how will it be over coming. The study constituted both female and male employees of Namboole stadium and customers from different areas. These are assumed to have reliable information about the study topic in order to determine proper requirements of the system. Questionnaires and Literature review were used for data collection. The following steps were deployed to fully understand the current system that was being used. These included; requirement identification; design; implementation, testing and validation. However, the development process was iterative, though it was depicted as comparing of phases (K. Branch et al., 2023a).

System Analysis

After using the various data gathering tools, the respondents' feedback was analyzed to determine the requirements for new system to be developed. This also provided a clear understanding of the changes to be done in the new systems, identifying and addressing the impact of project 'on different companies etc. The information analyzed was provided a basis for drawing plans that guided in the project schedule and resources accordingly.

System Design

A research design is a detailed plan which guides the study. Dalton L. R. and Todor, C (1979) defines it as the plan and structure of investigation so conceived as to obtain answers from research questions, systems analysis and design of the proposed event ticket Management System was achieved by designing a database using conceptual, logical and physical database a design. These were developed using tools such as Microsoft Visio cascading style sheet. Project management tools such as Microsoft project professional were used to present the time schedules for the system

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development procedures, task dissemination and ordering.

Software Implementation

Software implementation of the proposed online event ticket Management System was achieved by using of a client-server model architecture, which involves having a main server that provides information to other computers, which are known as the clients that was accessed it through the internet. The server runs a server-side program that was accessed by client programs through the internet.

The system design specification document prepared in the previous phase was used as a guide for the dividing the project into small units and actual coding of the system in those small units that was conducted. The languages, which I proposed to implement the said system, was included but not limited to HTML, CSS, php, sql, and java script. These was used to create the user interface while MSQL (K. Branch et al., 2023b).

The system included a server-side application. The following applications was used to implement the server side application.

Client interface

The user-facing element in a client Server application were provided the means to interact with it. The interface takes the form of a web application, connecting and interfacing with the database. The client interface's role overall was sent a request to the server, which was responded in return. The researcher developed the interface using on windows operating system platform.

System Testing

The system was tested against needs addressed and gathered during the requirements phase to allow early discovery of errors that may disrupt the proper functioning of the system. During this phase, the researcher anticipated the many ways in which the system might fail.

Weakness of the current manual system

The following weaknesses were identified about the current manual system. The system was time consuming and slow due to the manual data capture methods and tools involved because it required storage of records on paper which still needed to be compiled.

1. The system had duplication of records (tickets) due to poor coordination between the agents involved in the process. In that at times they do not inform their workmates about the number of tickets bought due to ignorance or fatigue.
2. The system was highly prone to loss of data since paper-based filing of data has the weakness of being misplaced if not well managed. Further still fire was a great threat to the information kept since very many files are paper based and no fire proof and filing cabinets exists.
3. The system did not cater for illiterate agents who felt left out. This is because they could not participate in the running and management of the various activities and records.

Strength

Although the manual system has its problems to different users such as agents and members, after gathering, studying and analyzing information about the present system, the following were established as its strength:

1. The manual system was simple and easy to understand since it needed no computers to operate.

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2. The current system was not prone to malware such as viruses, worms and Trojan horses meaning the data stored was not prone to malware.
3. The manual system was cheap to put in place since papers were readily available hence this eased the availability of resources.
4. The system was popular to many fans, agents, and administrators therefore the proposed system had no room for better understanding when in use.

User Requirements

A number of staff members from the ticket stores of some of the distributors were approached by the researcher during the system study and were asked how and what they would need the system to be and the following were the findings: - The system should be easy to learn and adopt, the system should be fast in producing results thus reducing processing time and increasing user productivity. The system should improve efficiency of information storage and retrieval. The system should allow users take a few steps to get done with any task. The system should have an element of consistency especially the interface. The system should have an element of error validation. That is, a system that would detect a user entering unusual commands or data format that is inconsistent with the database and the system should provide attractive interfaces with easy navigation throughout the system.

Functional requirements

These are requirements necessary for the system to function efficiently and effectively and they include the following. The system should enable customers to register as members before they order event's ticket. The online events ticketing booking System should also enable customers to view ticket availability, ticket cost, events schedules and after booking successfully, an email can be sent to them.

The system should show venue, the start and end times of events, and ticket number.

The system should allow the administrator to upload new information so that the member can check the availability of events. The system should also allow the agent to view tickets booked by a member and the system should be able to store the records for all members who have booked tickets.

Non-functional requirements

These are requirements that do not affect the functionality of the system.

The system should allow user access restrictions through a username and password. The system should be fast enough to satisfy the user.

User interface should be as simple and intuitive as possible.

User interfaces should provide data validation against user input.

System specifications

The system requires various hardware and software so that it is compatible with a variety of computers and runs smoothly without any errors. Therefore, research was carried out and the following software and hardware were recommended:

Table 1 showing software specifications for the system.

Software	Minimum system requirement
Operating system for the client PCs	Windows XP and later versions, Vista/Linux or any server windows and server 2005.
Database management system	MySQL Server,

Table 1: Software specifications

The hardware specifications for the system are described in the table 4.2 shown below

Hardware	Minimum system requirement
Processor	Intel Pentium II or above
Processor speed	800 MHZ or above Memory 128 MB RAM or above depending on the Operating system.
Hard drive	1 OGB or above

Table 2: Hardware Specifications.

Security Requirements

Before members can book a ticket, they have to create an account with the system with a unique username. Until then they can only access limited sections of the system such as viewing available events. The system particularly does not accept blank fields or non-valid input. The system has a unique login section for the admin who can view and carry out a series of activities. Users can logout at any time they fill like since there are provisions for such on any authorized page. The researcher approached the design of the system by modeling the processes and data involved in the system.

System Architecture

Figure 1 describes the architectural design of the developed online events ticketing system showing how the system users interact with the graphical user interface and how the interface goes ahead to interact with the database.

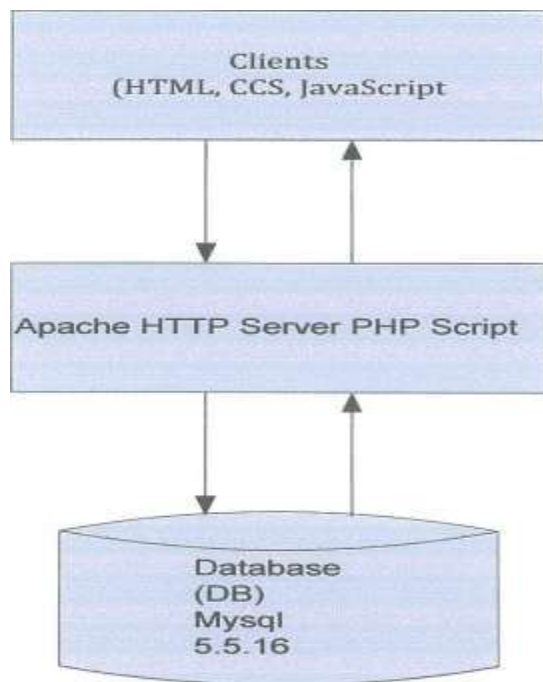


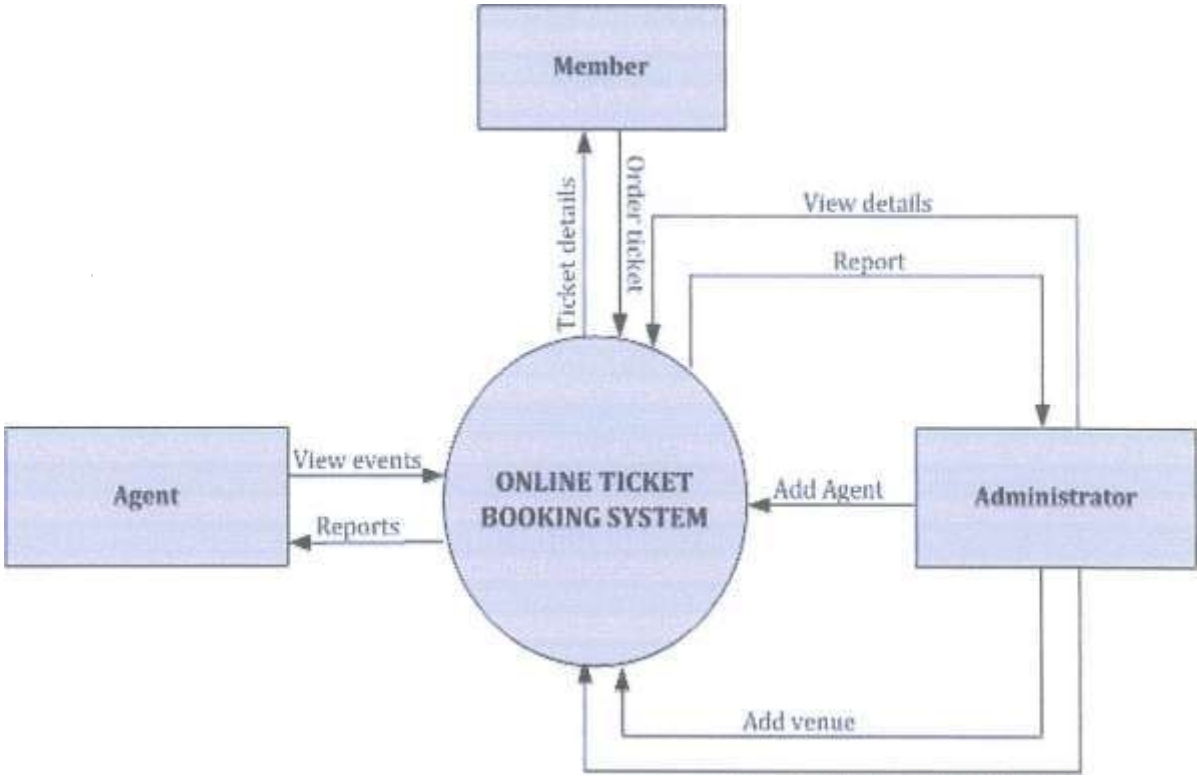
Figure 1: Showing system Architecture.

Conceptual System Design

This is a process of constructing a model of information concepts that were used in modeling the prototype. The models constructed included a context diagram, data flow diagram and entity relationship diagram.

Context Diagram

Figure 2 is a context diagram that shows the interaction of the system with the external entities, External entities are namely; Member, Administrator and Agent.



Add events

Data Flow Diagram

Figure 3 shows the flow of information for user's log in into the system, up to the administrator updating the database and viewing of generated reports

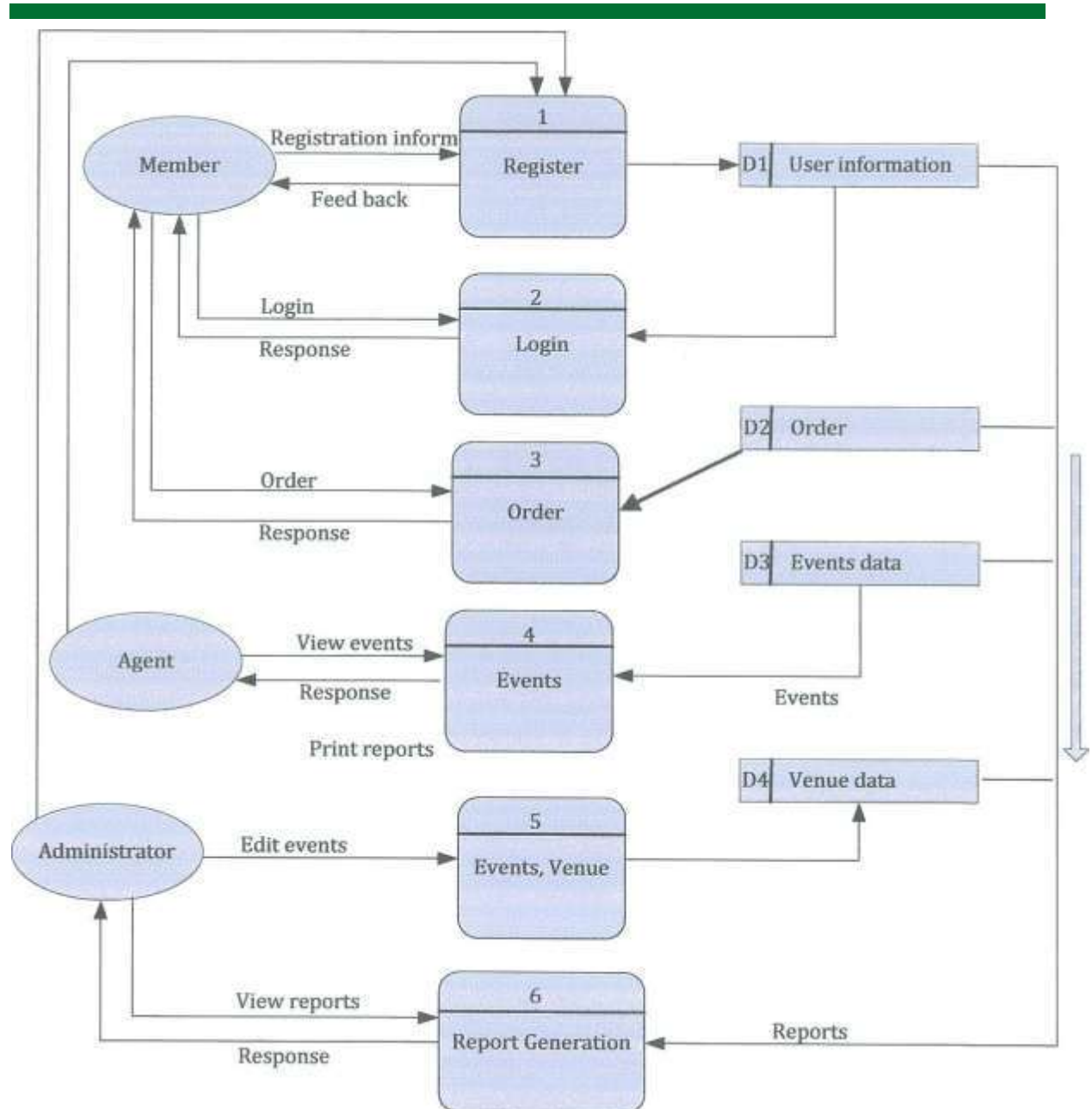


Figure 3: Shows the flow of information for user's log in into the system

Database Design

a) Conceptual database design

This is the design of a model of the information used in the system independent of all physical consideration. This involves identification of the entities, relationships and attributes.

Entities and their attributes in the System.

The entity types that were identified were; event, member, agent and administrator entities. Event is the area or major objects under a search

Member is the information consumer

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Agent acts as a representative and an authorized user of the online ticket booking system and helps clients to acquire tickets at various venues.

Administrator maintains the data in the database.

a. Table 3 shows member, agent and administrator entities and their attributes

Member	Agent	Administrator
member id (PK)	agent id(PK)	administrator id(PK)
user id(FK)	user id(FK)	user id(FK)
Fname	Fname	Fname
Lname	Lname	Lname
Password	Password	Password
Gender	Gender	Gender
Email	Email	Email
Addr	Addr	Addr
Usertype	Phone	Phone
	Usertype	Usertype

Table 3: Entities and their attributes

I. Entities and Multiplicities

The entities were then structured into binary entity relationship diagrams as shown in figure 4.4 below.



Assumption: A member orders ONE to MANY tickets and a ticket can be ordered by ONLY ONE member

Figure 4: Binary entity relationship diagram

The binary entity diagrams were assembled into an enhanced entity relationship diagram as shown in figure 4

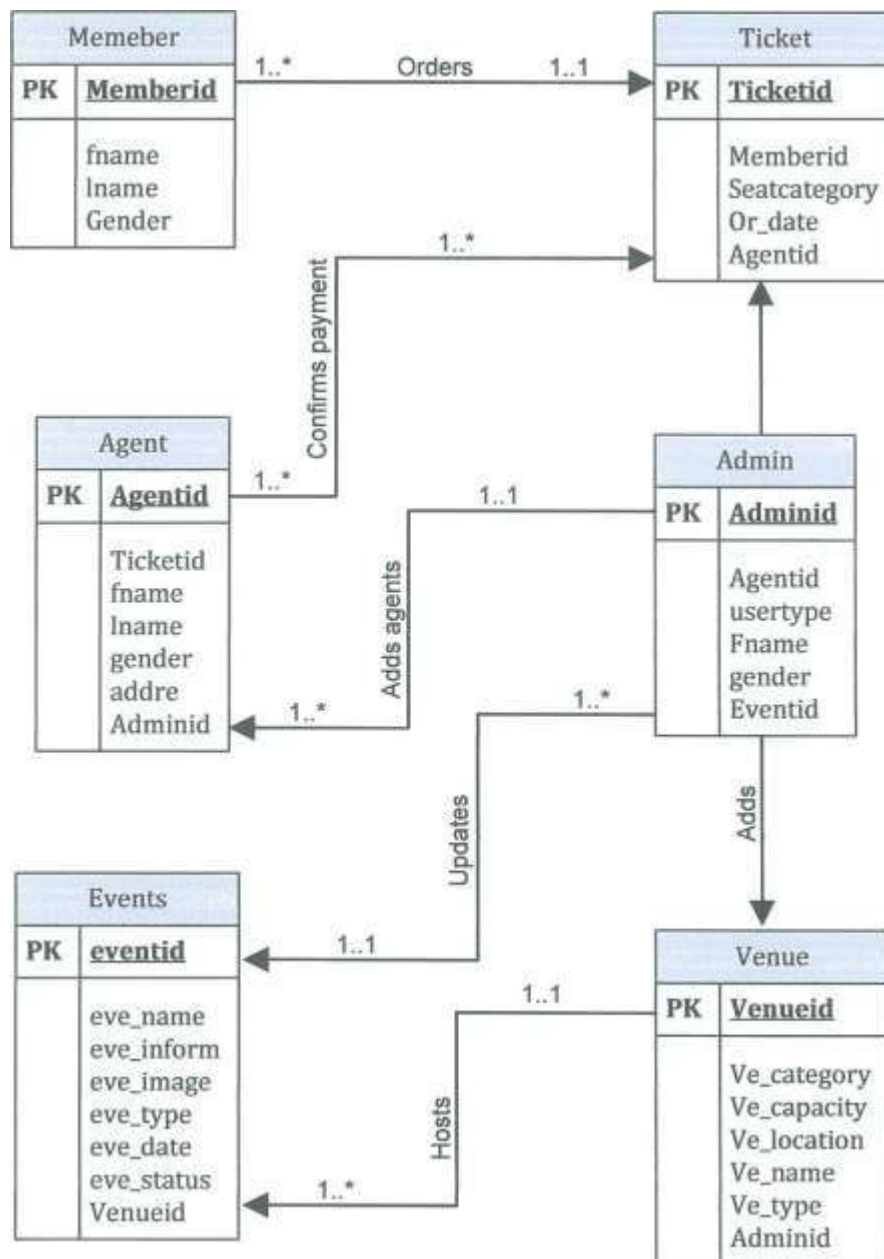


Figure 4: Enhanced Entity Relationship Diagram

Description of Relationships (Data Dictionary)

The data dictionary shows a centralized repository of information about data upon various processes such as ticket booking, venue categories.

Table 4 describes the administrators, data types description of field name and the outstanding details

Field Name	Data Type	Description	Outstanding detail
Arminid	Int (20)	Admin Id	Not null, PK
User_id	Varchar (50)	User Id	Not null, FK

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Fname	Varchar (50)	Admin's fname	Not null
Lname	Varchar (50)	Admin's sname	Not null
Password	Varchar (50)	Admin ' spassword	Not null
Gender	Varchar (10)	Admin' sgender	Not null
Email	Varchar (50)	Admin' semail	Not null
Add	Varchar (50)	Admin's address	Not null
Phone	Varchar (15)	Admin ' s phone number	Not null
User type	Varchar (10)	Admin's user type	Not null

Table 4: Administrator

Agent's table 5 describing agent, data type, the description of the field names and the outstanding details of the agent

Field Name	Data Type	Description	Outstanding detail
Agent id	Int (20)	Agent's id	Not null, PK
User_id	Varchar (20)	User's id	Not null
Fname	Varchar (50)	Agent's first name	Not null
Lname	Varchar (50)	Agent's sir name	Not null
Password	Varchar (50)	Agent' s password	Not null
Gender	Varchar (10)	Agent's gender	Not null
Email	Varchar (50)	Agent's email	Not null
Adder	Varchar (50)	Agent's address	Not null
Phone	Varchar (15)	Agent' s phone number	Not null
User type	Varchar (10)	User type	Not null

Table 5: Agent

Event table 6: describing event, data type, the description of the event and the outstanding details of the event.

Field Name	Data Type	Description	Outstanding detail
Eve id	Int (20)	Event's id	Not null, PK
eve name	Varchar (50)	Event's name	Not null
eve venue	Varchar (50)	Event's venue	Not null

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Event category	Varchar (50)	Event's category	Not null
Event image	Varchar (20)	Event's image	Not null
Event info	Varchar (500)	Event's information	Not null
Event date	Varchar (50)	Event's date	Not null
Event time	Varchar (50)	Event's time	Not null
Event status	Varchar (50)	Event's status	Not null
Venue id	Int (20)	Venue id	Not null, FK

Table 6: Event

The table 7 shows member name, data type, description and the details of the associated member.

Field Name	Data Type	Description	Outstanding detail
Memberid	Int (20)	Member's id	Not null, PK
User_id	Varchar (20)	User's id	Not null, FK
Fname	Varchar (50)	Member's first name	Not null
Lname	Varchar (50)	Member's sir name	Not null
Password	Varchar (50)	Member's password	Not null
Gender	Varchar (10)	Member's gender	Not null
Email	Varchar (50)	Member's email	Not null
Addr	Varchar (50)	Member's address	Not null
Phone	Varchar (15)	Member's phone number	Not null
Usertype	Varchar (10)	User's type	Not null

Table 7: Member

Venue table 8 showing the fields, data type, description and the outstanding details.

Field Name	Data Type	Description	Outstanding detail
Venueid	Int (20)	Venue's id	Not null, PK
Venue name	Varchar (50)	Venue's name	Not null
Venue capacity	Varchar (50)	Venue's capacity	Not null

ve location	Varchar (50)	Venue's location	Not null
ve-phone	Varchar (50)	Venue's phone number	Not null

Table 8: Venue Below is a ticket table 4.9 showing field names, data types description of the field names and the outstanding details.

Field Name	Data Type	Description	Outstanding detail
Orderid	Int (20)	Order id	Not null, PK
Or fname	Varchar (50)	Order first name	Not null,
Or sname	Varchar (50)	Order sir name	Not null
Or-phone	Varchar (50)	Order phone	Not null
Or email	Varchar (50)	Order email	Not null
Or-date	Varchar (10)	Order date	Not null
Seat cat	Varchar (50)	Seat category	Not null
or status	Varchar (50)	Order status	Not null
Memberid	Int (20)	Member's id	Not null, FK
Agentid	Int (20)	Agent's id	Not null, FK
Eventid	Int (20)	Event's id	Not null, FK

Table 9: Ticket

System Implementation

The system is made up various components each of which performs a specific role to achieve the objectives of this project as stated earlier in the project report.

Components of the online events ticket booking system include;

The Graphical User Interface (GUI)

This component mainly allows the user to interact with the system. It provides the following services;

- Authentication of members. The system allows the members to login into the system so as to gain access to the system services.
- Registration and management of users. Through submission of user profiles to the system, the user can be managed and registered.
- Data entry forms. The system provides the administrator with data entry forms through which they add booking events and venues into the backend of the system.
- Reports Display. The system provides the agents with detailed report showing the amount of tickets that have been booked.

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The database component

This component serves as the back-end of this system and provides the following services;

- a) Insertion. Allow the user to commit data to the system's database
- b) Deletion. System allows the administrator to delete unwanted data in its database.
- c) Update. The system allows the web application administrator to log into the system and add, update information on tickets.
- d) Searching. The system allows the user to search information about a given record in its database.
- e) Data retrieval. The system allows a user to get information about a given record.

Security component

This component handles the security issues of the system through the following

Member registration and management

Security component

This component handles the security issues of the system through the following;

Member registration and management

This helps in registering members by giving them access rights to the services provided by the system. Also manages user accounts through updating user's profiles and deleting of users who are no longer authorized to access the system.

User Authentication.

A user is requested to submit user login details created at the time of registration to gain access to the system functionalities. Without the right log in information, a user can't access the system.

Conclusion

This chapter gives clear indication of the information flow between the system and the users of the system. It shows the security part of the system and the benefits that the users gain from using the system. Convenience and effectiveness of the system gives the users ease of using the system

Recommendations

We recommend that in the future if other researchers have interest in Online Ticket Management for theatres or any other entertainment institution, this project should be a starting point. Future work may consider all other sources of ticket booking at the various theatres although this study considered the major theatre (UNT) only.

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