

AI-Based Hall Reservation System

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ABSTRACT

Computerized Reservation System (CRS) has recognized a widespread in different domains such as airline companies, hotels, and others thanks to their huge advantages such as: saving time of customers, reducing the errors, increasing the customer satisfaction, and automating the booking process. This project aims to help the customers, seeking to make a hall reservation for their events, to complete this task using a user-friendly mobile application. The customers can find a hall with different searching options, display all the details related to it including size, location, pictures, and review of previous customers. To enhance customer satisfaction, the system has Artificial Intelligence (AI) features for the content recommendation. The administrator can manage the list of the hall and check the review on the application. The developed system suggests to the user a recommended content based on the user profile and preferences saved from previous searches and has also the ability to display results based on new searches. This will save tremendously the customer time, display results more efficiently, and enhance the competitiveness between hall owners.

Introduction

Mobile applications development is a new and growing sector. When used in the business domain, the impact can be very positive on the revenues. On the other hand, people waste a lot of time and effort when trying to make a hall reservation. In the studied project, the customers will be able to use a mobile application to search for halls according to several options. The results are displayed accordingly and enhanced with content recommendations suggested by machine learning. The customers can also complete the payment and provide feedback.

Literature review

1. Android studio:

An open-source framework is known for Android. Google was developed to drive telephone innovation and supply developers and customers with an environmentally friendly ability. The portal is also accessible and unrestricted. Known as a full-length software package, Android provides a mobile apps tool and system creation kit that is quick and basic.

2. Planning to succeed in the project:

Organizing is a guide to project progress and assures that the project is known from beginning to end because projects that started in the wrong direction will lead to construction delays. Preparation is also a prerequisite to project performance, as it eliminates errors in the future of the project. Each stakeholder needs to cooperate with the project schedule, as joint actions have culminated in the project's accomplishment and possible threats must be addressed to discourage it. The planning of the project should also include all project stages, quantities, boundaries, processes, deadlines, and dates. The Planning thus requires the freedom to handle such unwanted project tasks and issues.

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3. **Star UML:**

Star UML is an open-source development model framework supporting UML and is a platform to develop diagrams and other kinds of graphs, such as operation diagrams, article diagrams and sequence diagrams. A diagram is a collection of items reflecting the user's opinions or structure. UML is structured to provide access to any type of meta-modeling functions through which users can build their methodology approach.

4. **Software development life cycle SDLC model:**

The life cycle of software production splits software development projects into separate layers of administration and preparation, including operations. The project team is responsible for managing application creation. It also requires other acts or tasks including specifications, planning, executing, verifying, improving, and sustaining. It also has various models such as rise, cascade, prototyping and spiral.

Methodology

The methodology is a collection of instructions, ideas, and stages that help us gather and validate the success of data on a subject. The strategy is a model of the software development life cycle. The methodology preference depends on the essence of the project and the tools and timetables available. Different methodologies can be used for the development of the project, gradual model, spiral model, dynamic structure development model, model in waterfalls, fast application joint development model.

Methods are very helpful for effective initiatives, as they help check measured designs, classify artifacts, include predictions, and clarify sudden trends. I can equate in this chapter three methodologies and then pick the one for the project I am going to carry out.

Dynamic systems development model (DSDM)

The method for the development of dynamically oriented systems is used to apply agile and method-based RAD projects which use a method gradually and in no time, but also as an approach for the development of software in the first place. This technology is critical for the overtime enhancement of the system. (DSDM) An organization that works on the effective and useful implementation of enterprise technologies to build projects applications.

The DSDM model consists of five phases:

- ❖ **Iteration of functional model:** The practical model iteration is repeatedly designed and tested by the prototype to illustrate the device specifications.
- ❖ **Study of the organization:** High-level job demands are identified during the market study process. The entire work is analyzed in the ideal method. Outside the structure, too, knowledge specifications are decided. The requisite device architectural architecture is then developed. This stage product is used to verify whether or not a method is ready for execution.
- ❖ **Iteration design and construction:** The system must be designed correctly to accommodate its operating conditions, focusing on this step.
- ❖ **Research of Facility:** In addition to testing the technological viability of the proposal, challenges, priorities, and nature of the project are defined in the feasibility report.

- ❖ **Deployment:** This process is the last phase of this process, with users being instructed on how to use the program in the deployment phase.

Strengths:

- Comfortable and easy to use.
- Providing jobs on schedule and a budget.
- Developers can reach end-users quickly.

Weaknesses:

- Not acceptable for small businesses.
- Full DSDM process compliance.
- Not commonplace and impossible to comprehend.

Design

The architecture of the project :

In this project, the front end is formed by customer and admin interfaces. The customer can search for a hall using several options. The results are enhanced based on content recommendation. The user can also make a reservation after searching the halls and finding a suitable result. After the implementation of the event, the customer can access the application and provide a review on the hall by giving his/her feedback. The content recommendation is provided based on machine learning which has access to the database and user preferences and previous searches. The admin can update the details on the halls which can include images, location, size, and other characteristics. The admin can also check the list of feedbacks and reviews given on a specific hall.

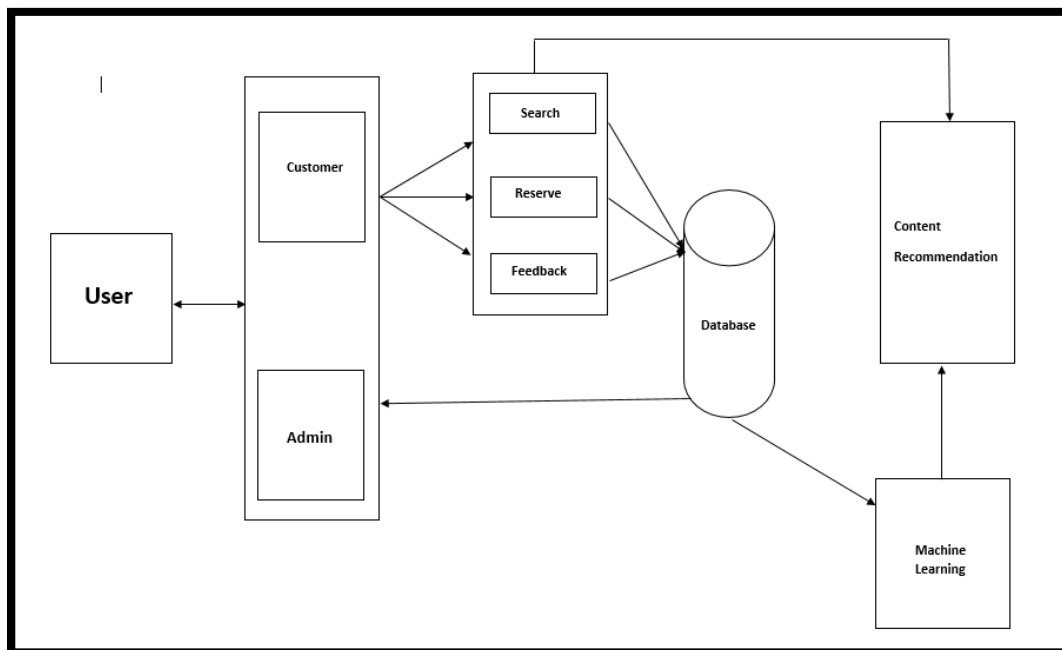


Figure 1: Project Architecture

ED:

The entity-relationship diagram is a diagrammatic representation of objects and relationships. This diagram will include three kinds of relationships: one to one, one to many, and many to many (associative entity). There are five individuals in this scheme, each with a unique relationship.

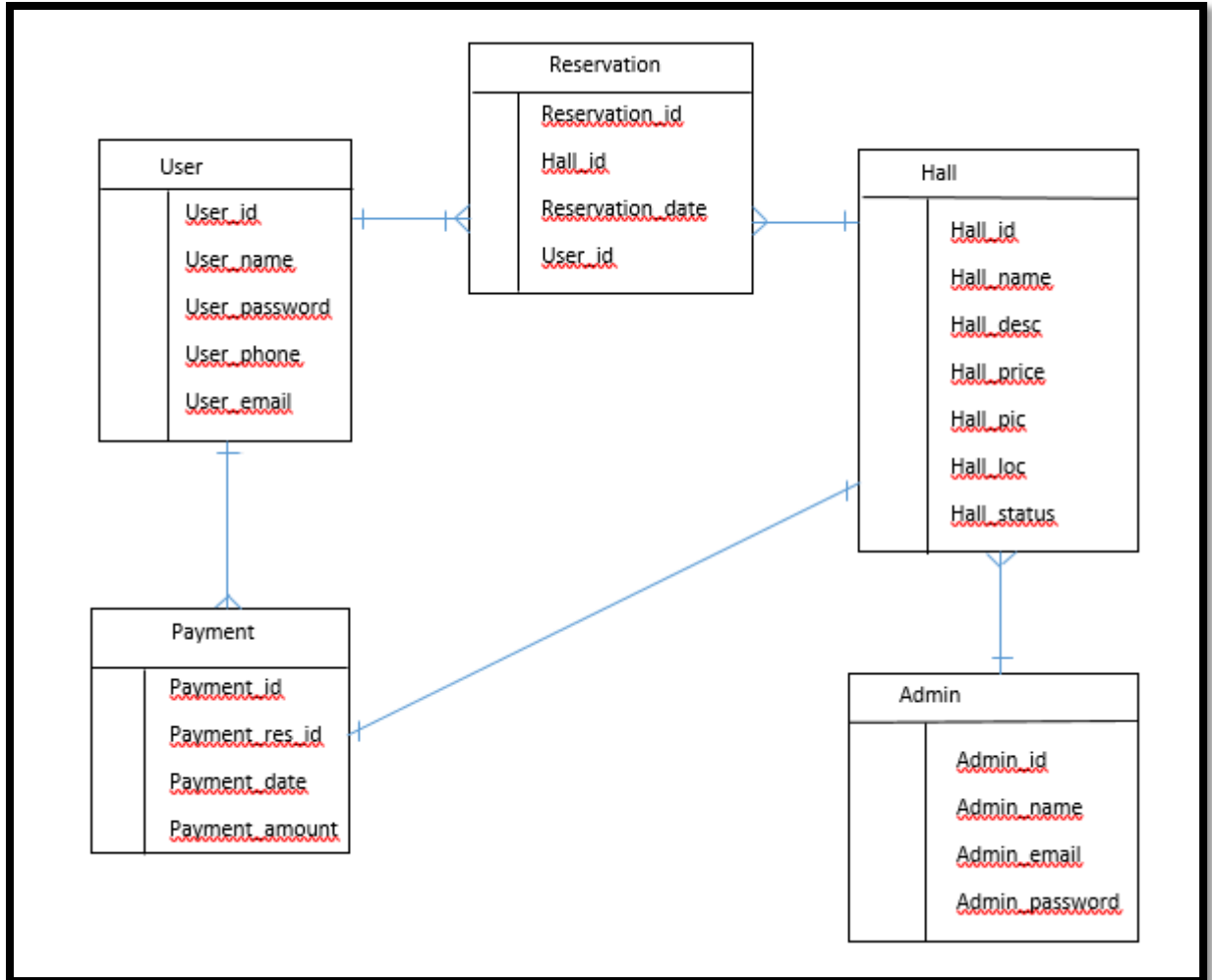


Figure 2: Entity Relationship Diagram

Conclusion

In conclusion, this project will be very helpful for the people who have occasions and they want to reserve a hall but they don't have time to visit the hall location and they search for the easiest way to reserve they can make the reservation online through the application.

Limitations

- The application is in the English language.
- The Application is using the internet.
- The Application will work only in Oman.
- The Application will accept all the halls around Oman.

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References

- Saleh, H. *et al.* (2016) *Mobile Application Development: JavaScript Frameworks*. Birmingham, UK: Packt Publishing (Learning Path). Available at: <https://search.ebscohost.com/login.aspx?direct=true&site=eds-live&db=e000xww&AN=1364681> (Accessed: 11 December 2020).
- Nurbekova, Z. *et al.* (2020) 'Project-Based Learning Approach for Teaching Mobile Application Development Using Visualization Technology', *International Journal of Emerging Technologies in Learning*, 15(8), pp. 130–143. DOI: 10.3991/jet.v15i08.12335.
- Khachouch, M. K. *et al.* (2020) 'Framework Choice Criteria for Mobile Application Development, 2020 International Conference on Electrical, Communication, and Computer Engineering (ICECCE), Electrical, Communication, and Computer Engineering (ICECCE), 2020 International Conference on, pp. 1–5. DOI: 10.1109/ICECCE49384.2020.9179434.
- Farooquie, P. and Khan, J. A. (2007) 'An interpretive structural model for project planning and success', *2007 IEEE International Conference on Industrial Engineering and Engineering Management, Industrial Engineering and Engineering Management, 2007 IEEE International Conference on, pp. 1022–1026*. DOI: 10.1109/IEEM.2007.4419347.
- Ozdamli, F. and Turan, B. (2017) 'Effects of a Technology-Supported Project-Based Learning (TS-PBL) Approach on the Success of a Mobile Application Development Course and the Students' Opinions', *TEM Journal*, 6(2), pp. 258–264. DOI: 10.18421/TEM62-10.
- Sharma, S. K., Gupta, P. K. and Malekian, R. (2015) 'Energy-efficient software development life cycle — An approach towards smart computing', *2015 IEEE International Conference on Computer Graphics, Vision and Information Security (CGVIS), Computer Graphics, Vision and Information Security (CGVIS), 2015 IEEE International Conference on, pp. 1–5*. DOI: 10.1109/CGVIS.2015.7449881.
- Ciccozzi, F., Malavolta, I. and Selic, B. (2019) 'Execution of UML models: a systematic review of research and practice', *Software & Systems Modeling*, 18(3), pp. 2313–2360. DOI: 10.1007/s10270-018-0675-4.