Kathmandu University

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A Mini Project Report
on
"Cinema Sansaar"

[Code No: COMP 202]

(For partial fulfillment of II/I Semester in Computer Science Engineering)

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Abstract

The absence of accessible movie ticket booking systems in many regions of Nepal presents a significant barrier to the growth of local movie theater businesses. This project aims to address this gap by developing a C++ program with a simple and user-friendly graphical interface using the QT framework. The objective is to create a system that simplifies the ticket booking process for both theater owners and moviegoers, especially catering to low-tech users. By employing C++ for the core programming and QT for the GUI, we designed and implemented a cost-effective solution tailored to the needs of these users. The expected outcome was an application that enhances the user experience and supports the growth of movie theaters. This project demonstrates the potential to benefit both theaters and their audiences, with the recommendation to extend the system to other rural areas and continuously improve its features based on user feedback.

Keywords: ***C++, QT, Movie Ticketing, Object-Oriented Programming, User-friendly***

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Acronyms/Abbreviations

The list of all abbreviations used in the documentation are presented below:

GUI	Graphical User Interface
AI	Artificial Intelligence
SDK	Software Development Kit

Introduction

This simple, yet effective, project focuses on creating a movie ticket booking system where users can reserve seats for the movies of their choice. “Cinema Sansaar” is a GUI application made with powerful SDK Qt creator and SQLite for creating user interface as well as database management respectively. It offers a user-friendly interface and choices of seat availability, providing a seamless experience for users to select their preferred movies.

1.1 Background:

The online movie ticket booking industry has evolved rapidly, with global advancements fueled by the demand for convenience. Technologies like AI, machine learning, and blockchain have significantly enhanced these systems, enabling personalized recommendations, dynamic pricing, and improved security measures. The proliferation of mobile apps has also made ticket booking more accessible, catering to users seeking efficiency and ease of use.

In Nepal, the adoption of online movie ticket booking is gaining momentum, supported by the introduction of mobile wallets and digital payment gateways. These innovations have enabled seamless transactions, particularly for users without access to traditional banking services. Local companies are increasingly investing in developing user-friendly platforms, incorporating localized payment options and language settings to cater to Nepal’s diverse population.

However, challenges remain. Limited internet penetration and low digital literacy, especially in rural areas, hinder widespread adoption. Additionally, concerns over security, data privacy, and the reliability of digital payment systems persist, contributing to user distrust and reluctance to transition from traditional methods.

Despite these obstacles, improving online ticket booking systems in Nepal is crucial. Enhanced systems can lead to greater efficiency, lower operational costs for service providers, and a more streamlined experience for consumers. Addressing these challenges through targeted strategies and technological innovations is essential to unlocking the full potential of online movie ticket booking in Nepal.

1.2 Objectives:

The main objectives of our project were:

● Provide an intuitive and accessible platform for users to select seats, and reserve tickets, reducing time in the counter booking for the ticket.

● To automatically send verification and welcome emails to users upon signup, ensuring secure and efficient communication.

● To streamline the ticket booking process, enhance user experience, and reduce the need for manual ticket purchases.

1.3 Motivation and Significance:

The motivation for developing a movie ticket booking system for Nepal stems from the growing demand for digital services and the desire to enhance the movie-going experience. As more Nepalese gain access to the internet and smartphones, there is a significant opportunity to simplify and improve the ticket purchasing process. Current methods, which predominantly rely on physical box office sales, often result in long queues and limited access to movie schedules. This project aims to address these

issues, supporting Nepal's digital transformation goals by offering a convenient and efficient solution.

The existing ticket purchasing methods in Nepal are marked by inconvenience and inefficiency due to the reliance on physical sales points. Our online booking system addresses these drawbacks by providing a platform that eliminates the need for physical presence, thereby reducing wait times and congestion at theaters.

What sets our project apart is its focus on user accessibility and inclusivity. It features a bilingual interface (Nepali and English) to cater to a broader audience. Key features of the system include real-time seat selection, personalized movie recommendations, and loyalty rewards. Additionally, it offers detailed movie information such as trailers, reviews, and ratings to help users make informed decisions. This comprehensive approach ensures a user-friendly experience while addressing the limitations of existing systems.

Related Works

There have been several notable projects and systems developed for online movie ticket booking, each with its own unique features and technological advancements. These systems provide valuable insights into the strengths and weaknesses of existing approaches, helping to inform the development of new solutions.

2.1 Omniplex Cinemas:

Omniplex Cinemas is a leading cinema chain in Ireland, recognized for its cutting-edge technology and customer-centric features. According to a study by Murphy (2018), Omniplex integrates digital advancements such as online ticket booking,

mobile applications, and loyalty programs to enhance user engagement. The use of 3D and 4K projection systems ensures high-quality visual experiences, while the inclusion of immersive sound technologies provides dynamic audio. However, the system's reliance on high-speed internet and modern infrastructure limits its accessibility in regions with lower digital penetration, which is a notable drawback (Murphy, 2018).

2.2 QFX Cinemas:

QFX Cinemas, a prominent chain in Nepal, offers a similar approach with a focus on providing a high-quality viewing experience. As highlighted by Shrestha and Gurung (2019), QFX incorporates online ticket booking systems and mobile apps that are tailored to the local market, integrating popular local payment gateways. While these features make QFX a leader in the Nepalese market, the system's challenges include limited accessibility in rural areas and a lack of multilingual support, which restricts its reach to a broader audience (Shrestha & Gurung, 2019).

2.3 BookMyShow:

BookMyShow is India’s largest online ticketing platform, offering a wide range of services beyond just movie ticket booking. Jain and Patel (2020) discuss how BookMyShow's platform stands out with its user-friendly interface, personalized recommendations, and integration with various payment options. It also provides real-time updates, customer reviews, and trailers to enhance the user experience. However, the platform's complexity can be overwhelming for users with limited digital literacy, which may affect its adoption in less technologically advanced regions (Jain & Patel, 2020).

Comparison and Drawbacks: Comparing these systems, it is evident that while they excel in providing a seamless user experience in urban and digitally advanced areas,

they often struggle with inclusivity, particularly in regions with lower digital literacy or limited infrastructure. The systems' reliance on modern technology and internet access, as noted by Taylor and Procter (2008), can lead to user exclusion in less developed regions. Current works in the field aim to address these challenges by incorporating features like multilingual support, simplified user interfaces, and integration with localized payment systems.

By understanding the strengths and weaknesses of these existing systems, our project aims to develop a movie ticket booking system that is more inclusive and accessible, particularly in the context of developing countries like Nepal.

Design and Implementation

We started our project with forming group and then did some study on to learn QT creator for GUI and SQLite for the database to store our client data securely. We initially did some QT works to gain more ideas on GUI and then set up our database as local host. We go on to build login- page and then spearheaded with backend to add basics of function. We soon found on how to add Mailgun API to ensure clients valid email address and send verification code to create a new user in our database. Then we learnt to implement all these in one and kept on debugging lines of code for weeks. Finally, amidst of our internal and assignment we successfully tested and again worked on some bugs in our projects. We added features as per our best of

capabilities and made it a user-friendly real world application.

System Requirement Specifications

4.1 Software Specifications:

Windows 10, macOS, or Linux: Compatible with the client application developed using Qt.

4.2 Hardware Specifications:

Since, QT Creator, Design Studio, and C++ are available for all kinds of operating systems like Windows, macOS, and Linux, any PC running on those OS with a minimum of 4 GB RAM and 4 physical cores CPU along with 10 GB SSD storage is enough to facilitate a smoother developing experience.

Component	Specification minimum:	Recommended
CPU	Intel Core i3 or AMD equivalent	Intel Core i5 or AMD Ryzen 3
RAM	4 GB DDR4	8 GBDDR5
SSD	64 GB	128 GB

Discussion on Achievements

5.1 Features:

The initial route we mentally laid out was not able to be carried out as planned. However, while we worked on our project, we made a number of adjustments and enhancements. We were unable to implement as anticipated due to time constraints and concerns, but we were able to substitute other features that may have been implemented.

- **Login Page:** This page prompts user to login into our system and verify their username and password in from our database.
- **Signup Page**: This feature allows user to choose for their User-name, create their own password for login and email as verification of a person's identity. Our system then sends a verification code to entered email and user can sign-up by entering the sent verification code.
- **Forgot Password**: Asks user for their email and sends verification code to their email. User can change their password by entering that code.
- **Mailgun API:** Mailgun is a cloud-based email service provider that allows developers to send, receive, and track emails through its API. We integrated this feature in our application for the verification of user identity.
- **UI for choosing seats:** After selection of the movie, user can understand the status of the seat by looking at color of the seats (*red, green and gray*). Green indicates availability, red indicates already-booked while gray indicates seats that is selected for booking.
- **The Database**: The SQLite database allows seamless data storage with the help of queries that are super easy to write. The data collection is made super quick and so accessible from the user end.

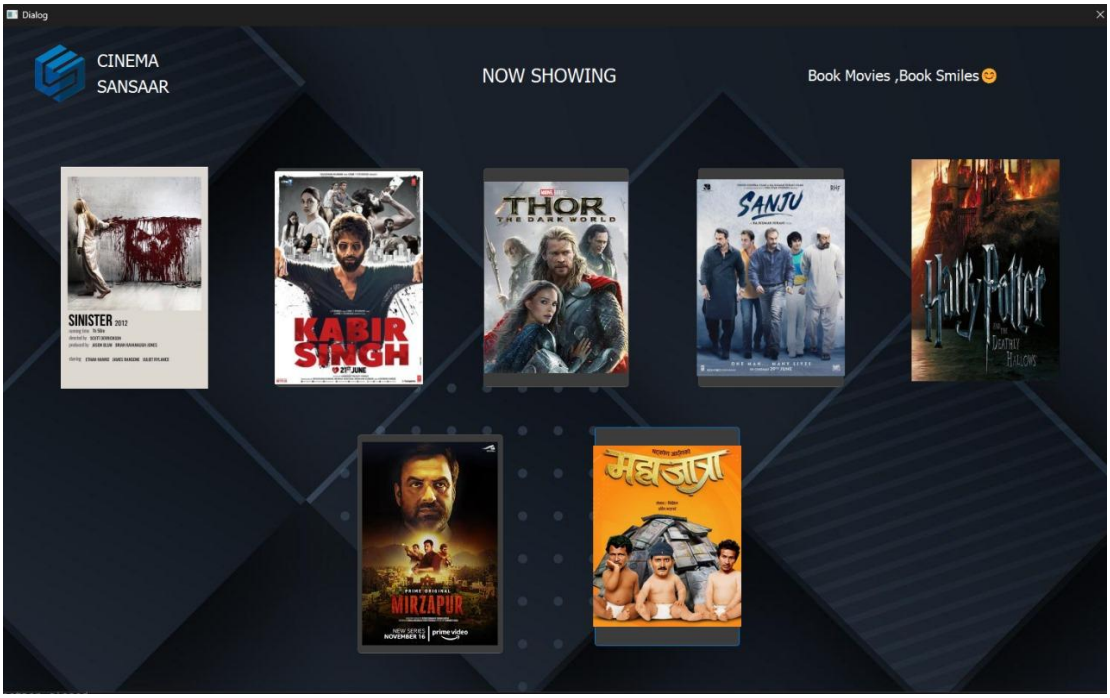
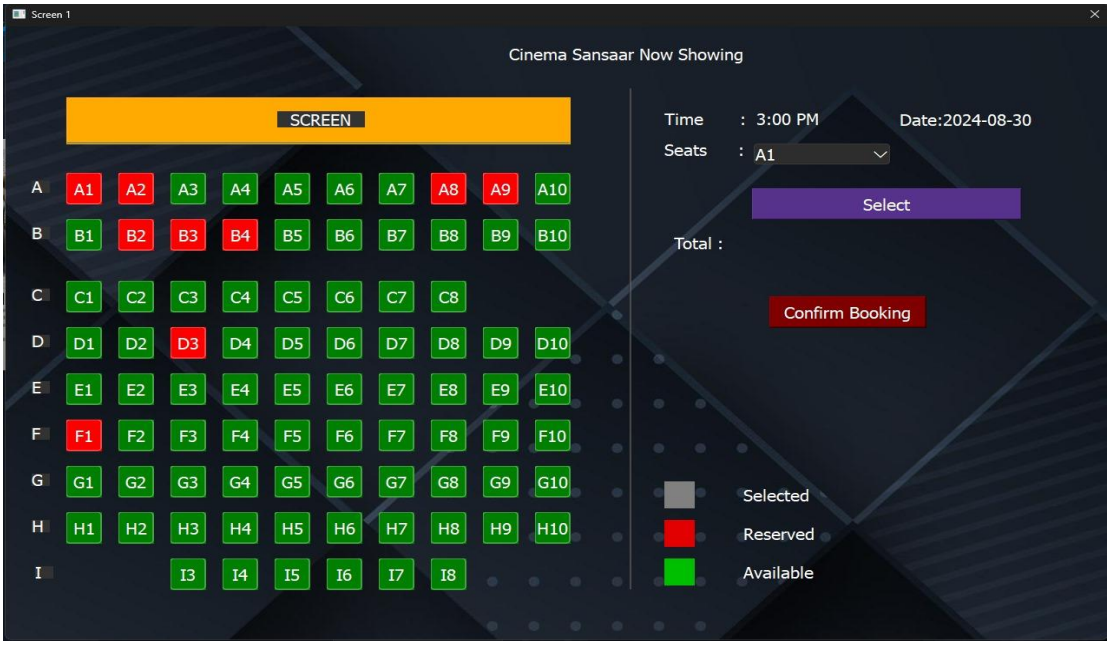


Fig. Dashboard



Conclusion and Recommendations

6.1 Limitations

We navigated through this project amidst our tight schedule that partially caused us to lose the vision of our project. We were dedicated to this project and successfully completed this at least 4 weeks before our deadline. However, we hereby address some limitations that we found in our project as per this date:

- **Lacking of payment medium:** Although this project was initially designed to be online application but due to unavailability of time and capability to tie-up with digital payment platform (E-sewa, Khalti, IMEpay, etc.) we couldn't markup this project with online payment.
- **Remote host of application:** As this project is hosted only in local PC's so there is issue of scalability. But we see this as a scope of future enhancement.
- **Issues with real-time seat booking:** As a seat is reserved by a local host the other network members aren't notified that might lead to some unexpected behavior.

6.2 Future Enhancements:

With aid of additional support and tie-up's, we estimate following enhancement to be integrated in our application:

- **Reliable and secure online payment medium:** Adding a digital payment medium to our application, we believe this can be a real world applicable online ticket booking system in Nepal.
- **Remote database:** With a remote database we can prevent double bookings by ensuring seat availability is updated instantly.
- **User feedback:** Nothing matches the level of area to improve other than the real user so we will always be open to user feedback and would try to solve bug as best of our capabilities.

6.3 Recommendations

- For anyone interested in continuing or improving upon this project, we recommend dedicating substantial time to understanding the Qt framework and SQLite database. A solid grasp of these technologies will provide a clearer concept of how ideas can be effectively implemented. Ensuring all team members have a good understanding of the framework will lead to more innovative ideas and contribute to the overall success and enhancement of the project.

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APPENDIX-I

- **GANTT chart**

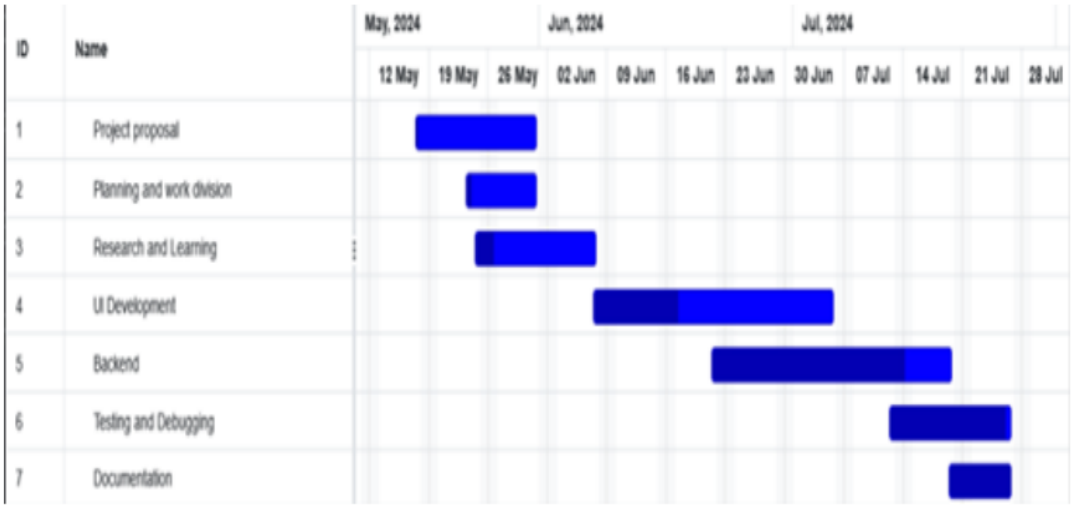

Fig. GANTT chart