DESIGN OF A CINEMA TICKET ORDERING APPLICATION IN MEDAN CITY BASED ANDROID

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Abstract: This research aims to build and create an Android-based cinema application for the city of Medan to enable viewers to choose films, buy tickets boldly, avoid long queues, and optimize audience time, especially for the people of Medan and its surroundings. This research was conducted using a software development approach based on the Waterfall method. Requirements analysis, system design, application implementation, testing, and maintenance are the stages of research. The implementation of this application is made using the React Native framework and the JavaScript programming language. During the implementation process, features such as login pages, movie listings, and ticket bookings are created. Functional, integration and performance testing are included in the black box testing method. Users provide feedback on usability, satisfaction, and suggestions for improvement through evaluation. The results of this study are expected to produce an Android-based cinema application that can meet the needs of users in Medan. This application is expected to help users of cinema tickets online, overcome the problem of ordering time, many transactions, and complicated processes. In addition, it is hoped that this research will contribute to the development of React Native based applications and other related studies.

INTRODUCTION

In the current digital era, most people use technology to carry out various daily activities. One industry that is currently feeling the positive impact of technological advances is the entertainment sector, especially the cinema sector. The audience will witness a story that seems real in front of them. (RD Siahaan, 2021) Cinema is a place where people can watch various new films with a more enjoyable experience. In the development of cinema in Indonesia there have been many changes. Cinemas, which were originally performance halls, now continue to be present in shopping centers because they are considered entertainment facilities that have their own attraction. Especially for

people who often need entertainment when carrying out busy daily activities (ON Putra, 2022).

However, even though the popularity of cinemas continues to increase, there are several problems in the cinema industry that need to be addressed. Among them, there are many problematic transactions. Large numbers of moviegoers at popular film screenings or other time periods can result in long waiting times before tickets can be purchased (S. Saroji, 2023). Moreover, in case of wrong time management. Audiences often spend a long time watching films and completing ticket purchases at cinema locations. Long wait times have the ability to reduce viewer comfort and experience.

To overcome this problem, this research will design an Android-based cinema application in the city of Medan using the React Native framework. React Native is a JavaScript-based framework that is used to create mobile applications for Android and iOS simultaneously (R.Setiawan, 2021). This application will allow viewers to choose films, buy tickets online, avoid long queues, and optimize the audience's time. This application will also provide information about films currently showing and screening schedules, making it easier for viewers to choose the film they want. In designing this application, related technologies such as Firebase and testing are also used to ensure that the application runs well and meets user needs. Firebase is a platform to make it easier for developers to develop mobile and web applications that are Realtime Database (R.Andrianto, 2022). Firebase provides various services such as data storage, authentication, and analytics (Y.Mari, 2023). In developing cinema applications using the React Native framework, Firebase is used to validate user login and registration processes, store film schedule data, film information, and data on users who purchase tickets.

Previous research has been carried out in the field of cinema application design and mobile-based ticket ordering. Several journals are relevant to this research topic. Research conducted by (D.Handayani, 2020) explains the implementation of an Android-based cinema ticket reservation system using the RAD (Rapid Application Development) research method and the Unified Modeling Language. One of the language standards most often used in industry is UML (Unified Modeling Language) (A.Saputra, 2019), which is used to create requirements, carry out analysis and design, and to describe architecture in object-oriented programming. The Android-based cinema ticket ordering system in this

research makes it easier for customers to order tickets in advance and makes it possible to pay via transfer or online. This research focuses on developing an application that allows users to make ticket reservations online.

Apart from that, research was conducted by (YI Hasari, 2022) regarding the application of user-based design methods in designing mobile-based cinema ticket ordering and payment applications. The research focuses on improving user experience through interfaces designed taking into account needs and preferences and discusses the use of User Centered Design methodology for creating mobile payment and payment-based ticketing applications.

In previous research, discussing the design of a mobile-based cinema ticket ordering application. The application developed has succeeded in creating a transaction processing system that is straightforward and minimalist, users can access cinema tickets available in the application just by entering the required data and then displaying the transaction results (RDE Putra, 2022). The application developed in this research succeeded in creating a simple and straightforward transaction system; Users can access movie tickets available in the application by simply entering credit card information and then viewing the transaction results.

In research on an Android-based cinema ticket booking application at Bes Cinema Pangkal pinang by (RRC Putra, 2018). In this research, waterfall and OOP methods were used. Testing was carried out using the Blackbox testing technique. Design of a simple mobile-based cinema application by (C. Nurrahman, 2022). In designing the cinema application, the Flutter framework and the waterfall system development method were used. Several stages are required in this research, including needs analysis, system design, and application or implementation. In this research, the cinema ticket purchasing application is not only useful for carrying out the purchasing process, but can also provide information about currently playing and upcoming films. When detailed information is provided, customers can more easily understand the film they want to see (SF Hendarto, 2020).

Based on previous research that has been carried out, there is room for further development in designing Android-based cinema applications in the city of Medan using the React Native framework. This is because there is no research that specifically discusses designing cinema applications using the React Native framework. Most

previous research also tends to focus on developing cinema ticket booking applications in general, without considering specific geographic locations such as the city of Medan. Therefore, this research will fill this space by focusing on the needs and characteristics of the cinema market, especially in the city of Medan.

It is hoped that this research can overcome the problems that have been identified through a comprehensive approach, taking into account user needs and expectations, as well as considering relevant features and careful testing. Thus, it is hoped that this research can make a significant contribution to the development of cinema applications that are better and more satisfying for users in the city of Medan. Apart from that, it is hoped that this research will also provide benefits to the public in accessing cinema information and services easily and efficiently, as well as contributing to the development of mobile-based application technology for further research.

RESEARCH METHODS

This is a phase of the study that can be seen in Figure 1 below.

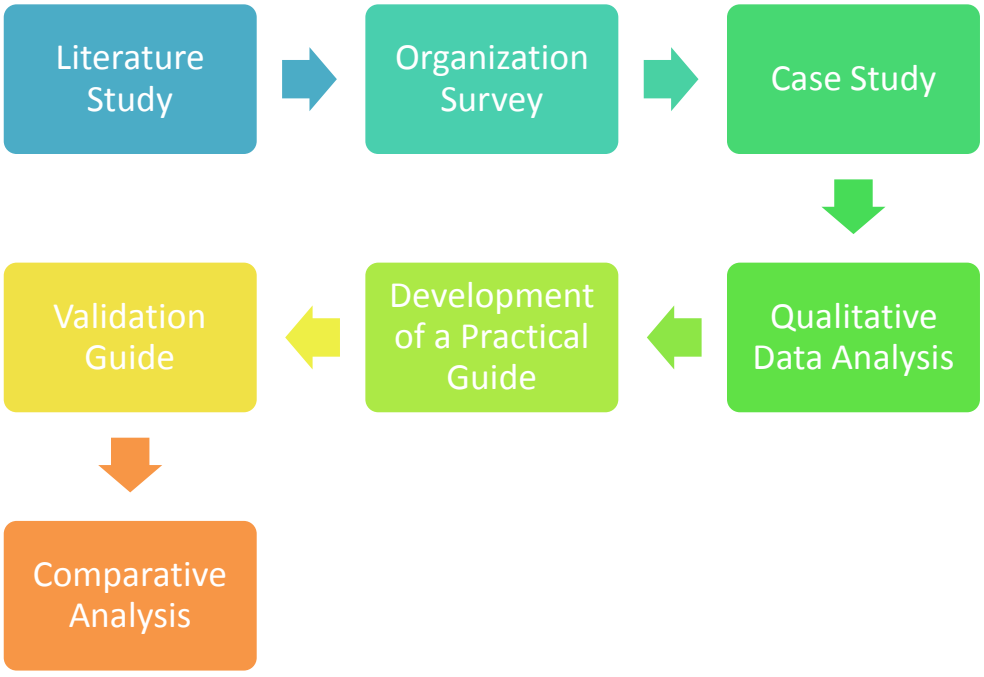

Figure 1. Research Phase

1.Analysis

The initial stage carried out was research needs analysis, starting from data collection by looking for sources from previous research that were relevant and accurate. Then analyze

the needs for creating a cinema application, this involves collecting information about user needs, the features the user wants, and the problems they want to solve. This will help in designing the objectives and scope of the application

2.Design (Design)

After the analysis stage is carried out, the next stage is to design the cinema application system as a whole. This includes architectural design and user interface design. This design becomes the basis for further application development.

3.Implementation

The deployment or implementation stage involves building a cinema application using the React Native framework. Developers will implement designs and features that have been previously designed. This process involves writing code, integration with backend systems, and unit testing to ensure that the application runs as expected.

4.Testing

After the implementation stage, comprehensive testing of the cinema application was carried out. This testing includes functionality testing, UI/UX testing, performance testing, and interaction testing between components using the black box testing method . Test results will be used to ensure application quality and make improvements if problems are found.

5.Maintenance

After the cinema application has successfully passed the testing stage and meets all the requirements, the completion stage is carried out. Then we move on to the final stage, namely the maintenance stage which is carried out periodically to ensure the application always runs well and meets user needs. Apart from that, improvements are also made to the application if bugs or errors are found in using the application.

The waterfall method used in this research will provide advantages in terms of clear structure and control. By following structured and sequential stages, researchers can better track the progress of application development. Apart from that, this method can also help in identifying and correcting problems or weaknesses from an early stage, thereby reducing the risk of errors at later stages.

RESULTS AND DISCUSSION

Result

1. Use case Diagram

Use case diagrams are a type of UML (Unified Modeling Language) diagram that describes the interaction between the system and its actors. Use cases are used to illustrate the fundamental function of an information system. *Use cases* explain how a business system interacts with its surrounding environment (HDURE Rahwanto, 2022). *Use cases* function as functional components in the system, allowing consumers and developers to gain a comprehensive understanding of the workflow and structure of the system to be created. This mutual understanding ensures that consumers and developers are familiar with the flow and functionality of the system. *Use case* diagrams can also be used to understand the functions in a system and to describe the interactions of actors with the system. The component in question then explains actor-to-actor communication using the existing system (A. Gunawan, 2022) . In this cinema application, *use case* diagrams can be used to identify and visualize interactions between users and the system in different usage scenarios. The following is an example of using *a use case* diagram in a cinema application:

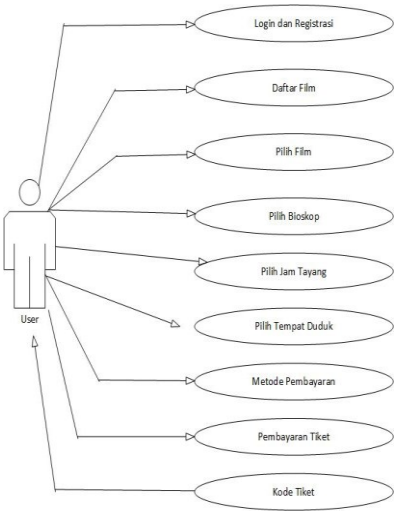

Figure 1. *Use Case* Diagram User

On picture. 2 above depicts *the use case* diagram flow for users in the cinema application. Starting with the user registering and continuing to log in. After successfully logging in, users can see the list of films displayed in the application and order tickets.

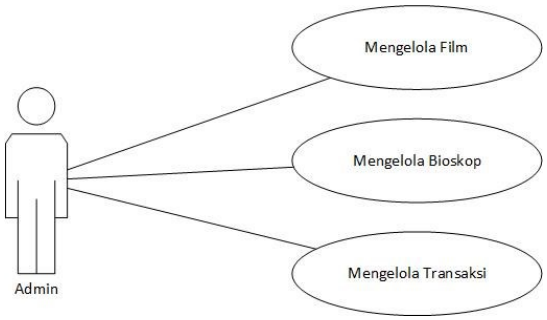

Figure 2. *Use Case* Diagram Admin

Figure 3 shows the admin *use case diagram in the cinema application. The admin use case* diagram describes the interaction between the admin and the system in carrying out administrative tasks and system management. Admins are responsible for managing film data, film screening schedules, managing cinemas, and other related information in the system.

2. Activity Diagram

Activity diagrams are one of various types of diagrams in *the Unified Modeling Language* (UML) which are used to describe workflow or flow of activities in a system or process (R. Aditya, 2021). *Activity* diagrams illustrate the activities that occur, the actions performed, and the sequence of steps involved in a process in the system (U. Rusmawan, 2019). In cinema applications, *activity* diagrams can be used to describe the workflow or steps involved in various activities, such as selecting the desired film, ordering tickets, and enjoying a film in the cinema. In Figure 4. Visualizing the steps in ordering tickets in the cinema application.

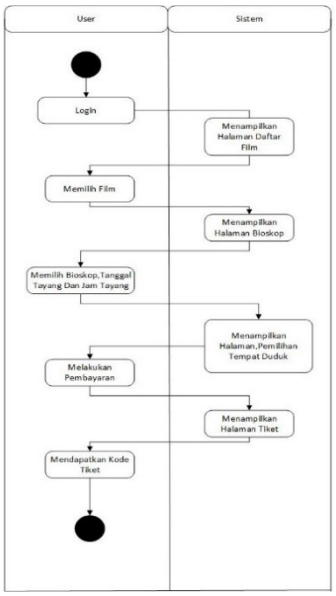

Figure 3. Cinema Application System *Activity Diagram*

Discussion

1. Log in Page

This page is the initial display when the user enters the application. The log in page is used to allow users to enter the application using a registered account. On the login page the user will be asked to enter the email and password that has been registered in the application. If you don't have an account, users are required to register first. If the login information has been validated, the user will be directed to the main page. The login page can be seen in Figure 5 below.

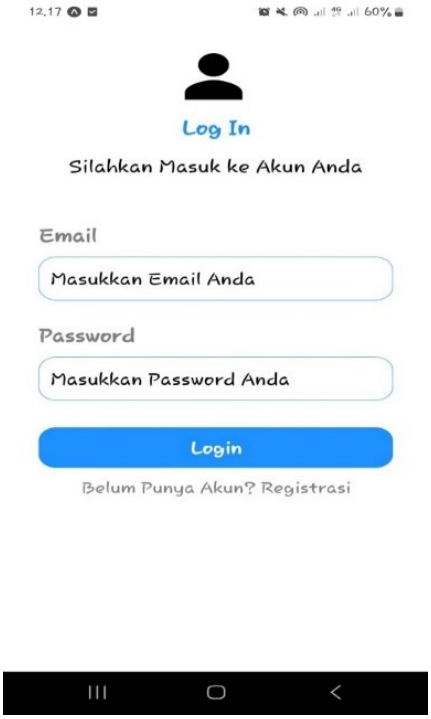

Figure 4. Log in Page

2. System Testing

In this research, this test was carried out using a *black box technique*. This method is a method used to carry out system tests without having to pay attention to the details of a *system* (F.Ghina, 2022) . The purpose of testing is to find out whether the system created is in accordance with user needs. And to find out whether the system input and output functions are as expected or not (D. Hanifah, 2020) This testing is to ensure the application can run properly and correctly according to the expected goals. In testing using the *black box method*, the focus in carrying out this test is testing from the user's perspective without paying attention to the internal implementation details of the application. Thus, this test tests the functionality and interaction of the application's *user interface* without paying attention to how the code is built. This will help to identify problems that may occur in daily use of the application. Testing carried out on this application is testing the main function of the application in accordance with predetermined specifications, testing interactions between components in the application, and testing application performance in responding quickly to user actions which can be seen in the table. 1 below.

Table 1. Cinema Application Testing

No	Testing System	Expected results	Results
1	Clicking the registration button	The system will display the registration page	OK
2	Fill in the registration form completely (email, password, name and telephone number) then click register	go to the main page	OK
3	Leave one of the fields on the registration form blank, then click register	The system will deny access	OK
4	Clicking the login menu	The system will display a login menu page	OK
5	Fill in the login form completely (email and password) then click login	Enter the main page	OK
6	Enter an email that has never been registered or has never registered	The system will deny access	OK
7	Just fill in your email and leave the password field blank	The system will deny access	OK
8	Just fill in the password and leave the email *field blank*	The system will deny access	OK
9	Clicking on the movie menu is currently showing	This will display a menu page listing the films currently showing	OK
10	Clicking on Cinema	A page will display the complete list of names and addresses of cinema locations	OK
11	Clicking on the seating menu	The system will display the seating options as desired	OK
12	Clicking *the button book tickets*	The system will display the payment amount and then display a payment code	OK

CONCLUSION

Based on the analysis and design that has been carried out in making an Android-based cinema application in the city of Medan, it can be concluded that the application designed can allow users to order tickets online without going through the queuing process when buying tickets at the counter. This can provide comfort and a better audience experience. The research was carried out using the waterfall method which consists of several stages. This research stage consists of needs analysis, system design,

application implementation, testing, and maintenance and has been completed effectively. In the design or system design process using use case diagrams and activity diagrams. The React Native framework has been used to create a cinema application that includes a number of important functions, such as a login page, movie listings, and a ticket booking site. Functional, integration, and performance testing have all been conducted thoroughly using black box testing methodology. Test results show that the application functions as intended and meets the requirements. Using the React Native framework, this research succeeded in designing and creating an Android-based cinema application for the city of Medan. This program can make people buy movie tickets online more effectively. Additionally, this research advances related research in the area as well as the creation of React Native-based applications. It is anticipated that this research will serve as a starting point for future work in improving user experiences with cinema applications.

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