



## Extreme programming method in the design of e-ticket information system for roro bengkalis port web-based

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### ABSTRACT

Roro Bengkalis Port is one of the access routes to and from the island of Bengkalis Regency. Roro Bengkalis Harbor has 2 piers, namely from Bengkalis Island - Sei. Selari and Sei wharf. Selari – Bengkalis Island. The current condition, starting from management, the process of buying tickets and queuing for vehicles, is still manual. This causes a lot of fraud, namely the existence of KKN actions carried out by irresponsible elements, there are brokers buying tickets, reports on people's names and vehicle registration certificates, both motorbikes, cars, rickshaws and so on, are not clearly recorded, bookkeeping reports are not clear. , an unclear crossing schedule and many breaking into the roro ship without joining the queue. Based on these problems the author will design a web-based e-ticket information system. The method used in designing the information system is to use the extreme programming method. The Extreme Programming method is a method with an approach model based on the needs of system users. The approach technique using the XP method in the information system design stage provides acceleration of planning for any changes in function requirements desired by users with no restrictions (Pratama & Saleh, 2017). The author also uses the Unified Modeling Language (UML). The Unified Modeling Language method is one of the standard languages used to define requirements, make analysis and design, and describe architecture in object-oriented programming (Apriliyanti & Wardhana, 2021). And the Uml method aims to match the desired system to be available properly so that problems in the existing system are resolved (Setiaji & Sastra, 2021, p. 1). It is hoped that this e-ticket information system can improve the quality of services provided by the government to the general public easily and quickly.

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### 1. INTRODUCTION

In the current digital era, information and communication technology is developing very rapidly in various aspects of human life (Rahmayani, 2015). Starting from the development of information technology, information systems and the internet. The

development of the internet has a positive impact globally. Internet users who are real time and online make users able to freely access anywhere and anytime (Sudharto, n.d.). With this convenience, various aspects can be utilized, starting from the education sector, the government sector and the business sector. In the government sector, the internet can be used to process services to the community by creating a product that can be used by the community easily and quickly. One form of this service is to build an e-ticket information system for the Bengkalis Roro crossing.

The Roro Bengkalis crossing is one of the public accesses to and from Bengkalis Regency. The Bengkalis Roro Crossing Pier has 2 piers, namely from Bengkalis-Sei. Selari and from Sei. Bengkalis.

The current condition of the Roro crossing is still manual, when people want to cross the roro ticket purchases are made at the counters around the port. This causes a lot of fraud, namely the existence of KKN actions carried out by irresponsible elements, there are brokers buying tickets, reports on people's names and vehicle registration certificates, both motorbikes, cars, rickshaws and so on, are not clearly recorded, bookkeeping reports are not clear, an unclear crossing schedule and many breaking into the roro ship without joining the queue. As a result, there are often riots at certain times because the community feels it is unfair with certain parties because people have to queue for 2-8 hours.

Based on the problems above, the author will design an e-ticket information system for roro crossings at the port of Bengkalis. With an information system, service, productivity, efficiency will be further improved, facilitating management in planning and facilitating management of company transactions (Warjiyono et al., 2020). The e-ticket information system is a web-based electronic ticket purchase that can be accessed by the public easily and quickly by using the internet network. E-ticketing is a way to document the online sales process which can make it easier for potential buyers to order tickets via a web application (Huda & Fernando, n.d.). The method in this study is to use the Extreme Programming method which is a software development approach used to enhance and simplify a project to make it more flexible (Susianto, n.d.). by applying the Extreme Programming method the author can design an information system according to the needs of the community and the information system is easy to use, ranging from teenagers to the elderly. The basic values that become the spirit of XP at every stage of the software development process (Jogianto, 2008).

This e-ticket information system is expected to be able to improve service to the community by knowing the number of vehicles waiting in line, seeing the distribution schedule and buying tickets online and it is hoped that it will certainly reduce fraudulent acts such as KKN carried out by irresponsible elements.

## 2. RESEARCH METHOD

The method in designing this system uses the Extreme Programming method. The Extreme Programming (XP) method is a dominant software engineering process with an object-oriented approach and team goals formed on a small to medium scale and this method is also suitable if the team is faced with unclear requirements or changes in requirements occur very quickly. (Supriyatna, 2018). For modeling the information system used is the Unified Modeling Language (UML) model. The UML method is a system design model that has the advantage of making it easier for system developers to design systems to be made because of their object-oriented nature (Prihandoyo, 2018). The Extreme Programming method is as follows :

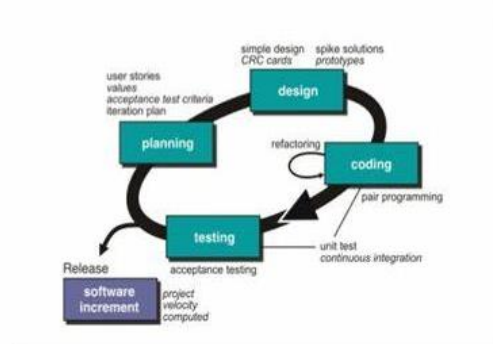


Figure 1. Extreme Programming Scheme

The stages in building a web-based E-ticket information system using Extreme Programming are as follows:

1. Planning (Planning)

At this stage the author collects data by conducting observations and initial interviews to determine the needs of users of the system. In this stage it begins with identifying the problems that are happening, then analyzing the user's needs for the system. This stage is the most important stage to determine what kind of design is needed by system users.

2. Design (Design)

At this stage the authors designed a design model based on an analysis of the needs of system users. In system modeling the writer uses the Unified Modeling Language (UML) method which consists of various components, namely Use-Case Diagrams, Activity Diagrams, Component Diagrams and Deployment Diagrams. Whereas for database modeling using Entity Relationship Diagram (ERD) and Logical Record Structure (LRS).

3. Coding (Coding)

This stage is a step to implement the results of the system model design that the author has designed. In developing the e-ticket information system, the author uses the PHP programming language. the database implementation part, the Database Management System used is MySQL.

4. Testing (Testing)

This stage is the stage for testing the information system that has been built. The method used in testing the information system is Black-Box Testing by testing the input and output generated by the system. The focus of the testing phase is the features that are designed to be used optimally by system users.

5. Software Increment

This stage is the stage of system development carried out in stages towards deficiencies contained in the information system that has been designed so that the information system that is implemented into the community can be used optimally.

### 3. RESULTS AND DISCUSSIONS

In building an information system will not be separated from the stages in building an information system (Ramdani et al., 2023). Research conducted to build a web-based e-ticket information system using Intel ® Core ™ i3-2370 computer hardware specifications, 2.0 GB RAM. The operating system uses Windows 7 32-bit. The design design in this study are as follows :

- a. Usecase Diagram

Use case diagram is a model to describe user activity in the information system that will be designed (Muhamad Tabrani, 2021).

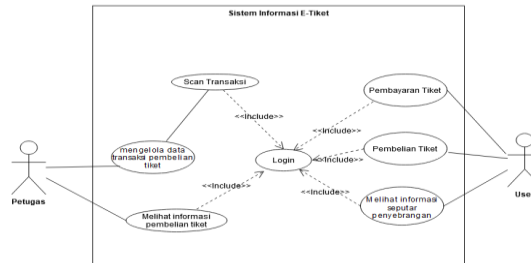


Figure 1. Usecase Diagram

b. Activity Diagram

Activity diagram is a form of workflow that contains the work stages of the system that will run. Activity diagrams are used to make it easier to design a database on the information system that will be built.

1. Activity Diagram Registration

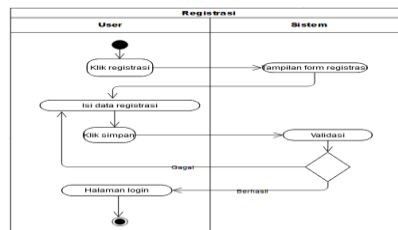


Figure 3. Activity diagram menu registration

2. Activity Diagram Login

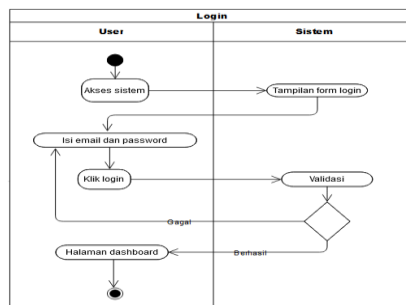


Figure 4. Activity Diagram Login User

3. Activity Diagram Ticket Purchase

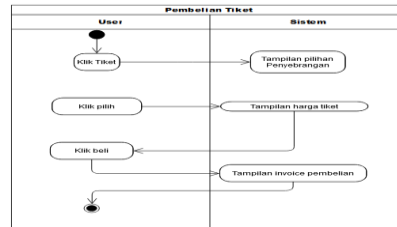


Figure 5. Activity Diagram Ticket Purchase

4. Activity Diagram Payment

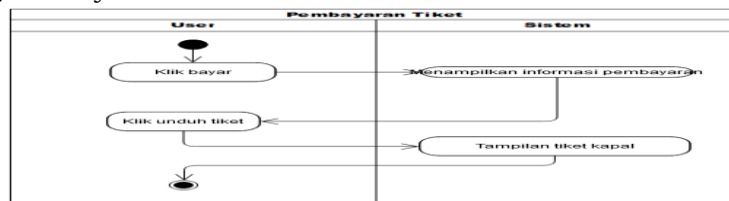


Figure 6. Activity diagram payment Ticket

5. Activity Diagram Home

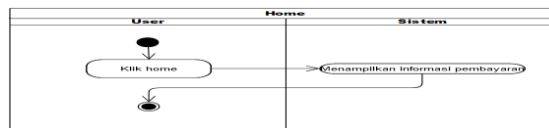


Figure 7. Activity Diagram Home

6. Activity Diagram Instruction

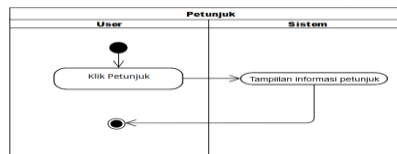


Figure 8. Activity Diagram Instruction

2. Activity Diagram Officer

a. Activity Diagram Login

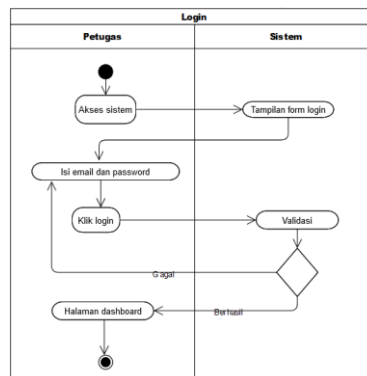


Figure 9. Activity Diagram Login officer

b. Activity Diagram Dashboard

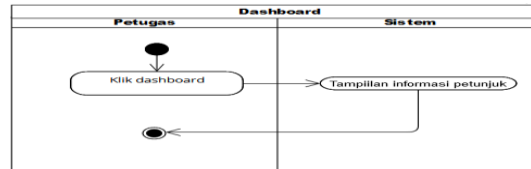


Figure 10. Activity Diagram Dashboard

c. Activity Diagram Ticket Status

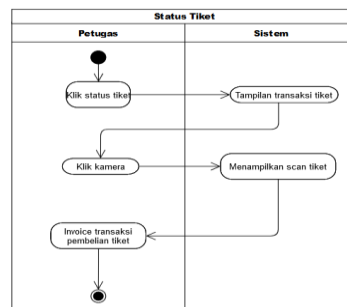


Figure 11. Activity Diagram Ticket Status

d. Activity Diagram Purchasing data

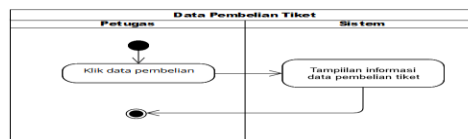


Figure 12. Activity Diagram Purchasing data

The e-ticket information system design is as follows :

A. User Page

To facilitate the creation of an information system the author will design an information system that suits the needs of the user

1. Registration page

This page is used to fill in the new account registration form for users who don't have an E-Ticket account.



Figure 13. Registration Page

2. Login page

The login page is used by the user / users to enter the application after successfully registering

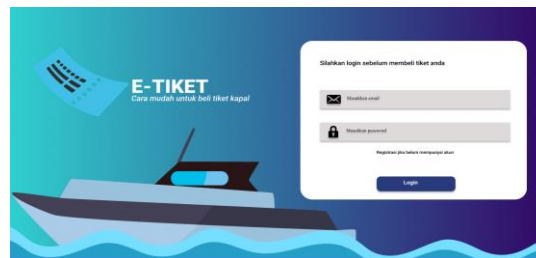


Figure 14. Login Page

### 3. Crossing options page

This page is used by the user / users to choose the crossing direction



Figure 15. Crossing Page

### 4. Ticket purchase page

The ticket purchase page is used by the user / users to choose the type of transportation to purchase the ticket price



Figure 16. Ticket purchase page

### 5. Invoice page

The invoice page is used by the user / users to view invoice information for ticket purchases

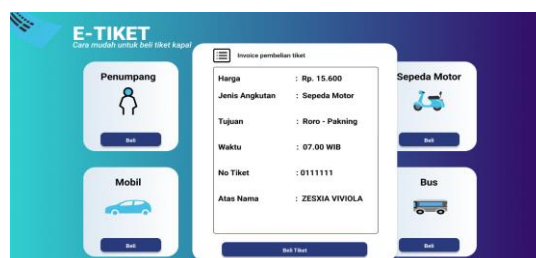


Figure 17. Invoice page

### 6. Payment page

The payment page is used for users / users to make ticket payment transactions through the payment provided

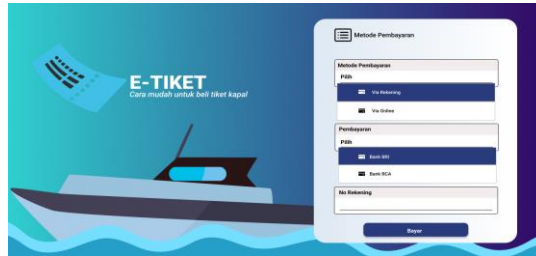


Figure 18. Payment page

7. Ticket download page

The ticket download page is used to download ship tickets after successful ticket payment transactions

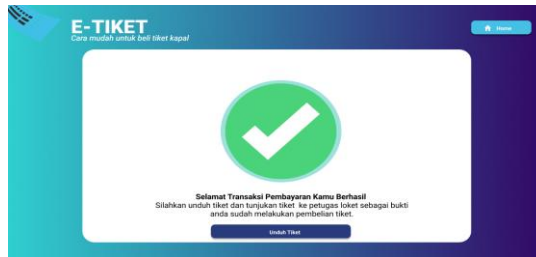


Figure 18. Ticket Download page

8. Ticket view

The following is a display of downloaded ship tickets



Figure 19. Ticket view

9. Home page

The home page contains information about ports and ship crossings



Figure 20. Home

10. Instruction page

The instruction page contains information on instructions for users / users in using the E-Ticket application

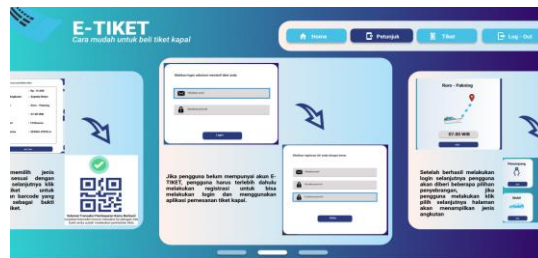


Figure 21. Instruction page

#### 11. Log-out page

The logout page is used to exit the E-Ticket application



Figure 22. Log-out page

## 7. CONCLUSION

Based on the results of research that has been carried out, the results of this e-ticket information system design can make it easy for the public to get maximum service related to crossing costs, information on crossing schedules and the state of queues for both two-wheeled and four-wheeled vehicles that are queuing around the pier. In this study the Extreme Programming (XP) method can be applied in designing or developing other information systems. In order for this information system to work properly, it is necessary to implement information systems periodically, analyze system deficiencies and evaluate system performance and the need for socialization provided by related parties to provide education to the public in using the e-ticket information system. Further research is expected that this information system can be built using the Java programming language so that it can be implemented directly in the system that has been designed.

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