

DEVELOPMENT OF ONE PAYMENT SYSTEM TO PAYMENT TOUR TICKETS IN BELITUNG

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ABSTRACT

The ticket is something very important in terms of tourism, such as airfare, tickets, and concert tickets. Ticket booking tours and rides can be done using a system that uses or use the QR Code feature. As well as reduce fraud in terms of ticketing as ticket counterfeiting Booking tickets through the system then can save time visitors no longer have to do the ticket queue at counter-counter in each tourist attractions. Alpha testing and testing the ability of reading the QR Code has been done to find out if an error occurs in the form of QR Code affects the ability of reading QR Code itself. The result of the alpha testing showed that ticket verification system that has been built is free from errors and run in accordance with their functions.

Keywords: QR Code, ticketing, one payment, features, ticket reservation, ticket forgery.

1. INTRODUCTION

Tours according to KBBI (great dictionary of Indonesian Language) is a kegiatan travelling together with the intention of having fun, add to knowledge, and others. Besides, it can also be interpreted as a picnic or picnic. Tourism is an activity that is conducted with the purpose of journey holiday or recreation. The sense of the sights is a place used for conducting tours. Area attractions include natural attractions and buildings. Natural attractions include the beaches, the mountains, and others, while the tourist spots of the building can be a historical heritage, museums, and others. While the Tourists are the ones who do tour activities [1].

As it is known to get the entrance attractions visitors normally buy the entrance ticket. The ticket, according to the great dictionary of Indonesian Language, commonly referred to by tickets. Tickets or ticket it can be described as a small letter/a piece of paper as a sign it has paid the fee and so on.

Based on data from the Department of tourism (Dispar) Belitung district in the year 2017 as much recorded 380.941 visits. While in the year 2016 amount to 292.885, the number of tourist visits in the year 2016 year 2017 until the number of tourists has increased by as much as 88.056 tourists.

In addition, Belitung district has several tourist attractions which use the system ticketing entry to

gain access to the tourist attractions. The system is still in the form of ticket sales on using tickets/paper on RIP and then given to the visitor attractions such as the entrance. Attractions in Belitung district there has not been that applying online ticketing system. All of the attractions in Belitung District still either using a system of tickets, which often led to long queues. The use of tickets with a ticket system will use a lot of paper wasted, with the abundance of paper being wasted so many trees will be harvested for the manufacture of paper tickets/ticket.

Ticket system with simplicity like this, then a lot of abused by persons certain persons to gain access to enter into a certain event or attraction free of charge. There are some that go with using a ticket already in poting/RIP and pretend to have been entered before, there's even a person to ticket forgery.

In addition, if you want to enjoy a facility or rides on a tourist attraction in general visitors should buy the entrance ticket to get access in the vehicle/facilities. Therefore, it will cause a large number of wasted time waiting in line for tickets only access a vehicle/facilities.

One of the technologies that exist namely one payment or more commonly called payout one line, which facilitates human in terms of payment transactions using the internet service.

Based on these issues, then needed a medium that can provide information to find out how a QR Code can serve as an entrance ticket. Therefore the author picked it up become a research topic entitled "development of SYSTEM ONE PAYMENT for TICKET PAYMENTS in BELITUNG TOUR".

1.1 Goal and Purpose

The purpose of this research is to build applications to facilitate the community in making a purchase entrance fees Belitung Regency.

While the goal will be achieved in this research are:

1. Minimize the occurrence of fraud or forgery of tickets that will be detrimental to the Manager.
2. Streamline the visitor time wasted during the wait for tickets to gain access to any facilities/vehicle.

1.2 Software Development Method

Methods of development of the software used in this research is to use the method waterfall as indicated in Figure 1.1 Waterfall Models follows:

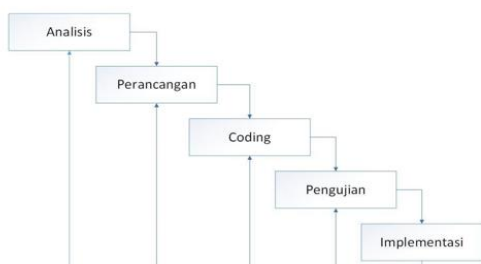


Figure 1 Waterfall Model

2. CONTENT OF RESEARCH

2.1 The Cornerstone of The Theory

The cornerstone of the theory used in this study are as follows.

2.1.1 Ticket

A ticket is a medium that is used to get the access rights of a person who used to get inside a place/attractions, or special facilities. Current ticket media in use by tour manager as a sign that someone has to make a payment and have gained entrance to the tour. On the use of transportation such as trains also use the ticket for travel to the destination area.



Figure 2 Example of tourist Passes

2.1.2 Website

A website is a collection of information/group page that is commonly accessed by internet. Everyone in various places, and all the time can use it as long as it is connected online on the internet network. Technically, the website is a collection of page, incorporated into a particular domain or subdomain. Website-the website that there is in the World Wide Web (WWW) Internet [2].

2.1.3 QR Code

QR Code is a display in the form of a collection of pixels that make up an information that has been previously are initialized.



Figure 3 QR Code for the URL of the page Users Facebook.

2.2 System Analysis

System analysis is defined as the decomposition of a system intact to be built into the component parts with a view to identifying and evaluating the problems occurred.

2.2.1 Analysis Of The Problem

There are a few problems that need to happen so that the building of this system are as follows:

1. Often rigged in terms of ticketing as ticket counterfeiting that can harm the tourist Manager.
2. The large number of visitor's time is wasted during the wait for tickets to gain access to any facilities/vehicle.

2.2.2 Analysis of System Architecture

Analysis of system architecture to serve as a medium for identifying the architecture to be built on the application in flatform website. Analysis of system architecture discusses technology and the description of the tech grooves that run on the system are made. This analysis can also be used to look at the infrastructure that supports the system to be built. The following is a system architecture on the application.

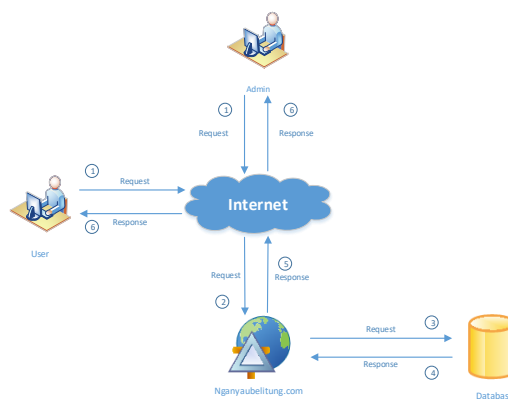


Figure 4 analysis of system architecture

The following is a description of the architecture of the system on the website.

1. User: user doing the request to the internet to access the website nganyaubelitung.com, the user can use the computer or smartphone.
Admin: admin do the request to the internet to access the site nganyaubelitung.com, the admin using the computer to perform the action.
2. Nganyaubelitung.com require the internet to access it.
3. nganyaubelitung.com Site do request to the database to access data on that site.
4. Database giving the response data to the site nganyaubelitung.com.
5. The site nganyaubelitung.com gives a response to the internet to be accessed.
6. User: Internet gives a response to the user regarding the information on the site nganyaubelitung.com.
Admin: the Internet provides response to admin about the information on the site nganyaubelitung.com..

2.2.3 Needs Analysis Data

The application to be built is an application that will do the process of decoding and encoding of tickets into QR Code. In the encoding process, changing the data of the tourist ticket number into a QR Code.

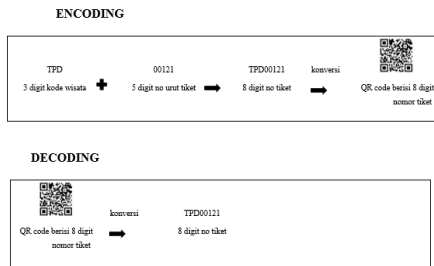


Figure 5 Data Stream Tour Tickets on the process of Encoding and Decoding.

2.2.4 Calculation analysis of QR Code

Step-by-step calculation of QR Code include the determination of the capacity of the data to be encoded and encode the data. These steps are described as follows:

1. Determine the type of Data

The data type of the data will be read first. Each type of data will be stored into the binary numeral 4 bit representation and has a specific character length of storage. The data is encoded "TPD00121" where the encoded data is alphanumeric data, can be seen in the table below.

Table 1 description of Indicator Mode.

No.	Type Data	Representation The 4 Data bits	length Storage
1	Numerik	0001	10 bit
2	Alfanumerik	0010	9 bit
3	Biner (8 bit)	0100	8 bit
4	Kanji	1000	8 bit

2. An indicator of the number of characters

The indicator on the number of characters represented in binary is 000001000 so the binary number that already formed is 0010 000001000.

Table 2 number of bits per Length Field.

Encoding	Ver. 1-9	10-26	27-40
Numerik	10	12	14
Alfanumerik	9	11	13
Byte	8	16	16
Kanji	8	10	12

3. Encoding the Data in a binary Representation

Alphanumeric data type in the data encoding starts from the number that is 0, 1, 2, 3, 4, 5, 6, ..., 9, a, b, ..., etc. 0 = 0, 1 = 1, 2 = 2, ..., a = 10, b = 11, ..., etc. Then the value of $V = 45 \times C1 + C2$. encoded in binary representation with a length of 11 bits.

Table 3 Encoding Data in a binary Representation.

"TP"	"D0"	"01"	"21"
$45 * 29 + 24$	$45 * 13 + 0$	$45 * 0 + 1$	$45 * 2 + 1$
1284	595	1	91
10100000100	01001010011	00000000001	00001011011

Next do a terminator with an added binary representation results to 0000

```
0010 10100000 10001001 01001100 00000000
10000101 1011
```

4. Fulfillment of the number of bits and the number of Symbols

```
00100000 10100000 10001001 01001100 00000000
10000101 10110000 00000
```

The result of the representation of the ticket number 0010 10.1 million 10001001 01001100 00000000 10000101 1011 then grouped every 8 bits. Sehigga results of the representation is as follows:

```
00100000 10100000 10001001 01001100 00000000
10000101 10110000 00000000
```

The addition of zero padding into the binary data as the number of symbols which become input Reed-Solomon have to keep IE 8 bits is called the codewords.

00100000	10100000	10001001	01001100	00000000
1	2	3	4	5
10000101	10110000	00000000		
6	7	8		

After the calculation is performed, the number of codewords contained in numbered 8 codewords with number of bits as much as 64 bit with it to do the addition byte "11101100". So being 9 codewords.

00100000	10100000	10001001	01001100	00000000
1	2	3	4	5
10000101	10110000	00000000	11101100	
6	7	8	9	

Next do converting it back into a decimal, and decimal **32 160 137 76 0 133 176 0 236** series didapatlah. The decimal sequence that will be input on the Reed-Solomon coding process.

2.3 NON-FUNCTIONAL NEEDS ANALYSIS

Non-functional requirements analysis is an analysis which is used to pengspesifikasian the needs of the system. Analysis of non-functional requirements comprises of hardware requirements, software requirements, as well as the analysis of the user.

2.3.1 Needs Analysis Hardware

The device needs analysis carried out with the purpose to find out the needs of hardware that will be built.

Hardware components used to create software using a laptop with the following specs.

1. Processor Intel Core i5-6200U 2,3-2,8 GHz.
2. VGA Nvidia Geforce 930MX.
3. RAM DDR4 4GB.
4. Harddisk 1TB.

The hardware requirements for the Decoder:

1. Cell phone or tablet.
2. have a camera.
3. Have the wireless connectivity (Wi-Fi).

While the software needs analysis was conducted to find out the kebutuhan software that is required in the process of application development.

Software requirements:

Software	Specifications
Operating System	Windows Vista atau lebih baru
Web Server	Wamp versi 2
Code Editor	Notepad++

2.3.2 Analysis Device Needs Thought

Needs analysis device thought to know the specifications of the user that is associated with the software.

Table 4 Device Needs thought.

System Users	Access Rights	Must-have skills	This type of Training to be provided
Admin	Manage data entry ticket	Can use the Internet and understand about administrasi	About how to use the CMS website
Petugas Tiket	Verify tickets	Able to use computer devices.	Regarding the use of decoder device computer
Pengunjung	Booking tickets	Can use Internet	-

2.4 Functional needs analysis

A functional needs analysis is a process planning representations, into the unified whole using UML (Unified Modeling Language).

2.4.1 Use Case Diagram

Use Case Diagram is a process of functional depictions contained within the system. Now here is a Use Case Diagram in application nganyaubelitung.com is.

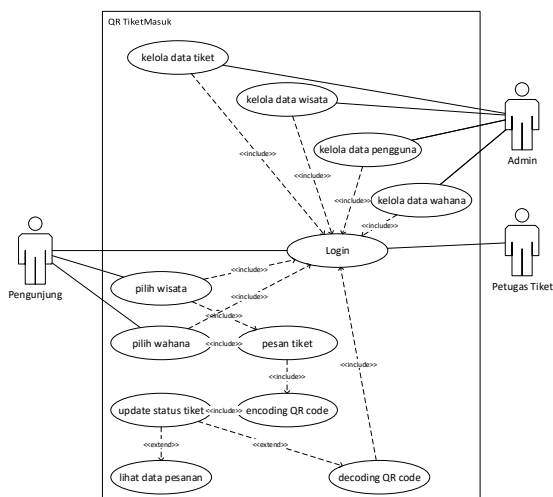


Figure 1 Use Case Diagram

2.4.2 Class Diagram

Class Diagram is an overview of the system and not mewaklili a specific process. The following is a

description of the class diagram in application nganyaubelitung.com.

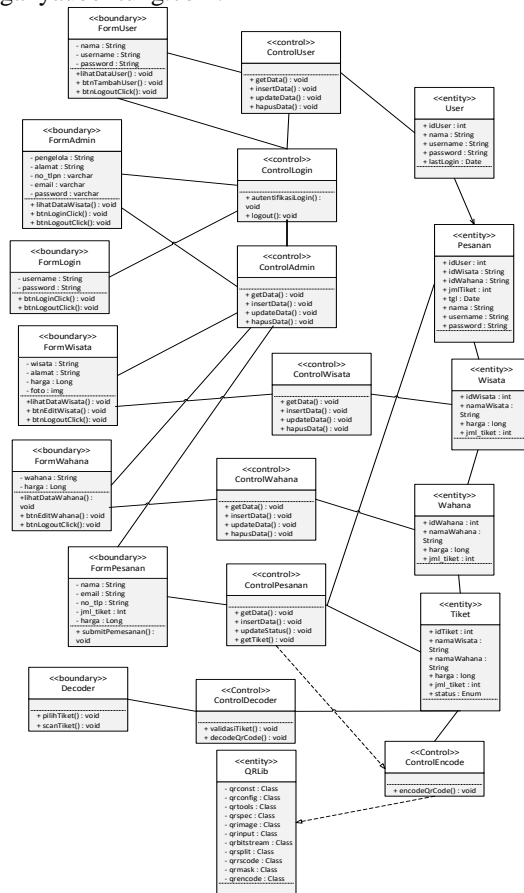


Figure 2 Class Diagram

2.5 Interface Implementation

Interface implementation is done on applications that have been created that have previously been designed of the design have been made sebelumnya.

2.5.1 The Login User Interface Implementation

Implementation of the interface of the login of the user as follows:

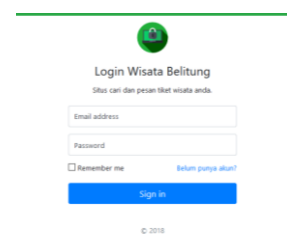


Figure 8 the User Login Interface

2.5.2 Main Page The Visitor Interface Implementation

Implementation of the interface of home visitors is as follows:

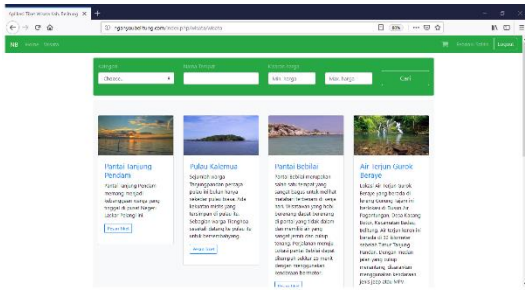


Figure 9 Interface main page Visitors

2.5.3 Ticket Ordering Page Interface Implementation

Implementation of interface of ticket reservation page is as follows:

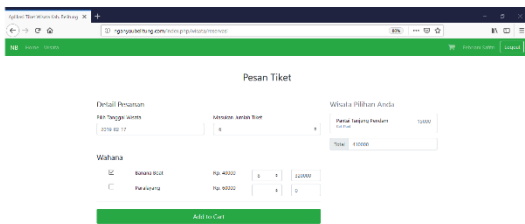


Figure 10 Ticket Booking Interface

2.5.4 Cart Page Interface Implementation

Implementation of the interface of the Cart page is as follows:

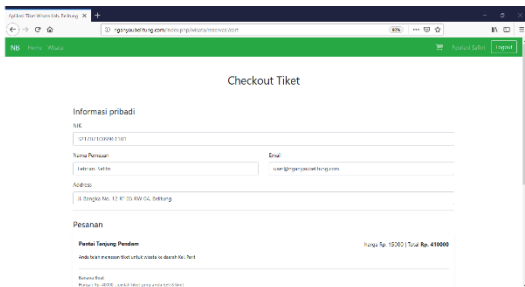


Figure 11 the interface Page Cart

2.5.5 See details Page Interface implementation of an order with a Status of Pending

Implementation of interface see details page with the status of pending orders is as follows:

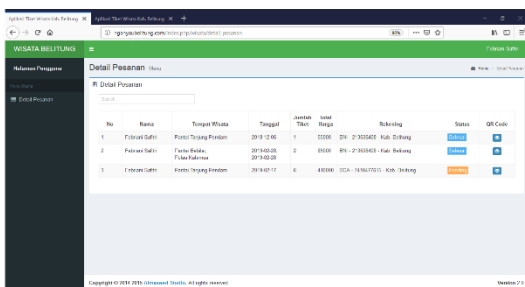


Figure 12 Interface see details Page with the Status of Pending Orders

2.5.6 See details Page Interface implementation Orders with Status finished (full price)

Implementation of the interface of page see details of orders with the status completed (Paid) are as follows:

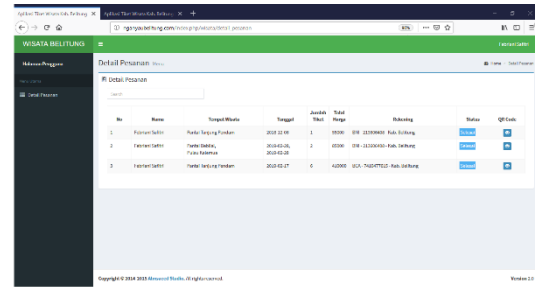


Figure 13 the interface Page see details of orders with Status finished (full price)

2.5.7 Ticket Page Interface implementations in the form of QR Code

Implementation of the interface of the ticket page in the form of QR Code is as follows:



Figure 14 Ticket QR Code Page Interface

2.5.8 Implementation of Interface with 1 Order Manager Page

Implementation of the interface of the provider of the page with 1 order is as follows:

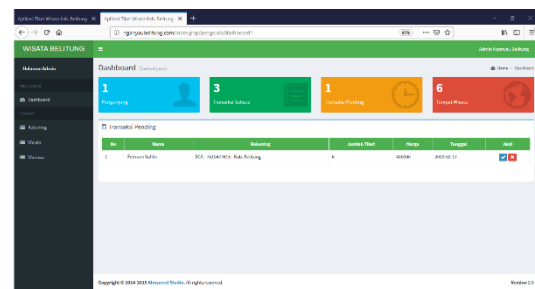


Figure 15 Page Manager Interface with 1 Order

2.5.9 Implementation Of Interface Data Page Tour

Implementation of the interface of the data page of the tour is as follows:

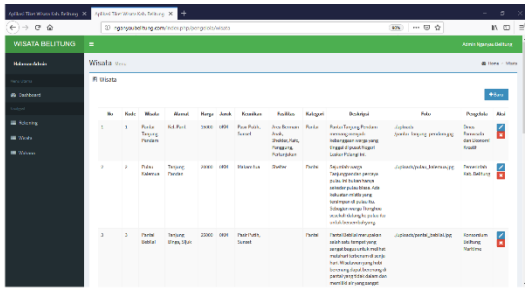


Figure 16 Data Pages Interface Tour

2.6 Testing The System

System testing is a process to find out an application that has been developed can be run. As for in testing system using test two techniques i.e. functional testing and alpha testing.

2.6.1 functional testing

Functional testing is the process to know the functionality that has been designed to run or not.

Table 5 Details the testing Plan

No	Functional	Testing Details	Testing Method
1	Login	Perform the login page	Black Box
		Authentication credentials, performing admin page, running session	
		Delete session login	
2	Manage Ticket Data	Perform ticket data	Black Box
		Save the new ticket data into database	
		Update ticket data into database	
3	Manage User Data	Perform user data	Black Box
		Save the new user data into the database	
		Delete user data from the database	
4	See Order Data	Perform data see order page	Black Box
		Update payment status into the database	
5	Update Ticket Status	Change ticket status	Black Box
		Change ticket status in accordance with the verification status tickets	
6	Decoding QR Code	Perform scanner	Black Box
		Decode QR Code	
		Verify the results of decoding the QR Code with the appropriate ticket data in database	
7	Encoding QR Code	Perform the payments page	Black Box
		Save the ticket data is booked into the database.	
		Perform a ticket in the form of QR Code.	
8	Ticket Booking	Perform ticket list.	Black Box
		Perform the ordering page	
		Save booking data	

		Perform the booking details page	
9	Select A Tour	Perform page select tours.	Black Box
		Save order data	
10	Select A Vehicle	Perform page select rides.	Black Box
		Save order data	
11	Manage Data Tour	Perform data tour	Black Box
		Save data into new database tour	
		Tour data update	
12	Manage Data Probe	Delete data in the database of tourism	Black Box
		Perform data probe	
		Save the new vehicle data into the database	
		Probe into the data update database	
		Delete data from a vehicle in the database	

A. cases and the results of the Alpha testing

Following is the result from the alpha testing.

Table 6 test results the process of booking tickets

Cases and test results (Right Data)			
Data Input	The Expected	The Observations	Conclusion
Input the web address for the page visitors	Perform a list of available tours	The system displays the visitor's page and list of attractions	[√] Accepted [√] Rejected
Choose a tour	Perform the appropriate ticket ordering	Ticket ordering page to perform in accordance with the selected tourist attractions	[√] Accepted [√] Rejected
Cases and test results (Wrong Data)			
Data Input	The Expected	The Observations	Conclusion
Entering invalid data	Do not Save the data of the reservation into the database	Performpesan system error "Invalid Data"	[√] Accepted [√] Rejected
Press the "Submit Order" without the input data	Do not Save the data of the reservation into the database	System error Performpesan "incomplete Data"	[√] Accepted [√] Rejected

B. the test Conclusions

Based on the results of the testing that has been done, it can be inferred that functionally the system runs as expected.

3. CLOSING

3.1 Conclusion

Based on the results of the analysis, design, implementation and testing phase then obtained the conclusion with suggestions for system one payment

payment tickets in Belitung, following the conclusion of the research.

1. Successfully built a system to minimize the occurrence of counterfeit tickets by using QR Code technology.
2. Can facilitate people who want to visit the sights with the use of this system will be more efficient in the time of booking the ticket, due to no need for queuing at the ticket counter of the tour as well as the spacecraft.

3.2 Advice

The writer realized on the development of software that has been built is far from perfect and not optimal said in the application. Therefore there are some suggestions that can be made into consideration in the development of writing. As for sran of this research are:

1. Use High levels of error correction which can restore the codewords to 30% that occurs due to damage to the environment that could have happened to the ticket a QR Code.
2. For the future required a system or device to the ticket QR Code to make it easier for travelers in saving the ticket, such as wristbands that have been printed QR Code for the next scan when wanting to gain access to a tour or thrill rides.

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