Universiti Teknologi MARA

The Development of Aliana Kembara Agency Reservation System

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Thesis submitted in fulfilment of the requirements for Bachelor of Information Technology (Hons) Information Systems Engineering Faculty of Computer and Mathematical Sciences

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SUPERVISOR'S APPROVAL

THE DEVELOPMENT OF ALIANA KEMBARA AGENCY RESERVATION SYSTEM

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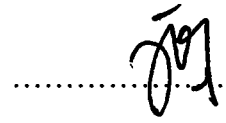

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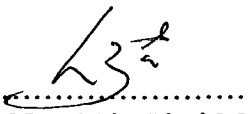
Miss Anis Afiqah binti Sharip
Project Supervisor

JANURARY 3, 2018

STUDENT'S DECLARATION

I certify that this report and the project to which it refers is the product of my own work and that any idea or quotation from the work of other people, published or otherwise are fully acknowledged in accordance with the standard referring practices of the discipline.



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ABSTRACT

The growth of tourism industry has been increase as the technology are now beyond the line. Web-based for travel agency has been popular to done some business. Aliana Kembara Resource has been expended their business. By using a reliable management system will help them to improve their service as well as making sure the customer in a comfort zone. Currently Aliana Kembara Agency used Facebook as their main platform for business. However, several problems have been identified such as the file-base which cause the data redundancy which cause inefficient in data record. Besides that, it also consume time consuming in managing the data. The customer also hard to find the latest packages and promotion offered by the agency via their website. This system will allow customer to easily make reservation and find the latest packages offered. Besides that, the staffs also benefited in managing business smoothly. For the chosen methodology is the waterfall which only three phase are implemented in this project. It include gather requirement and analysis, system design and implementation. This particular system allow customer to search, view and make reservation for their vacation based on the offered travel packages. Minimum of members in one reservation is four people and the customer are allow to manage the members' details. Besides that, customer also can update their personal details. For the staff task available are managing the packages and reservation details. Besides that, an email will sent to the customer once they already confirm the reservation, customers need to pay deposit or full within 48 hours hours of reservation.

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LIST OF ABBREVIATIONS

AKA	Aliana Kembara Agency
AKARS	Aliana Kembara Agency Reservation System
EIS	Executive Information System
MIS	Management Information System
RAD	Rapid Application Development
SDLC	System Development Life Cycle
SMS	Short Message Service
TPS	Transcation Processing System
SRS	Software Requirements Specification
SDD	Software Design Documentation
DCD	Detail Class Diagram
MLSD	Multilayer Sequence Diagram
UCD	Use Case Description

CHAPTER 1

INTRODUCTION

This chapter provides the background, problem statement that lead to propose the system. It also include the aim, objective, project statements and anticipated outcome of the propose system.

1.1 Background of Study

Every day, millions of people travel around the globe for business, vacations, sightseeing, or other reasons. Traveler spent money on tickets, accommodations, food, entertainment and transportation. Tourism is the idea of people traveling to destinations away from their home for business or pleasure, is a growing field with many opportunities (Hendricks, n. d). Today tourism has grown in both economic and social importance. The fastest growing economic sector of most industrialised countries over the past several years has been in the area of services. One of the largest segments of the service industry, although largely unrecognised as an entity in some of these countries, is travel and tourism (Theobald, 2005). For tourism professionals, these opportunities include work in the facilities where tourists stay as well as employment in the activities tourists undertake during these trips (Hendricks, n. d). People embark on tourism for all kinds of reasons such as to relax, to visit their family, to take in new cultures and as part of business and professional outings (Hendricks, n. d). As an industry, tourism play important role to development, growth, and economic.

Tourism management is all activities related to the tourism and hospitality industries (Hendricks, n. d). In the travel and tourism industry, technology has gone miles. Online Travel Businesses today have no limitations due to distance. This means that not only they can collect or share content with

international. AKA recently receive a lot of demand for vacation reservation. Usually AKAs' client will visit their Facebook page to see the latest promotion. If they would like to make any reservation, the client will contact in charge person whether through WhatsApp or calls.

Figure 1.2 Aliana Kembara Official Facebook Page

Since AKA do not have physical store for customer to walk-in, after the client give confirmation to proceed with the reservation, the staff will fill-in a form to store the customer details. Currently AKA use basic application such as Microsoft Word and Microsoft Excel to process the data. After that, the staff will print out and store the copy into a file-base system. This is time consuming, data redundancy and costly to keep all the information efficiently. The staff has to go through all the paper-based document one by one if he/she is looking for customer personal information or the customer reservation history with AKA.

1.2 Problem Statement

In the old traditional file based system, system administration becomes more difficult as the number of files increases. Lack of resources and budget, not enough time to truly test recovery processes and technologies, and limited

people based in any corner of the world easily, but also close in on overcoming obstacles of cultural and geographical boundaries.

Many Malaysia prefer to travel abroad for business and leisure as the Ringgit currency is getting stable. However, it also attract outside tourist to visit Malaysia. According to Malaysia Tourism Statistics, the year 2017 is forecasted to be a more promising year for the travel & tourism sector as the growth picks up across the global economy, led by increase in employment and stronger consumer spending. The top 10 tourist generating markets to Malaysia in 2016 were Singapore (6,596,452), Indonesia (1,378,699), China (992,463), Thailand (864,453), Brunei (637,369), India (359,853), South Korea (228,023), the Philippines (220,163), the United Kingdom (206,313) and Japan (198,693).

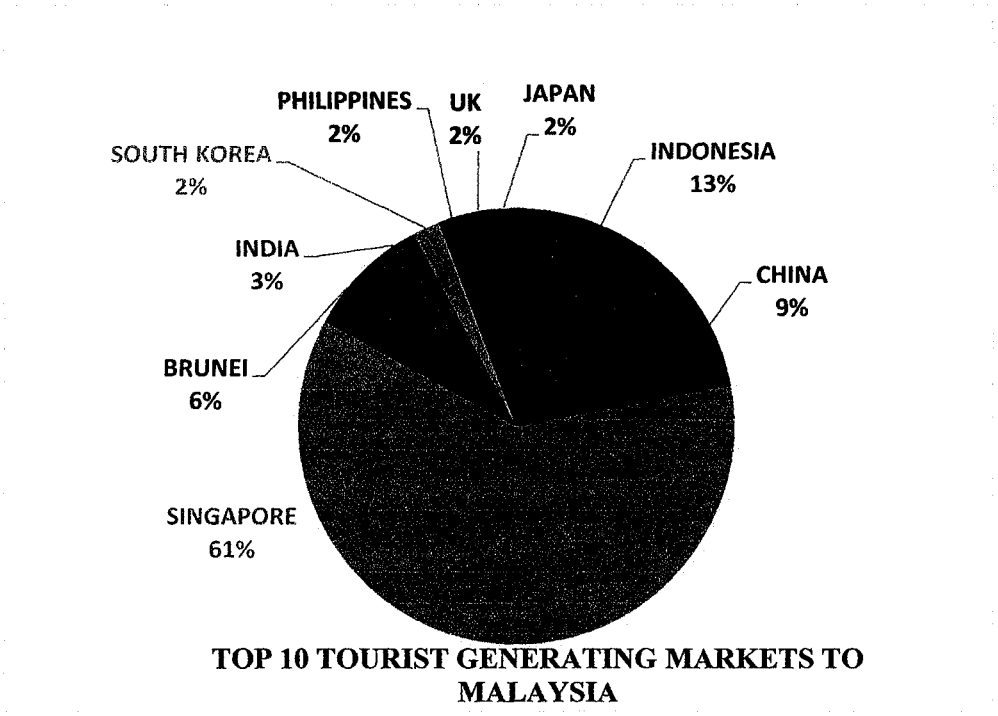


Figure 1.1 Top 10 Tourist Generating Markets to Malaysia

(*Source*: Malaysia Tourism, 2017)

Aliana Kembara Agency (AKA) found in 2010 and based in Kuala Lumpur, do not have a physical store and has operate from house since all the staffs are working fulltime as government staff (Abu, K. personal communication, Mar 31, 2017). As so far, AKR not only offer domestic tourism but also

skill sets have all contributed to a less than optimal situation (Bertrand, 2016). Based on the Aliana Kembara Agency (AKA) current business processes, there are several problem has been identified. First is the file-based system which can cause data redundancy. Data Redundancy is inefficient and wasteful for a few reasons and database designer try to dispose it using a method called standardization (Alakari, 2014). When a customer register to the company, the staff will fill in a form to record all the personal details. After that, the staff will print out the information to store in the file for the record. If the customer has recently change his address, the staff might not know the changes but with the system the customer can update itself.

Aside from that, file based system cause time consuming for managing the information. The staff need to go through the file to look for the desired records which will take longer time. It is also not efficient if the staff make mistake by wrongly arrange the record according to the category. For example, the customer file record are arranged by the reservation number. The staff might misplace the records and when he need to find the records, it will take a longer time.

Since AKA do not have physical store and having difficulty to manage reservation since they only use Whataspp application and Facebook to deal with customer. The current main platform for AKA to promote their business is Facebook. The difficulty is when the customer want to know the latest travel package promotion, they have to scroll down one by one included the unrelated post on the Facebook. Some customer now tend to just disregard Internet advertising, making legitimate businesses lose valuable traffic and of course revenues in the process (Yurovskiy, n,d). By using online management system, the advantages is that regardless of time and location, people can connect with AKA easily to see the latest promotion offered and for the staffs, they can manage the data more efficient to run the business.

1.3 Project Aim

The aim of this project is to develop Aliana Kembara Reservation System.

1.4 Project Objectives

The objectives as follow:

i. To gather from Aliana Kembara Agency for analysing the requirements.

ii. To design the system based on (i)

iii. To develop the system.

1.5 Project Scope

The system will display the latest promotion and packages offer to potential travelers. If the customer desired to choose Aliana Kembara Agency to manage their vacation reservation, they can log in and insert personal details before proceed to reservation. Besides that, the staff can manage the customer information and the reservation. This system only manage the reservation process but not include the online payment transaction.

1.6 Project Significance

Aliana Kembara Reservation System will provide a lot of benefits to user which are:

1.6.1 Aliana Kembara Agency

This system is very useful to the staffs. They can manage customer's details and manage the reservation. The staffs do not have to store the data manually

using the file-based system anymore. They will insert the data into system and the system able to update, view and delete the desired information. Besides that, this system will display the latest promotion that the company offered and will attract more customer to choose AKA as their travel agency.

1.6.2 Customer

The customer can register online before make any reservation. They only have to insert the valid information and register to the company. Then the customer can view the latest travel package that AKA offered and choose their according to their desire. After that, they make the confirmation and the staff will contact the client as soon as they receive the reservation. Besides that, the system will also display the reservation information clearly and understandable and also able to manage the customer information

1.7 Outline of the Thesis

This chapter gives the structure of the proposal as follows:

- **Chapter 1:**

Discuss on the establishment of the study regarding the Aliana Kembara management business process. Furthermore, the problem statement, project objectives, project scope, significance of the project and an outline of the thesis is included in this chapter.

- **Chapter 2:**

Provide the literature review which identify, collect, summarize and analyze relevant and latest of subject matter that related.

- **Chapter 3:**

This chapter describes methodological approach to investigate the research problem. It provides the information about the approach of the overall research design. In this chapter also describe the specific methods of data collection that are going to conduct. In this chapter also explain the technique that will be used during the implementation of the proposed system.

- **Chapter 4:**

This chapter provides the result of the data in the development of Aliana Kembara Agency Reservation System (AKARS). It describe on how the process of presenting the finding and analysis in order to get the information to complete the research.

- **Chapter 5:**

This chapter concludes overall for this project. This chapter also describe the limitations during conducted this project. Suggestions and recommendations also provided in this chapter to give future sight to other researcher that interested to enhance this project.

1.8 Summary

This chapter provides the background of the research project to be performed. The introduction of the project is briefly described in this section. The problem objectives stated in this chapter as well. The scope of the project being states has been determined based on the considered limitation and time constraint and also the significance of the project is stated in this chapter based on the problem to be solved.

CHAPTER 2

LITERATURE REVIEW

Chapter two focuses on the topic that relates to the development of the proposed system. This chapter elaborates more on writing from other researchers through various sources of information. Moreover, additional explanation on related work, the chosen methodologies with its comparison of each type of methodologies.

2.1 Information System

Information system (IS) is a set of interrelated computer component that collects, process, stores in database, and provides as output the information needed to complete business task (Satzinger, Jackson and Burd, 2012). Besides computer software that may include the database, example of computer application include web browser. According to O'Brien, & Marakas (2007), IS can be refer as any proper pattern of people, hardware, software, communications networks, data resources, and policies and procedures that stores, retrieves, transforms, and spread information in an organization.

This statement also supported by Satzinger, Jackson, & Burd (2002), that IS consist of interdependence set of computer component that produce the output to complete tasks in an organization. While, based on Al-Mamary, Shamsuddin, & Abdul Hamid (2014), IS technically is to motivated the result, coordination, and control of an organization. It can be concluded that the information system must have set of interrelated sufficient component that makes an organization by having certain activities or process to produce outcomes to complete tasks so that it can support their decision making, make changes and control in an organization.

2.1.1 Types of Information Systems

People rely on modern information systems to communicate with one another using variety of devices and communication channels. Nowadays, many organizations need information systems to keep their business on track as well as record the data. Numerous commitments have stressed the multidisciplinary character of IS, yet numerous at the same time have expressed the absence of cement hypothetical establishments, speculations or ideas that are acknowledged by the majority of IS researchers (Helfert, 2011). The roles and functions of information systems within organizations including providing management information, supporting e-commerce, supporting knowledge work and undertaking transaction processing (Al-Mamary, Shamsuddin, 2014). There are several type of information system such as transaction processing systems, management information systems and executive information systems.

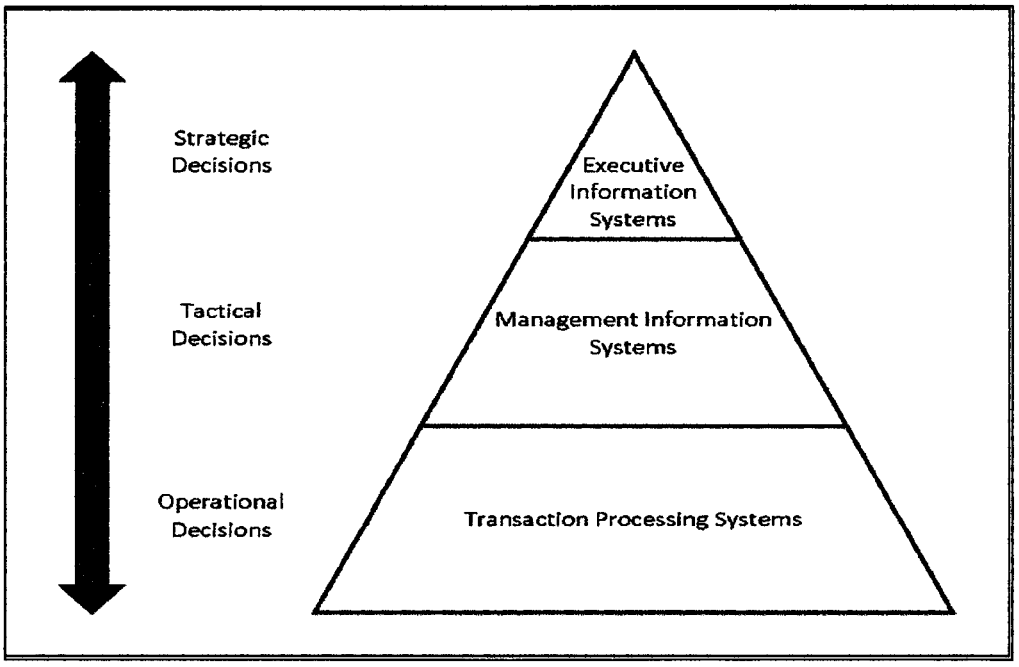


Figure 2.1 Type of Information Systems
(Source: Al-Mamary, Shamsuddin, 2014)

a) Transaction Processing Systems

A Transaction Process System (TPS) is an information processing system for business transactions involving the collection, modification and retrieval of all transaction data. Characteristics of a TPS include performance, consistency and reliability. TPS is also known as transaction processing or real-time processing. It is more than simple data processing systems. Transaction Processing Systems keep an organization running smoothly by automating the processing of the voluminous amounts of paper work that must be handled daily (Mahar,2003).

TPS usually operated by shop floor worker or front line staff, where they provide data required to support management of the operation. Besides that, TPS produce information for other systems. There are many different type of TPS such as inventory control, payroll and reservation systems.

Table 2.1 Function of Transaction Process Systems

Inputs	**Processing**	**Outputs**
Transaction events	Calculation Validation Sorting	Details report Lists Receipt

b) Management Information Systems

A Management Information System (MIS) is a set of systems and procedures that gather information from a range of sources, compile it and present it in a readable format. Its purpose is to meet the general information need of all the managers in the firm or in some organizational

subunit of the firm. (Asemi, Safari & Zavareh, 2011). The MIS manager typically analyses business problems and then designs and maintains computer applications to solve the organization's problems. In a small business MIS operating in a single computer to manage the business process.

Many organizations have separate MIS departments which are involved in maintaining records, performing transactions, report generations and consolidation of the important information which will be supplied to the various levels of the management (Tripathi, 2011). There are many type of MIS such as Budgeting Systems, Inventory Control Systems and Sales Management Systems. A useful tool for making business decisions is a Management Information System (MIS) (Asemi, Safari et al, 2011).

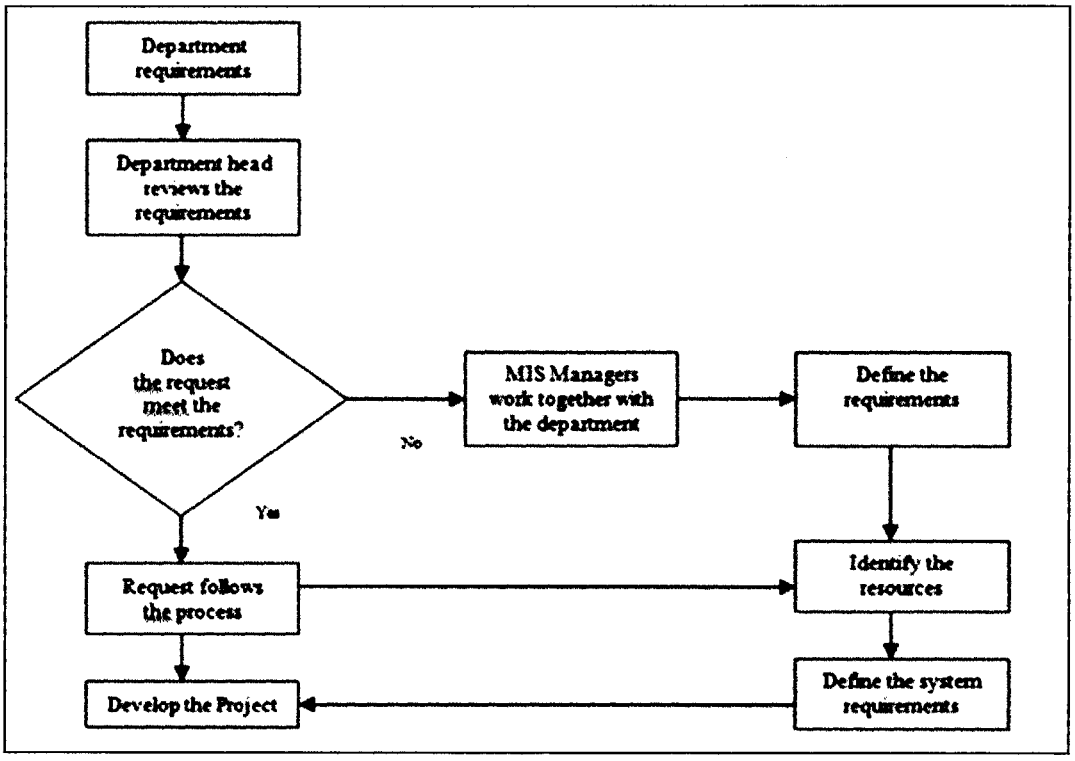


Figure 2.2 Management Information System (MIS) development model

(Source: Tripathi, 2011)

c) Executive Information Systems

An Executive Information System (EIS) can be defined as a specialized Decision Support System. This type of the system generally includes the various hardware, software, data, procedures and the people. According to Azad, Amin, & Alauddin (2012), EIS is a sort of administration data framework proposed to encourage and bolster the data and basic leadership needs of senior officials by giving simple access to both inward also, outer data applicable to meeting the key objectives of the association. With EIS, the top level executives get an incredible support in taking and playing out the different sorts of the choices. It also can help companies extend their business range to faraway locations, offer new products and services, reform organization structure and work flows, and perhaps significantly change the way they operate the business (Udoh & Inuwa, 2016). Executive Information System is very user friendly in the nature. It is supported at a large extent by the graphics. It gives exceptionally fast access to the convenient data and furthermore offers the immediate access to the different administration reports.

There are a lot of benefit using EIS such as its flexibility and ease of use, output the timely information with the short response time also with the quick retrieval and produces the correct information. Besides that, EIS contain user-friendly interface and suites the top level executive's style. Liao & Lu (2005) also said that this third generation of EIS is LAN-based to enable executives and other managers to access both internal and external information rapidly from almost any location.

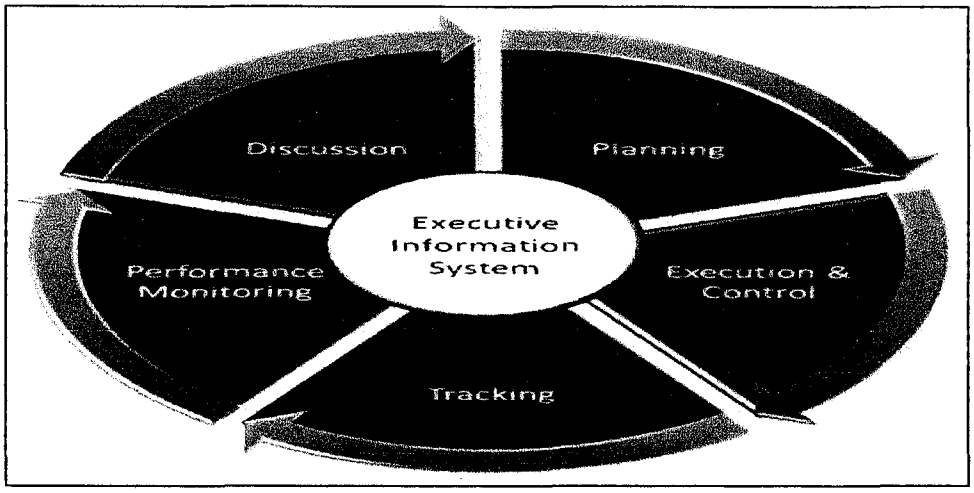


Figure 2.3 Executive Information Systems
(Source: http://www.peceng.com/html/about_commitment_cost.php)

2.2 Web-Based System

There are many definitions for websites that been defined by many expert nowadays. A web based financial application gives an opportunity to access the business information from anywhere and anytime all over the world. (Hassan, Ibrahimy, Motakabber, Ferdaus & Mostafa, 2013). Web based applications are a definitive approach to exploit today's innovation to improve the associations profitability and productivity. Web-based system can be accessed from anywhere over a secure Internet connection. This flexibility is particularly useful for practices that have multiple locations and for practitioners who travel a lot or work from several locations. Web-based presents excellent modularity and openness per component (Chandrinos & Trahanias, 1998).

The advantages of web based application is that it enhance the efficiency and increase the productivity of the organization. Potential user can done their business anywhere, anytime by using this technology. Besides, nowadays many small enterprise use web based application to run their business saving a lot cost for their physical business building. Code re-use is another positive

side-effect of Web services' interoperability and flexibility (Cavanaugh, 2006).

2.3 File-based

A file-based system is a collection of data stored in an orderly manner in a file. It is a file packed with data, with no metadata and no organizing structure. The advantages of file base systems is that it cost low money to apply and maintain. File systems provide a friendly means to store final and partial results, from which it is even possible to resume a failed job because of a system crash or program error (Piernas, Cortes & García, 2004). The bottom line is that when dealing with a file-based system, the application program must know how the file is ordered and access desired data at a very low level.

One of the famous problem with file-system is data redundancy. It is possible that the same information will be duplicated in different files. This leads to data redundancy results in memory wastage. Besides that, because of data redundancy, it is possible that data may not be in consistent state. Apart from that, less data integrity is one of the problem occur. Data integrity is the data contained in the database in both correct and consistent.

2.4 Related Systems

In this section shows the existing systems regarding the project with the purpose to get a clear view or insight in using AKARS. There is a few example of software and websites that have interesting features and function that is well-define by the user that help in finding the crucial aspect and value in this research.

2.4.1 MelancongKeJepun.com

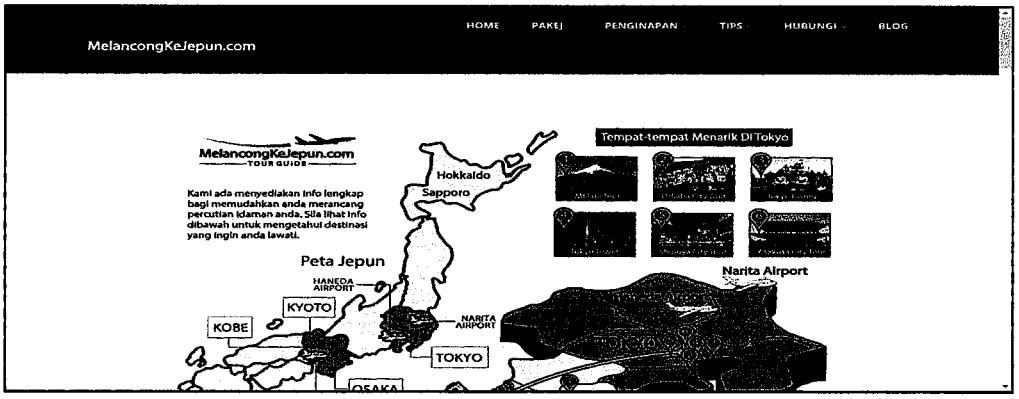


Figure 2.4 Interface of melancongkejepun.com

(Source: http://melancongkejepun.com)

MelancongKeJepun.com is a local travel agency website that based in Japan. The purpose of the website stated are to help Malaysia who desire to enjoy their vacation in Japan. Melancongkejepun.com is organize by Malaysian students who currently studying in Japan and some of the Malaysian who been living in the sunrise country. This web-based system give benefit to customer such as :

- About the company
- Information about the latest package offer
- no software to install
- tips for travelling
- Contact address and phone number.
- Blog

Apparently to make a reservation, the process is not via online reservation but the customer need to contact them via Whatsapp, email or phone call.

2.4.2 Melancong.com.my

Figure 2.5 Interface of Melancong.com.my
(Source: http://www.melancong.com.my)

Melancong.com.my is one of the local company that lead in budget vacation in Malaysia. In this website, it include several packages such as :

- Promotion package
- Malaysia package
- International package
- Island package
- Honeymoon package

The website also include the blog section where it display the previous customer feedback towards the company services.

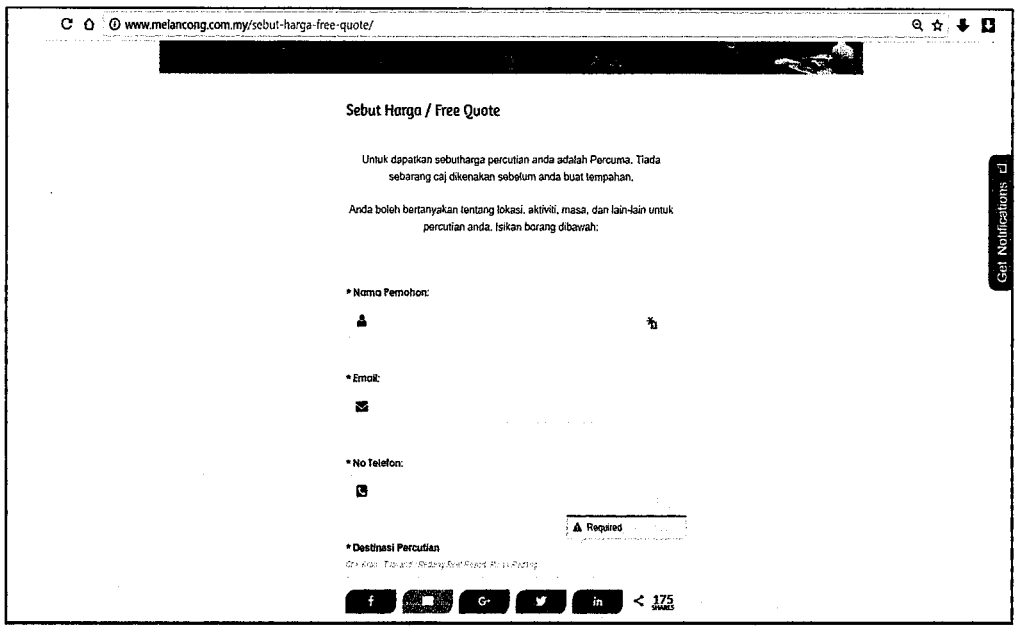


Figure 2.6 Melancong.com.my quotation application form
(Source: http://www.melancong.com.my)

The quotation will be sent by email. The form require basic information of the customer, desire place to go, selection of date, packages selection, number of people and option to include flight tickets or not. This website also display their business partner at the homepage.

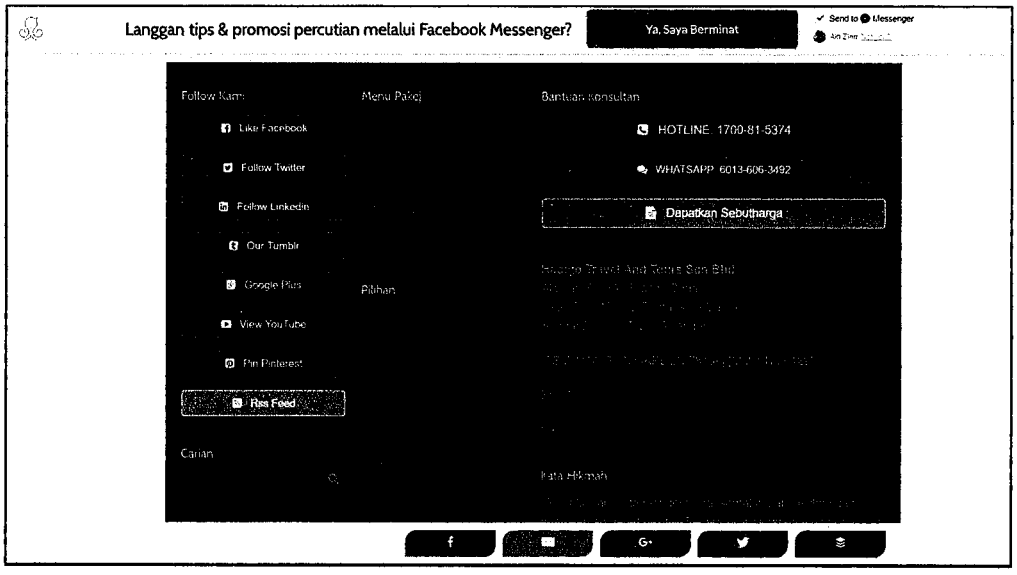


Figure 2.7 Melancong.com.my contact features
(Source: http://www.melancong.com.my)

2.4.3 Malaysiaharmony.com

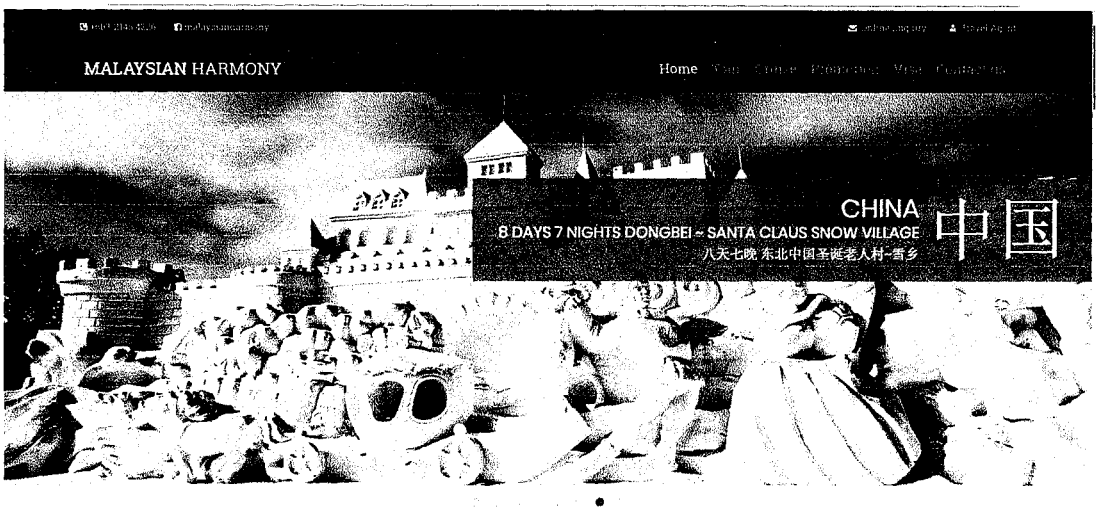


Figure 2.8 Malaysia Harmony homepage
(Source: http://www.malaysiaharmonycom.my)

Malaysia Harmony Travel & Tours is a travel agency started in 17 April 1984 as a family business. They have twelve staff that working round the clock to accommodate customers' need who want to book flight and plan their vacation. In this website, it display the current packages clearly with its details and itinerary.

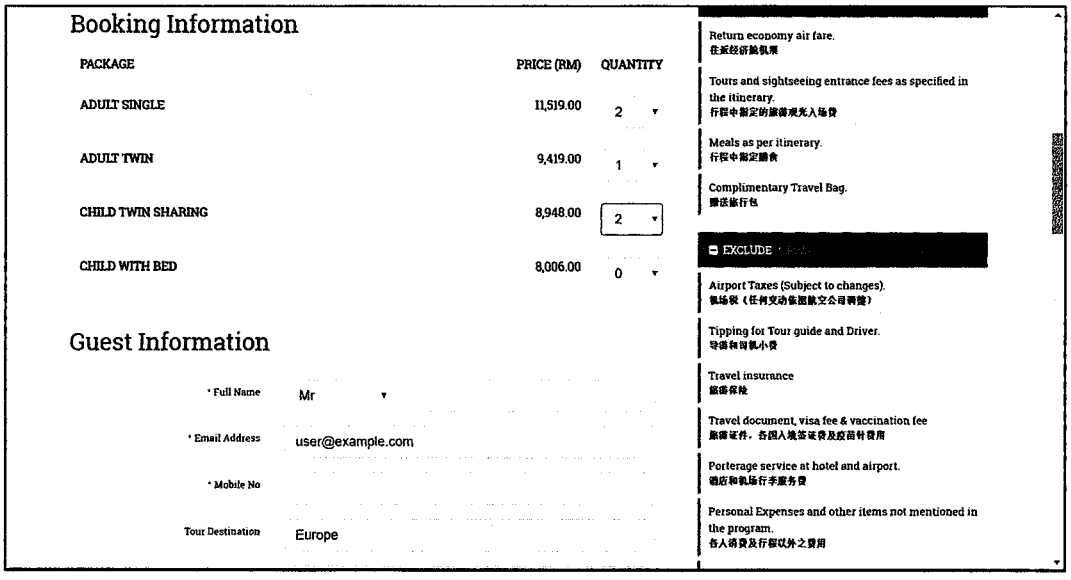


Figure 2.9 Customer booking form

Figure 2.7 shows the booking information form where customer insert the booking details such as number of adult single, adult twin, chil twin sharing and child with bed with its prices respectively. Other than that, the customer also need to insert guest information such as email, mobile number and booking remarks. After that, customer needs to wait the booking responded by the staff. They will contact back the customer via email and mobile phone to proceed the reservation including processing the payment and their travel flight information.

Figure 2.10 Package itinerary.

Figure 2.8 shows the particular package itinerary where customer also can download it by pdf file. One of the downside of this website as compared to other related system is that it does not have the blog site.

2.4.4 Comparison existing systems

From the website, there are several features that can be compare with one another.

Table 2.2 shows the comparison of the existing websites

Features	Melancong Ke Jepun	Melancong.com.my	Malaysia Harmony
Platform	Windows, Mac OS	Windows, Mac OS	Windows, Mac OS
Online reservation	No	No	yes
Online transaction	No	No	No
Recommendation features	No	No	No
Packages offered	Yes	Yes	Yes
Testimony	No	Yes	Yes
Tips	Yes	No	No
Blog	Yes	Yes	No

There are 8 features have been reviewed from different websites. The features are platform to run the websites, online reservation, online transaction, recommendation features, packages offered, testimony, tips and blog. As shown in table 2.2 above, there are three common features can be identifies, no online transaction, recommendation features and packages offered.

2.5 Business Communication Method

Effective business communication ensure the efficient business process and in decision making. Besides on paper, there are several familiar ways for business communication such as Short Message Service (SMS), E-mail and Social Media are top choice for digital communication nowadays. Applying the business communication tool to an information system are popular nowadays. SMS is an extremely personal method of communication; for many consumers, it is used mainly for communicating with other people (Kunene, 2017).

2.5.1 SMS

Short Message Service (SMS) is an effective tool for business communications because of its simplicity, ease of use and reach. According to Cho & Hung (2011) SMS is considered to be a form of new technology and a significant body of research supports the view that the use of any specific new technology is determined by behavioral intentions to use it, whereas behavioral intentions are determined by users' perceptions regarding the system.

2.5.2 E-mail

Today's organizations depend heavily on the use of email and information is exchanged to reduce uncertainty and resolve equivocality to accomplish internal tasks or coordinate activities (Roberts, 2016). It can be effective only when it is relevant to its purpose. Most email systems allow user to edit messages using any editor. There are also systems that will provide basic formatting, including bold, italics, font color and HTML. The strength of this method lies in the general and systematic way it provides to evaluate organization members and their ties with respect to their influence on others to reply (Engel, n.d).

2.5.3 Social Media

Social media has become an effective and efficient way to communicate and stay connected. Most common social media nowadays is Facebook and Twitter and Instagram. One of the most important advantages of the use of social media is the online sharing of knowledge and information among the different groups of people (Baruah, 2012). In Malaysia, many Small Medium Entrepreneur use social media as their business communication platform. The common purpose is to promote their products and some use it as customer relationship medium.

2.5.4 Comparison between SMS, Email and Social Media.

Below is the comparison of the business communication method in order to determine which method is suitable to be implement in the project.

Table 2.3 Comparison of business communication method

Features	SMS	Email	Social Media (Facebook, Twitter, Instagram)
Platform	Mobile Phone	Smartphone, Computer, Laptop	Smartphone, Computer, Laptop
Charges	Yes	No	No
Limited Words	Yes	No	Yes
Image	No	Yes	Yes
Video	No	Yes	Yes
File	No	Yes	Yes
Internet	No	Yes	Yes

There are six common feature compared between SMS, Email and social media such as Facebook, Twitter and Instagram. In table 2.3, Email and social media have big advantages in sharing the image, video, and file.

However social media have the limited words which email does not. Types of content might be short status updates, longer text pieces, links, images, audio or video files or publications (Osterrieder, 2013). According to Acevedo (n. d), most email software provides customization features you can tailor to the type of work performed, volume of daily email messages and the needs of the worker. While SMS is forgotten nowadays, yet still there is advantages of using SMS as it do not require internet present.

However, Email seems to be the most suitable to apply in the Web-base Information System as it do not require charges and more formal to business use.

2.6 System Development Life Cycle

In developing a system, with just having programming skills does not enough to develop a good system. For a systems development to be successful, it must be planned and organized properly. The plan must include comprehensive set of activities that flow in the proper sequence (Satzinger, et al., 2012). System development life cycle (SDLC) provide a way to think about developing a new system as progressive process. During the development a system must be dynamic, living entity that is updated, modified, and repaired through smaller projects. There are many approach to developing a system.

2.6.1 Waterfall

Waterfall is the most predictive SDLC approach that assumes the phases can be completed sequentially with no overlap (Satzinger, et al., 2012).). The waterfall model give a rigid planning and final decision-making at each step of the system development. The general steps that are accomplished in a Waterfall project are requirements gathering, analysis, design, development,

testing, implementation and maintenance (Eason, 2016). In waterfall show, each of the stages should have been finished first before continuing to the following stage. Requirement given by the client should be clear before we start the next phase of development life cycle because in waterfall model the requirement phase should be freeze before start the design phase (Balaji & Murugaiyan, 2012). It moves forward from phase to phase in the same manner as a waterfall.

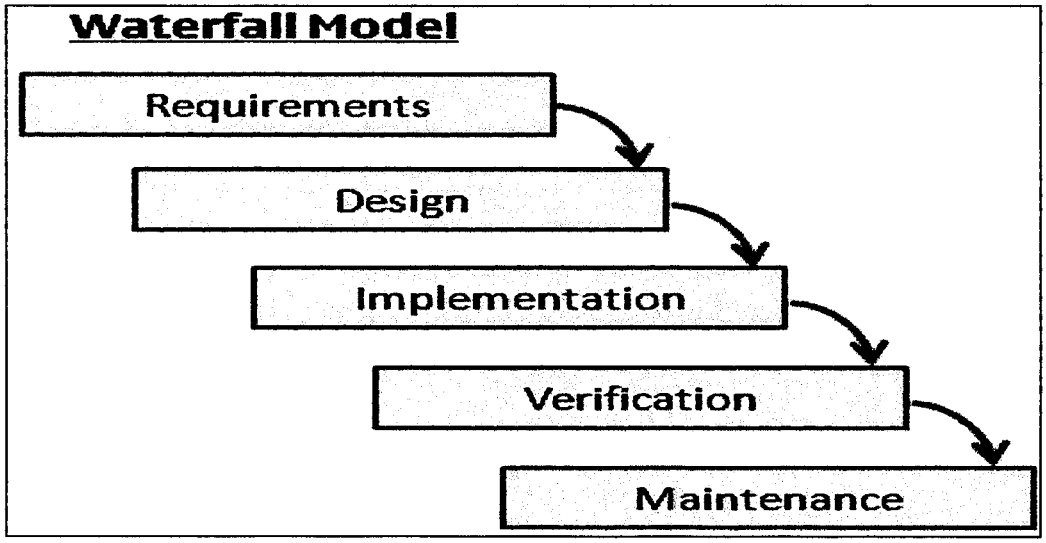


Figure 2.11 Waterfall model
(Source: https://eternalsunshineoftheismind.wordpress.com/2013/02/27/the-waterfall-model-2/)

The two advantages of the structured design waterfall approach are that it identifies system requirement long before programming begin. It also minimize changes to the requirement as the project begin.

2.6.2 Rapid Application Development (RAD)

Rapid Application Development (RAD) is a recent information systems development method noted for its high levels of user involvement and use of iterative prototyping (Beynon-Davies, Mackay, & Tudhope, 2000). RAD usually embraces object-oriented programming methodology, which

inherently fosters software re-use. RAD requires numbers of team that developing system in such a rapid way. It include four stages that are planning, design, construction and cutover.

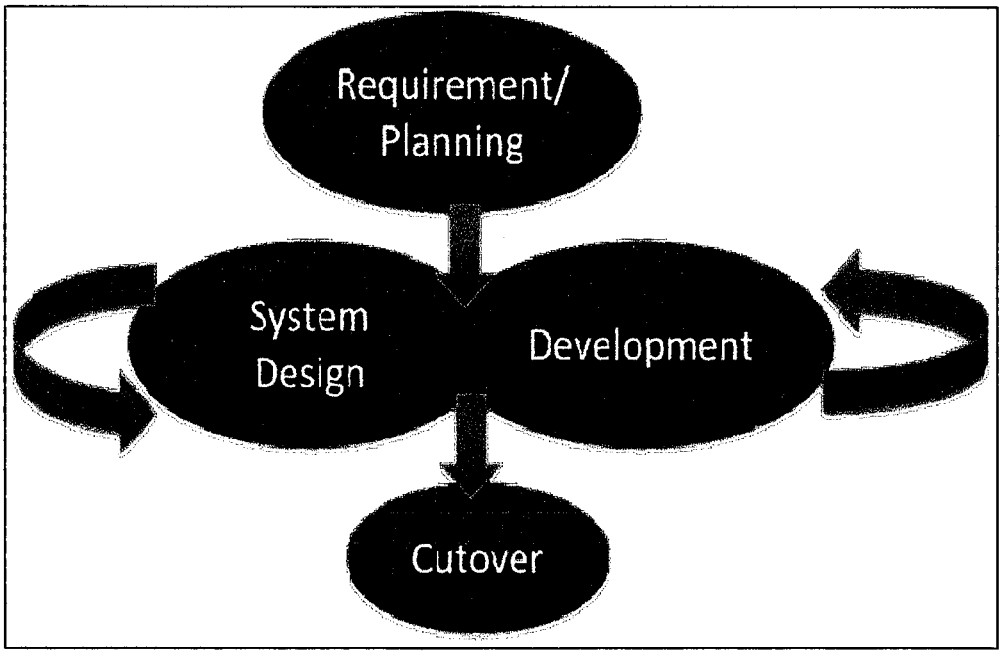


Figure 2.12 Rapid Application Development phase
(Source: http://webcreations-us.com/custom-programming.html)

According to Shelly and Rosenblatt (2012), RAD is a continuous process that allows each of the development team members to quickly alter any changes as the design process are in progress. This RAD methodology is suitable for small, medium and large scale projects with the constraint that projects have to be broken down into modules (Despa, 2014). Another author also stated that,

2.6.3 Spiral

The spiral model is similar to the incremental model, with more emphases placed on risk analysis. The spiral model has four phases: Planning, Risk Analysis, Engineering and Evaluation. Spiral model is very dynamic to the environment as its ability to change to requirement environment through development cycle. This also supported by Farell (2007) he said that spiral is

a more flexible methodology then the waterfall method as it allows for the requirements to be modified and refined as the project progresses. Stakeholders are also can give a feedback to change the requirement. Each iteration of the development cycle can include changes to the project and the project approach can be changed to match project requirements as part of these modifications. Another author, Despa (2014) also stated that after the model is tested and feedback is received from the project owner specifications are adjusted and the model is extended. This process is repeated until it meet the stakeholders' requirements.

The Spiral model can initiate a larger amount of risk analysis by breaking large projects down and executing the project in smaller deliverables. This also support by Farell (2007) as the author said, this method focuses is on minimizing the project risk, supporting changes to the project, and supporting manageable development of larger projects by deconstructing a project into smaller segments and allowing for analysis of risk in the development cycle.

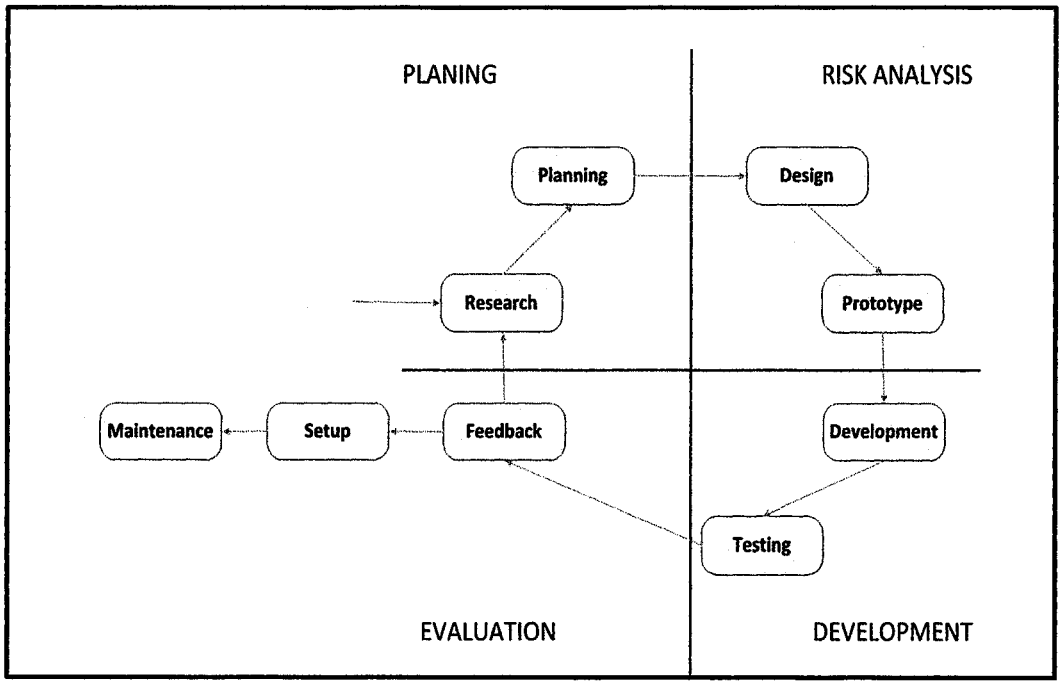


Figure 2.11 Spiral application development methodology
(Source: DENSA, 2014)

2.6.4 Comparison between SDLC

Table 2.4 Comparison features of selected methodologies

Features	Waterfall	RAD	Spiral
Cost	Low	High	High
Skill Requirement	Low	High	High
Flexibility of Changes	Rigid	Flexible	Flexible
Team Commitment	Low	High	High
Project scope	Small and medium	Medium and large	Medium and large
Stakeholders involvement	Only at the first phase of the model	At the beginning and during the feedback	Less, after each iteration

Table 2.3 shows the comparison Waterfall, Rapid Application Development (RAD) and Spiral model to be compare. Several features are being compared such as the cost, skill requirement, flexibility of changes, team commitment and the stakeholders' involvement.

2.7 Discussion

This chapter is to discuss about the suitable not only method that use in this system. An information system is essentially made up of five components hardware, software, database, network and people. In section 2.1.1, there are three type of information systems that has been highlight which are Transaction Processing Systems (TPS), Management Information

Systems(MIS) and Executive Information Systems(EIS). In this particular project, Management Information Systems might be suitable to choose. According to Asemi et al.. (2011) MIS motivation is to meet the general data need of the considerable number of administrators in the firm or in some authoritative subunit of the firm. Since the propose systems is using the web-based platform. MIS able to collect data, process and store the data essentially. This will benefit to both users and the organization in the use of information systems.

Nowadays, web-based systems is commonly used especially for a good management systems. Web-based benefits in over the file-based systems in such many ways. One of the advantages of using web-based system is that, it is more efficient and reliable. As states in section 2.3, web-based system allow user to access it anywhere and anytime for their desired business purpose.

From the three existing website that have been compared in section 2.4.4, there are several common features which are the package information, tips about travel and blogs. However, these existing website do not cover the online reservation. Thus the proposed system are expect to cover the feature based on the stakeholder's needs.

Besides that, effective business communication via the website is also important. Email is chosen to be the most official and proper business communication tools to be apply in the proposed web-based information system.

For the methodology approach in developing a systems, several approach has been highlighted which are Waterfall model, Rapid Application Development and Spiral model.

Rapid Application Development (RAD) is where the system development and documentation is work together in parallel. It can give a rapid review to the

stakeholder and receive quick feedback in case they want to make any changes. Although, this approach a bit costly compared to waterfall.

For spiral methodology, it is suitable for a large and mission-critical project. As stated in 2.6.3, this methodology is very dynamic to the environment. When a stakeholder want to change any requirement, spiral allow it by spinning back over the process until it meets the requirements. However this approach is costly and the risk analysis require high expertise.

In section 2.6.1, it has been stated that waterfall is the most predictive approach of System Development Life Cycle (SDLC). It is predictable and easy to understand. This model suitable to use for small project where requirements are essentially well understood. Therefore, this approach has been chosen to be used for this project development.

CHAPTER 3

METHODOLOGY

This chapter discussed the methodology that will be in this project. It covered all the activities that will be conducted and the delivered for each activity, in order to achieve the objectives of this project.

3.1 The Selection of Methodology

Several approaches have been reviewed as shown in section 2. The selected method for this development is Waterfall methodology but it has been modified from five phase into three phase only including requirement, design and implementation. According to literature review, this method is suitable for individual development which cause a lot simpler than other methodology. Each phase in waterfall only starts after the previous one has completed. This methodology is also predictable which suitable for developing a system for Aliana Kembara Agency.

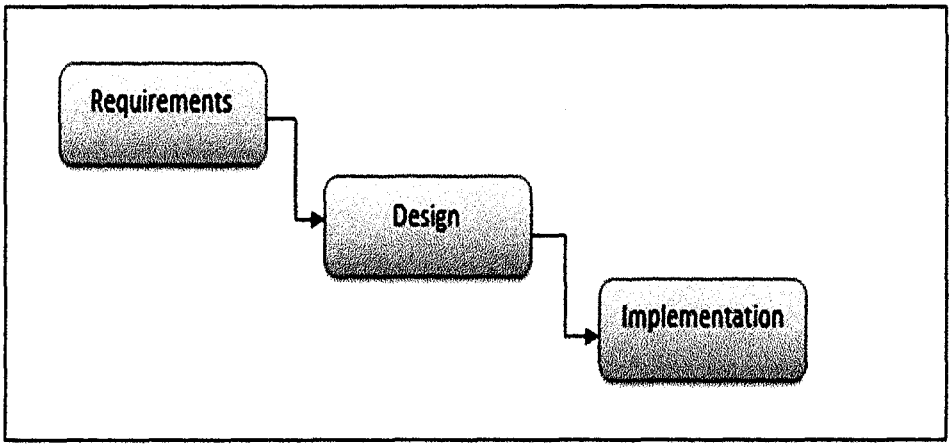


Figure 3.1: Modified Waterfall model

Table 3.1: Activities, deliverables, phase and objectives

Phase	Activities	Deliverables	Objectives
Requirement Gathering and analysis	1. Prepare interview questions	1. Question for interviews.	1. To gather and analyse the requirements from Aliana Kembara Agency
	2. Observe the current process and interviewing one of the staff, Mr Abu Khairi.	2. Interview answers. 3. List of features to propose to Mr Abu Khairi	
	3. Analyze the requirements.	4. List of requirement	
	4. Model the requirements	5. Requirement model such as UCD.	
	5. Document the requirements	6. Software requirements Specification (SRS).	
System Design	1. Design system architecture.	Architecture Design	To design the system for Aliana Kembara Agency
	2. Design the user interface and system interface	1. User interface	
	3. Design database	2. Domain Class Diagram	
	4.Document the design	3. Design document.	
Implementation	1. Develop the systems	1. System of Aliana Kembara Agency Reservation System	To develop the system.

3.1.2 Requirement Gathering

First stage in the waterfall model phase, which concern with understanding the current business flow and the problem that may exist inside the system is obtained from the stakeholder of the system. The problem that had been stressed out by AKA will then be analyze by using carious technique such as event decomposition method. An interview has been conducted to identify the problem statement. En. Abu Khair is the staff that has been interviewed to obtain primary data. Primary data means the data or information that is obtained from the original resource or first-hand experience. Boeije (2005) highlight that primary data are data that are collected for the specific research problem at hand, using procedures that fit the research problem best. Several question has been asked such as "Is there any problem while recording and storing the data?" and also "Are the staff having difficulty to manage the data?".

Secondary data refer to data or information that had been collected by someone else and being publish in form of article, books, journal or related academics publication. Secondary analysis is a systematic method with procedural and evaluative steps, yet there is a lack of literature to define a specific process, therefore this paper proposes a process that begins with the development of the research questions, then the identification of the dataset, and thorough evaluation the dataset (Johnston, 2014)

Some research has been done by the internet from the related journals, articles and books. After that, from all the requirement collected it been documents into Use case diagram (UCD) and Software Requirement Specification (SRS).

3.1.2 System Design

The process of converting the problem that exist to the proposed solution which is to design the system. System design is a bridge that connect from the requirement and a solution to the proposed system. It include on how to build the systems and selecting the hardware and software included during the development process. This phase cover the designing the environment of the system, designing application architecture and software, designing user interface, designing system interface, designing database and end with designing system controls and security. The programming language that will be use is java, tomcat as the server and oracle as the database administrator.

3.1.3 System Implementation

System implementation is the process of constructing the new system and delivering the system into the expenditure (Satzinger et al., 2012). It is the last stage in waterfall model for the proposed system. With inputs from system design, the AKR system is first develop in small programs called units, which are integrated in the next phase. Each unit is developed and tested for its functionality which is referred to as Unit Testing. Before proceeding to project, agreement from stakeholders are require to make sure there is no changes made upon the requirements.

3.2 Summary

This chapter summarizes all the phases that had been carry out during the process of developing Aliana Kembara Reservation System using one of the system development methodology which is Waterfall model that has been modified from 5 phases into 3 phases of development.

CHAPTER 4

RESULTS AND FINDINGS

This chapter provides the result of the data in the development of Aliana Kembara Agency Reservation System (AKR). It describe on how the process of presenting the finding and analysis in order to get the information to complete the research.

4.1 Requirement Gathering

First stage in the waterfall model phase, which concern with understanding the current business flow and the problem that may exist inside the system is obtained from the stakeholder of the system. The problem that had been stressed out by Aliana Kembara (AKR) will then be analyse by using carious technique such as event decomposition method.

The first method to get to know Aliana Kembara Agency is through their official social media account Facebook. Aliana Kembara Agency have 1,297 likes and 1,304 followers. The staff are actively use Facebook to communicate with the customer and visitor. They typically reply within an hour for any enquiry. The business process and packages offer is identify by the Facebook post.

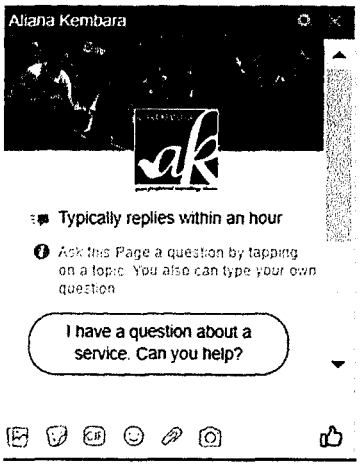


Figure 4.1 Aliana Kembara common FAQ on Facebook Chat

Besides that, additional information such as customer information details requested by the agency, minimum and maximum head per reservation and payment process are identify by the interview. The interview has been conducted to identify the problem statement. En. Abu Khair is the staff that has been interviewed to obtain primary data.

Primary data means the data or information that is obtained from the original resource or first-hand experience. Boeije (2005) highlight that primary data are data that are collected for the specific research problem at hand, using procedures that fit the research problem best.

Several questions have been asked as in table 4.1 have resulted the suggested features of the system such as packages display where customer can find it easily, manage their information details using the system and make online reservation according to their budget and preference. Besides that, staff also play important role by manage the reservation, manage the packages and make sure it was updates time to time.

No	Question	Answer	Finding
1	How many staff that work for the agency?	Officially only two who is Mr. Abu and Mr Zahin	Two actor will be involved in the reservation management.
2	Do you have any difficulty while using Facebook and Whatsapp and the main platform to deal with the customer and manage the reservation?	Yes, sometime it is hard when they do not have the internet access.	Problem Statement number 3
3	Do you think that this agency need a management system that allow the staff to manage the reservation more efficient?	Yes if the system do fulfil the requirement of the agency.	The proposed system seems to give advantages to the agency.
4	How would you like your system to be develop?	A system that is user-friend to the customer and the staff can manage all the information and reservation effectively.	The draft of the futures for the system such as information need to be add in the system or the details of the reservation form.
5	What type of information you usually request from customer during the reservation.	Full name, IC No, Contact No, Emergency Contact No, Passport No, Address and Email.	Use case : Create Customer Manage customer information. Make Reservation Manage Reservation Payment
6	How would you suggest for the new system to solve this problem?	Beside make reservation, the system also make customer easier to find the latest packages offer.	Use Case : Create Packages Manage Packages View Packages

4.1.2 Observation and Literature Review

Observation is one of the method to gain the primary. By observing the trend and pattern of travelling toward the season happens to have some conclusion of the raw data. Several website have been reviewed their features and compared to gain the suitable feature for Aliana Kembara Agency Reservation System. Below is the features that have been identify from current web-based system to be uses in the proposed system.

System Features	**Melancong Ke Jepun**	**Melancong.com.my**	**Malaysia Harmony**	**Aliana Kembara Reservation System**
Platform	Windows, Mac OS	Windows, Mac OS	Windows, Mac OS	Windows, Mac OS
Online reservation	X	X	/	/
Online transaction	X	X	X	X
Recommendation features	X	X	X	X
Packages offered	/	/	/	/
Testimony	X	/	/	/
Tips	/	X	X	/
Blog	/	/	X	X
Email Notification	X	X	X	/

Table 4.2: Features of AKARS

4.1.2 Analyze and model the requirement

The purpose of analyses the requirement is to understand the user's need, the business process and how will the system support the business. From the observation and interview related to the business process and research of literature review, several requirement are listed to solve the problem. Due to uncertain packages that AKA offers, the system only cover the international packages only. The requirement model are created such as Class Diagram, Use Case diagram, and System Sequence Diagram.

4.1.2.1 Use Case Diagram

The use case diagram are first modelled to determine and list all the function the system able to do. Two actor are identified involve with the system which are the staff and customer. After that, the use case description has been produced according to the use case diagram. It describe more on each of the use case listed in table 4.1. The description will tell the flow of the particular use case on both actor and system's side. Use case description include the use case ID, name, actor, description, preconditions, postconditions, priority, frequency of use, normal course of events, exception and notes and issues of that particular use case.

For the manage use case, there are only one combination function which are manage account. The manage packages only can be done by staff while manage members can only be done by the customer. Only the staffs are allow to delete any account created for both staff and customer. Other combination functions are view packages and cancel reservation.

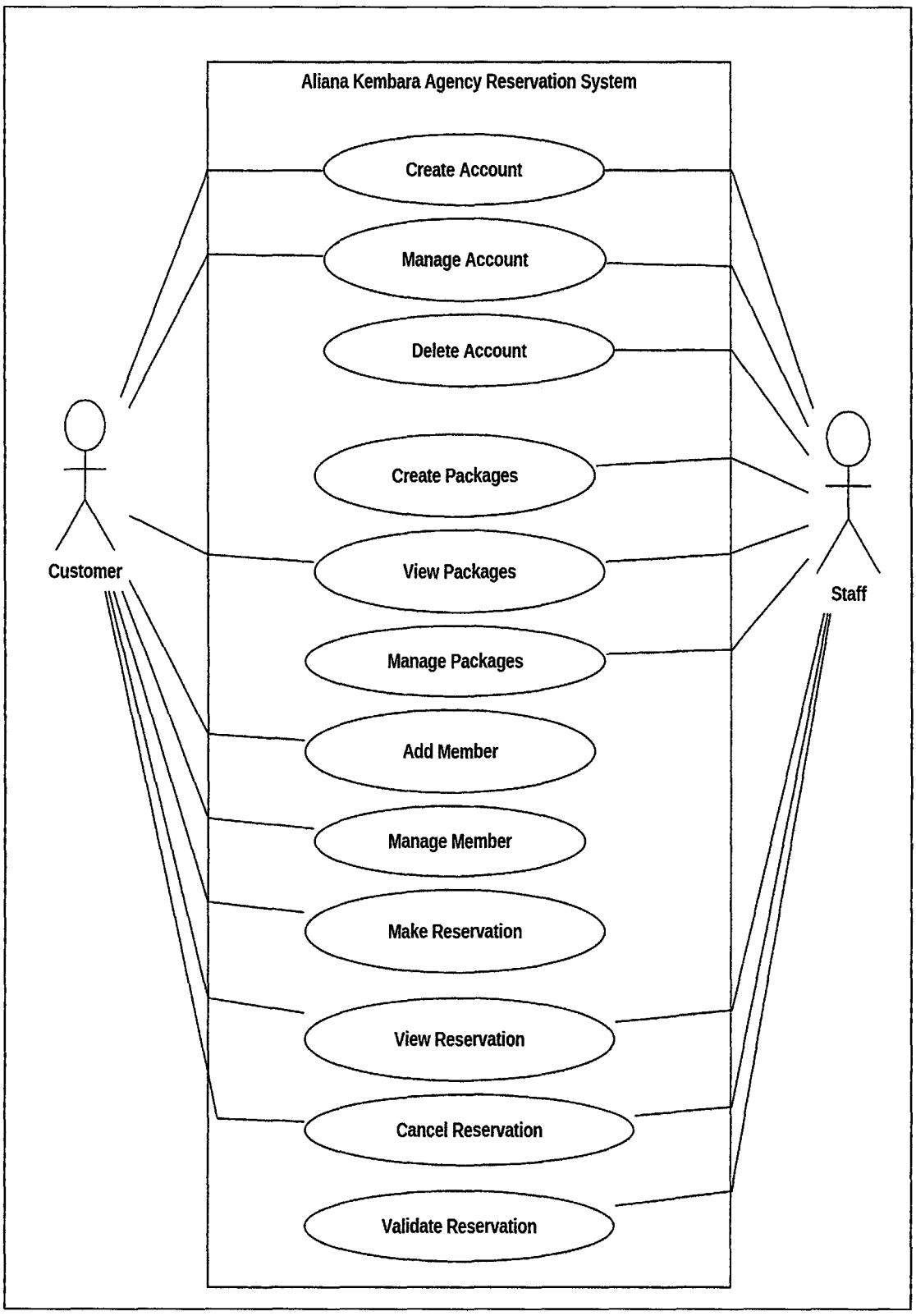


Figure 4.2 Use Case Diagram

Use Case ID:	SRS_REQ_105		
Use Case Name:	Make reservation		
Created By:	Siti Noor'Ain	Last Updated By:	Siti Noor'Ain
Date Created:	20/8/2017	Date Last Updated:	20/8/2017

Actor:	Customer/Staff	
Description:	Actor choose desire packages and make reservation.	
Preconditions:	Packages must have been created	
Postconditions:	System will display all reservation and staff need to update the reservation status	
Priority:	High	
Frequency of Use:	High	
Normal Course of Events:	Actor	System
	1. Customer select the packages and fill the details required including the members details	1.1System will display the data requested
	2. Customer confirm the reservation and members details	2.1 System display the reservation & members details
	3. Customer confirm action	3.1 System save the details.
Alternative Courses:	N/A	
Exceptions:	1.1 Information invalid	
Includes:	N/A	
Special Requirements:	Customer id and password.	
Assumptions:	N/A	
Notes and Issues:	N/A	

4.1.2.2 Class Diagram

Next, the Class Diagram are modelled to show the association between the tables of data. Each table contain attribute that help to describe the item and all the table are related to one another. As below, the diagram contain

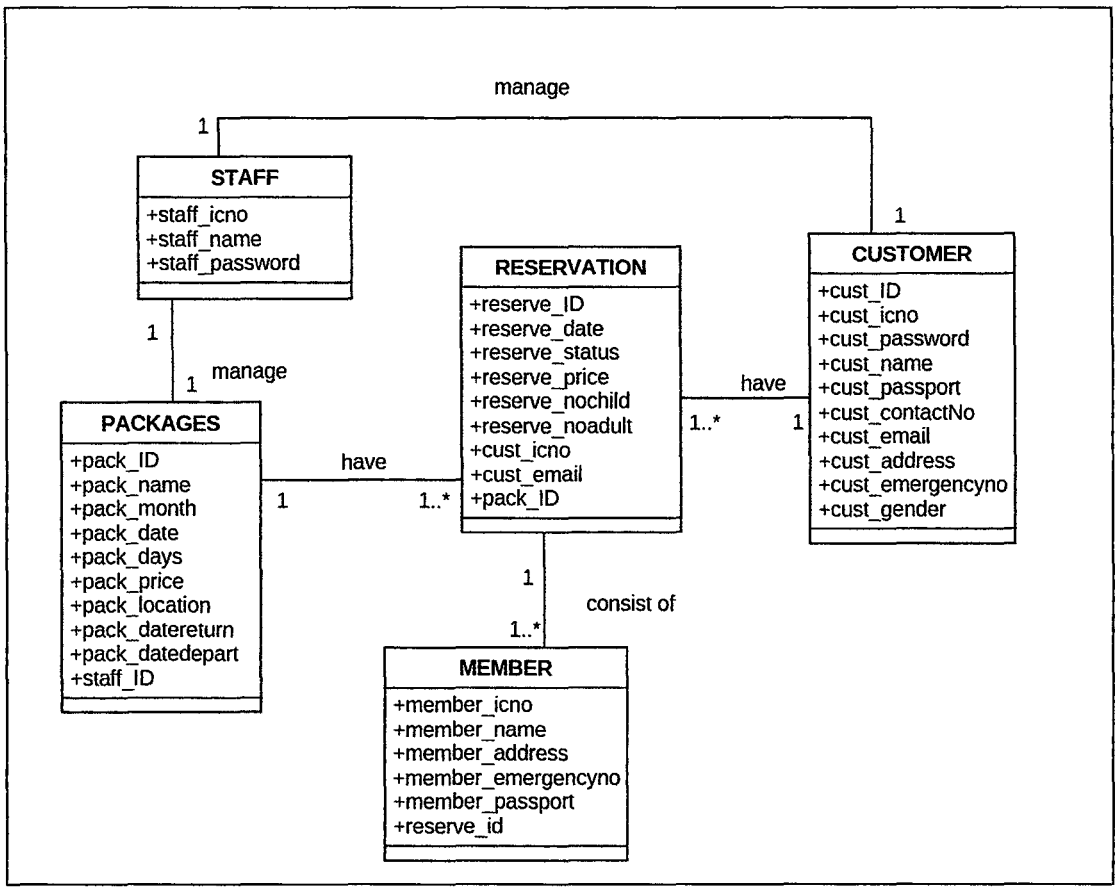


Figure 4.3 Class diagram

4.1.2.3 System Sequence Diagram

After all the previous model have been developed it then documented in Software Requirement Specification (SRS) along with the details. The SRS attached in Appendix A and with the deliverable of SRS, objective 1 is achieved.

4.2.2 Design Class Diagram

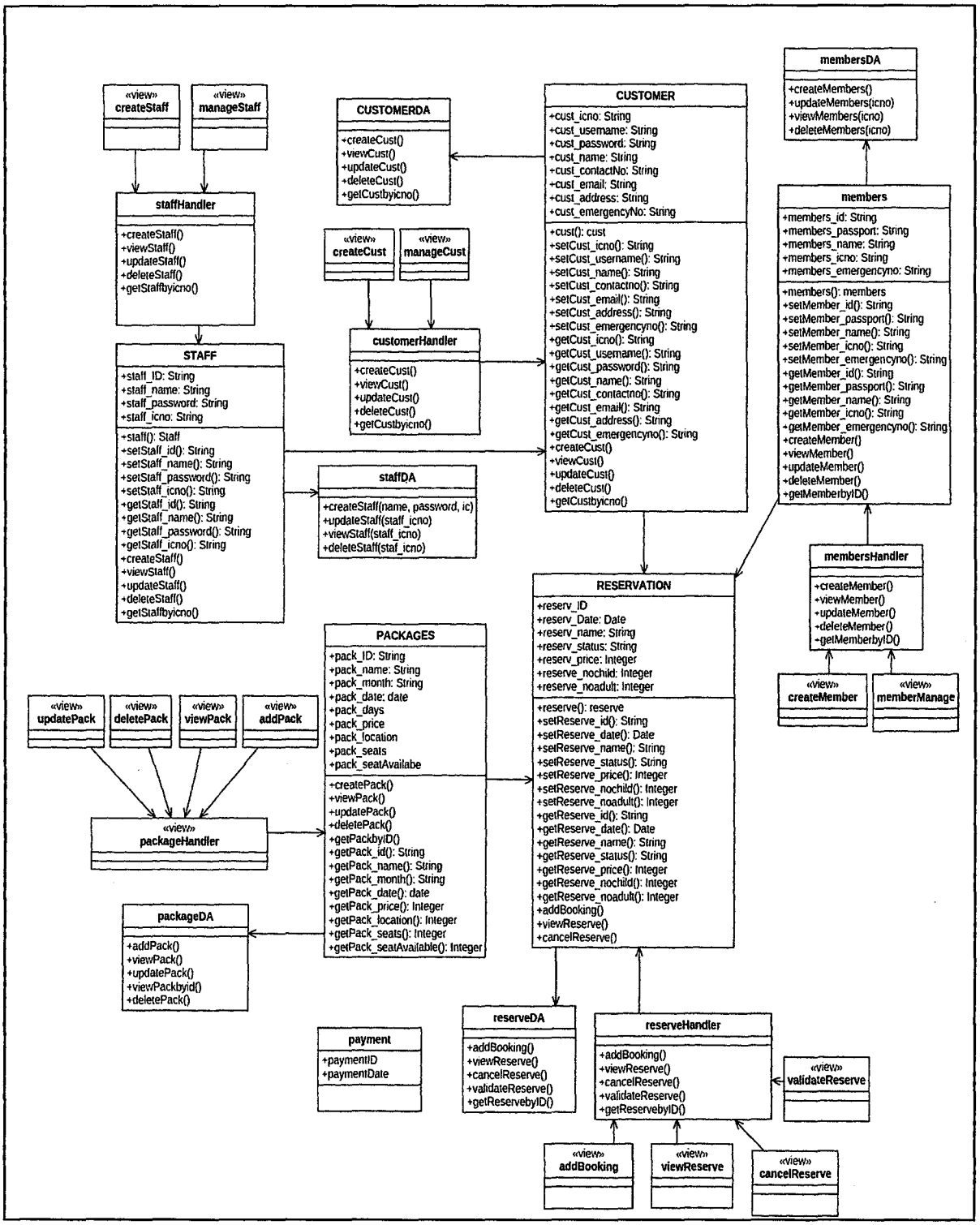


Figure 4.6 Design class diagram

4.2.3 Design Database

Oracle database was choose as the platform to design and manage the database. There are five classes was created which are Customer, Packages, Payment, Reservation and Staff class. Each classes contains its primary and foreign key respectively.

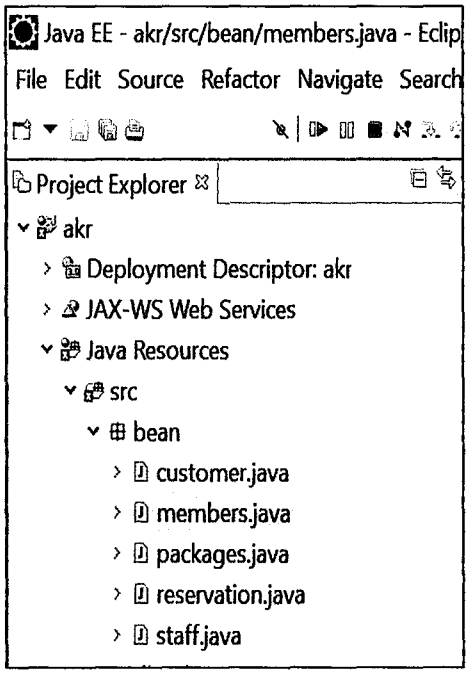


Figure 4.7 Database of Aliana Kembara Agency Reservation System in Oracle Database

4.2.4 Design User interface

Customer View

Aliana Kembara Reservation website basically show the packages include the image of the location to attract customer, some description about the packages and the price per head .The homepage for the website can be seen by all customer, visitor and admin. This page show the latest package include its price and details. Customer also can view all the packages at once and compare the price.

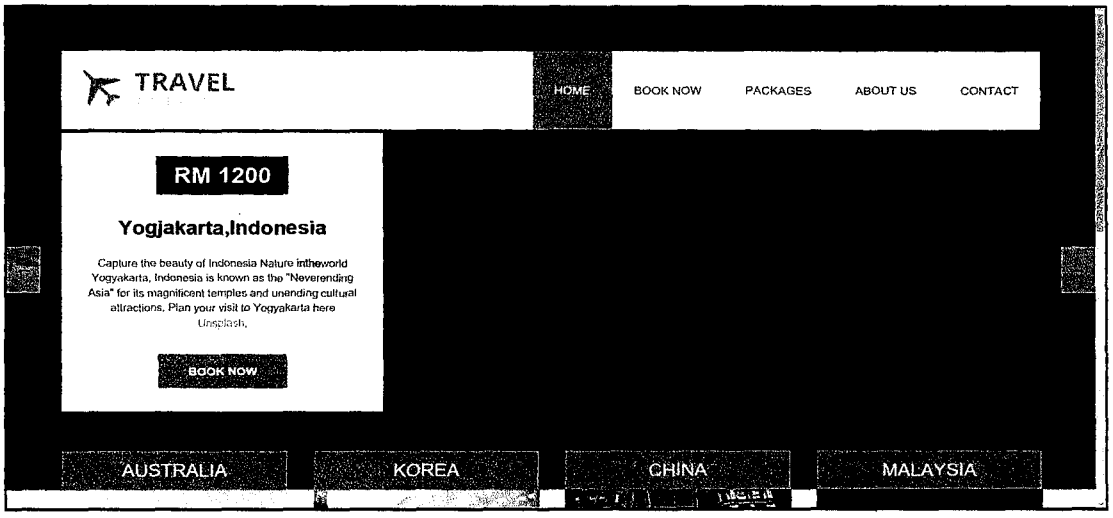


Figure 4.8 Home page that display all the packages offered including the price and available seats

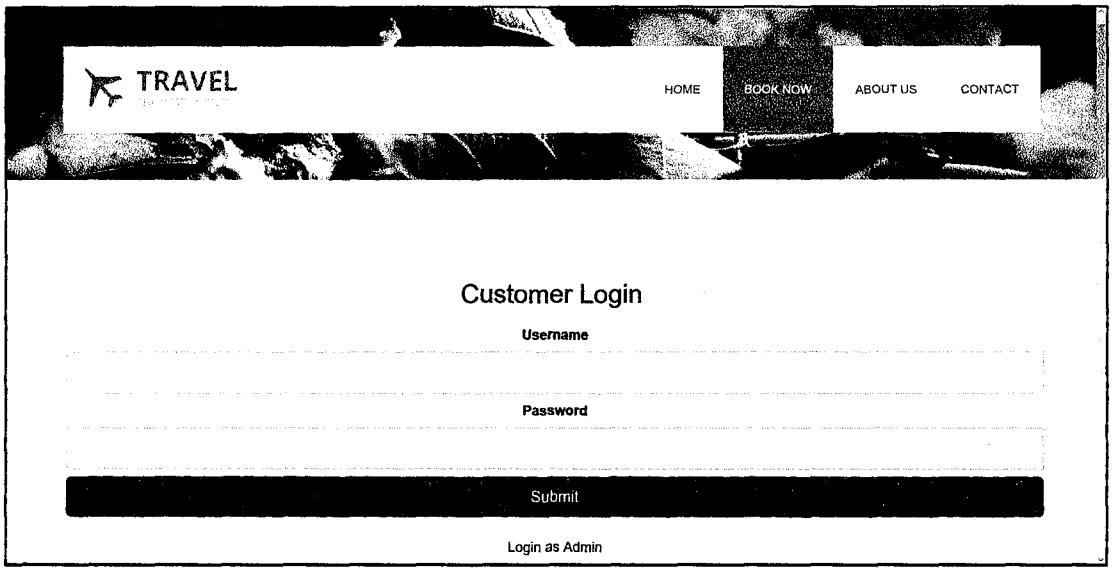


Figure 4.9 Customer login page by using the customer IC No and password

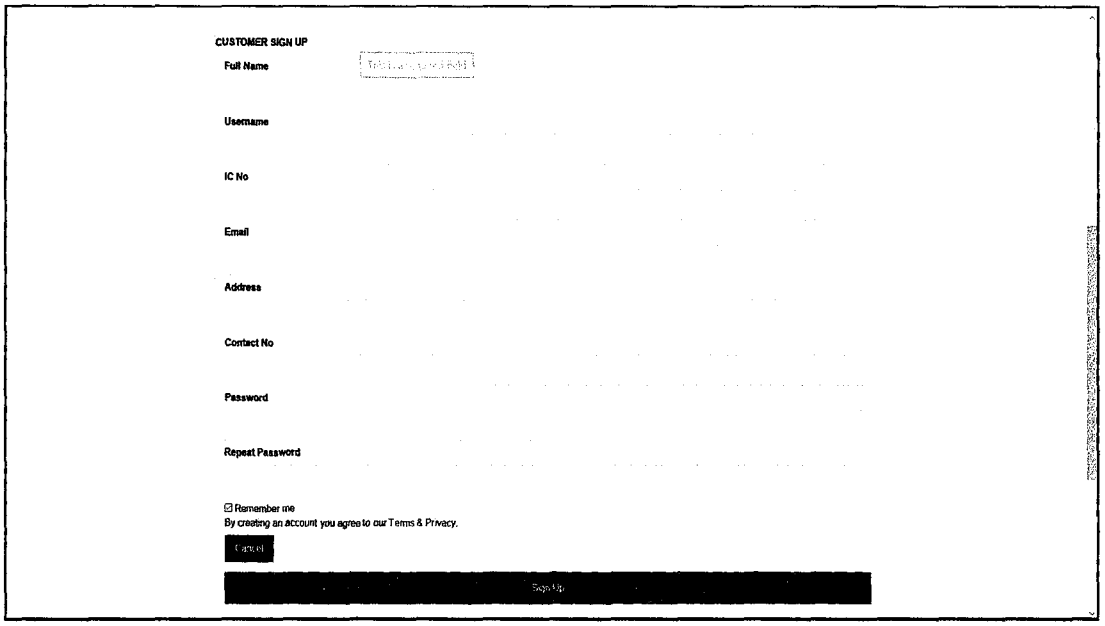


Figure 4.10 For visitor that want to sign up and make reservation they have to fill in the requested information. All of the information are compulsory to fill in by customer in order to proceed for the next step.

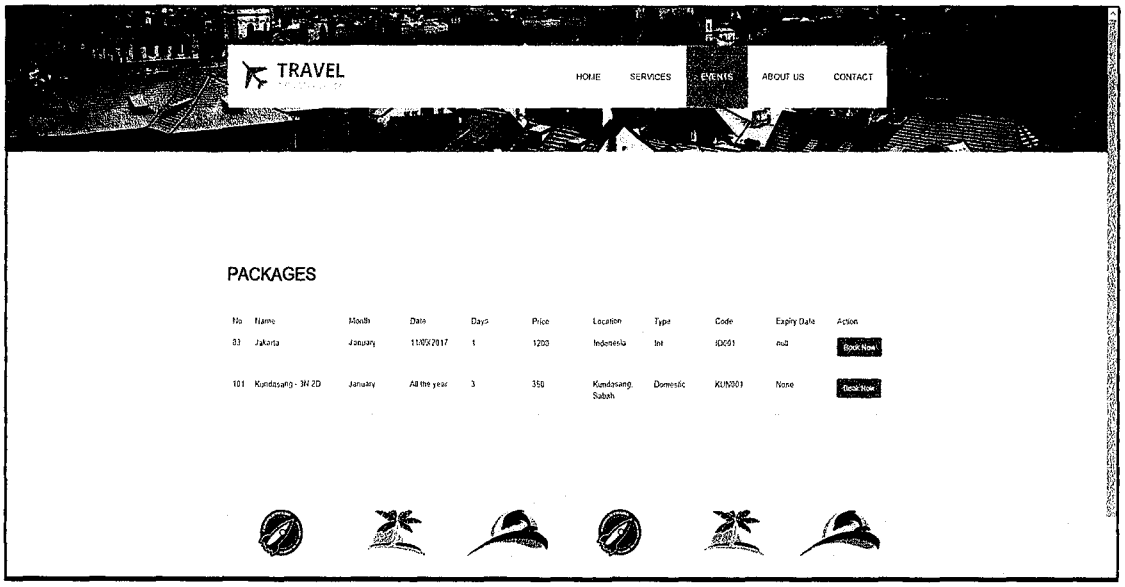


Figure 4.11 Page to show all the package offer by Aliana Kembara Agency. This page can only be seen by login customer.

Staff Interface

Staff dashboard include the features of manage the account for staff and customer, manage packages, view reservation and validate the reservation.

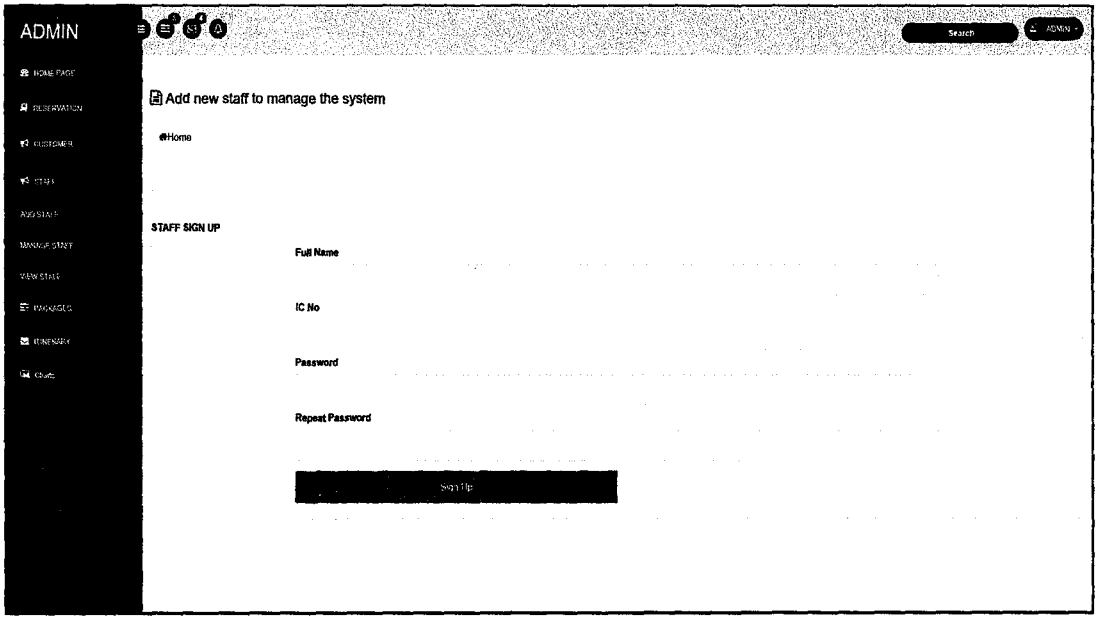


Figure 4.12 Admin page can only be access by the staff, they can add new staff to manage the system such as staff details, package details, reservation and payment.

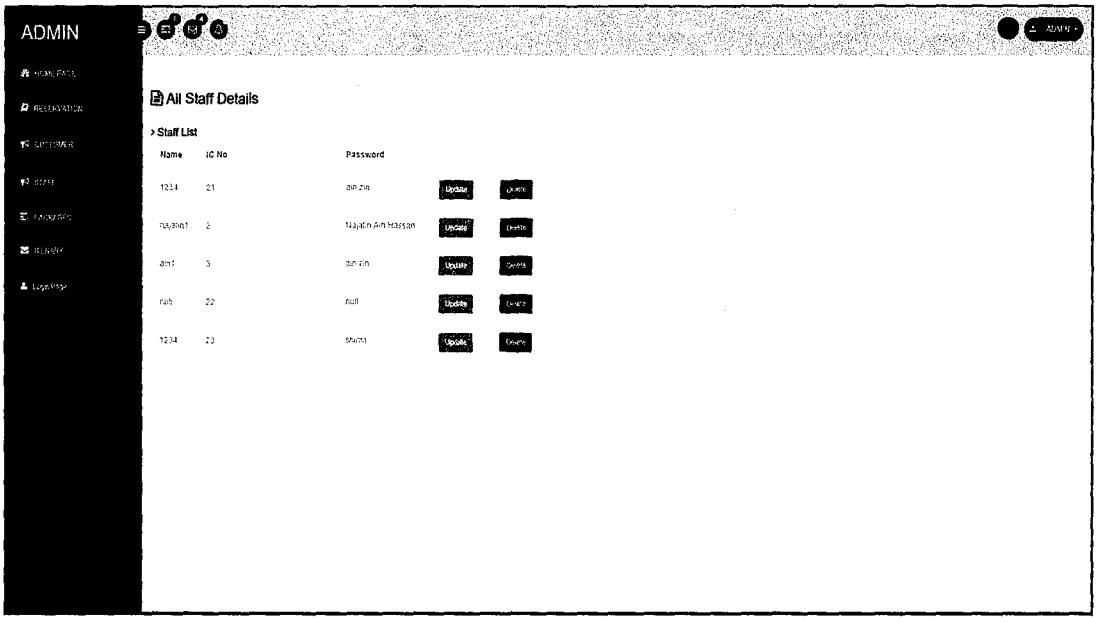


Figure 4.13 Staff can view all the staff information such as staff name, password and IC Number.

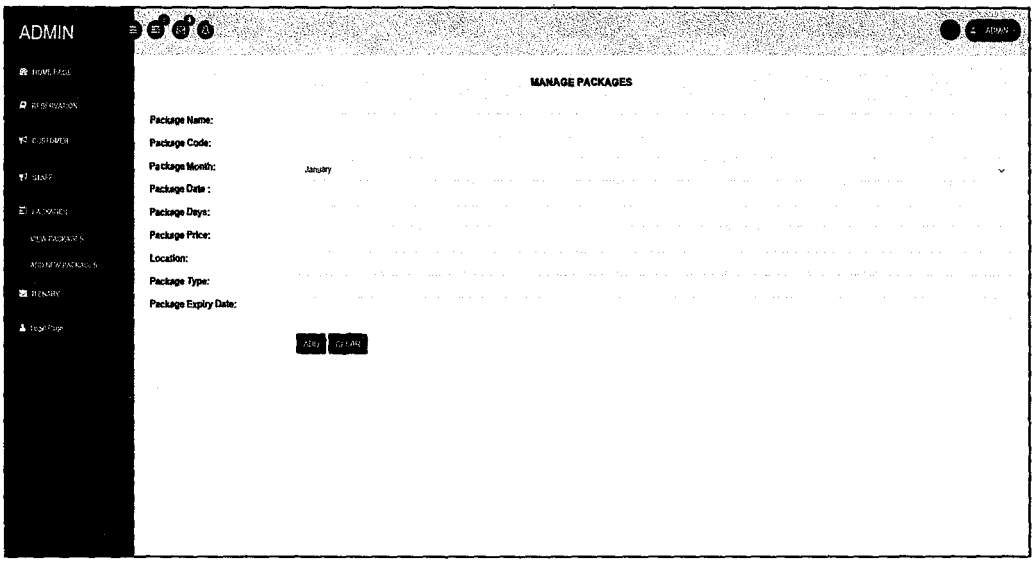


Figure 4.14 Manage Packages

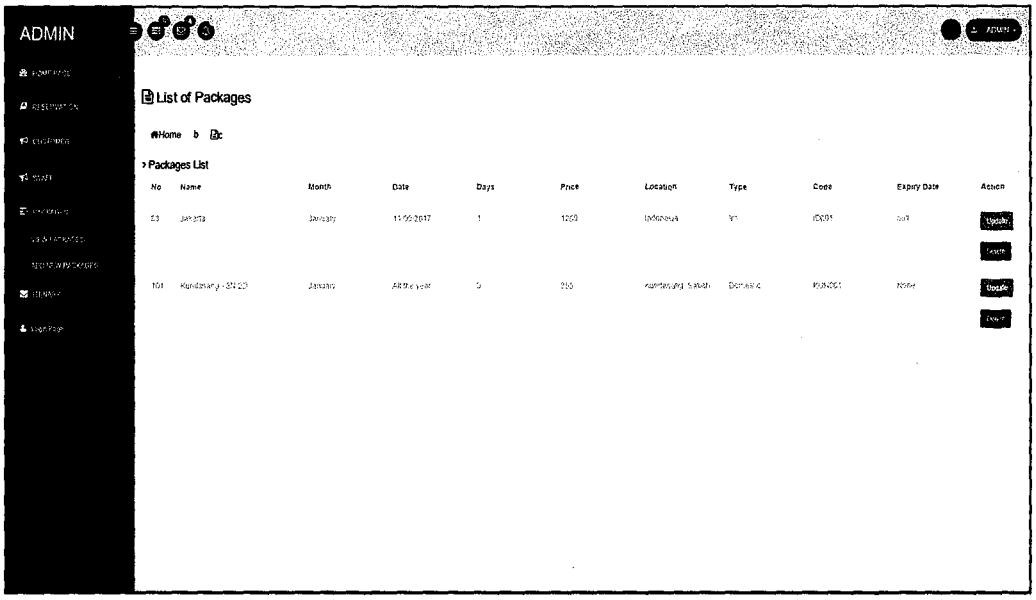


Figure 4.15 List of Packages

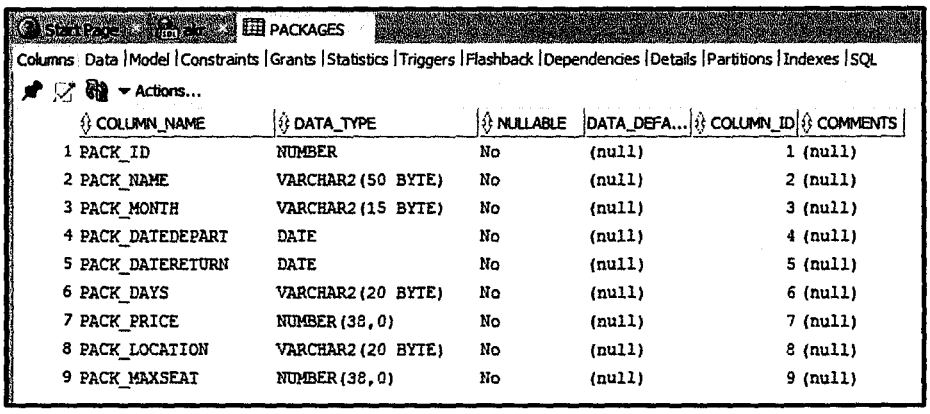
4.3 Implementation

System implementation is the last stage in waterfall model for the proposed system. It is the process of establishing the new system and delivers the functionalities of the system. The activities in this phase include selecting a suitable platform for system and develop the system. Selecting suitable

platform is needed before developing the system. The platform includes the development language, development tools, operating system, etc.

4.3.1 Develop the system

After develop the system interface and its database, the activities is to start the Object Oriented Programming. Based on the Software Design Document, a data dictionary was created for each table. Figure 4.16 shows the details of Packages table. It include column name, data type, column ID, and nullable. The attribute that include is pack_id, pack_name, pack_month, pack_datedepart, pack_datereturn, pack_days, pack_price, pack_location, pack_maxseat.


PACKAGES

Columns | Data | Model | Constraints | Grants | Statistics | Triggers | Flashback | Dependencies | Details | Partitions | Indexes | SQL

Actions...

	COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFA...	COLUMN_ID	COMMENTS
1	PACK_ID	NUMBER	No	(null)	1	(null)
2	PACK_NAME	VARCHAR2(50 BYTE)	No	(null)	2	(null)
3	PACK_MONTH	VARCHAR2(15 BYTE)	No	(null)	3	(null)
4	PACK_DATEDEPART	DATE	No	(null)	4	(null)
5	PACK_DATERETURN	DATE	No	(null)	5	(null)
6	PACK_DAYS	VARCHAR2(20 BYTE)	No	(null)	6	(null)
7	PACK_PRICE	NUMBER(38,0)	No	(null)	7	(null)
8	PACK_LOCATION	VARCHAR2(20 BYTE)	No	(null)	8	(null)
9	PACK_MAXSEAT	NUMBER(38,0)	No	(null)	9	(null)

Figure 4.16 Packages Table

Eclipse is used as the development tools include the model, view and controller. There are four packages include in Java Resources folder which are bean, dao, dbutils, servlet and test connection as shown in Figure 4.16.

All the packages are separated to easily manage by its function without confusion and to reduce time in finding error.

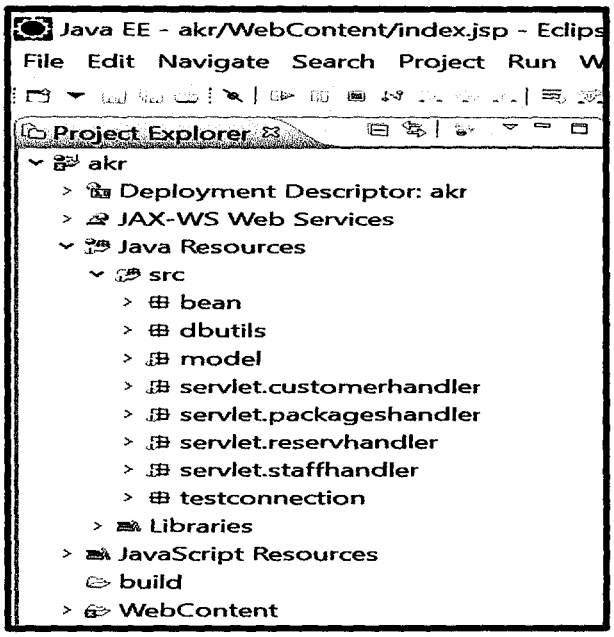


Figure 4.17 Packages in Java Resources

Connection manager then connect the eclipse with the Oracle database of AKARS. It also act to ensure that all the data in database can be input to the system and can be retrieved by the system. The name of the database is shown as in figure 4.18 below :

```
1 package testconnection;
2
3+import java.sql.DriverManager;
6
7 public class TestConnection {
8
9-    public static void main(String[] argv) {
10        System.out.println("-------- Oracle JDBC Connection Testing ------");
11        String URL = "jdbc:oracle:thin:@localhost:1521:xe"; // xe stand for
12                                                            // Oracle XE db name
13        String USERNAME = "akr";
14        String PASSWORD = "akr";
15        // this is the password you set when you installed XE.
16        try {
17            Class.forName("oracle.jdbc.driver.OracleDriver");
18        } catch (ClassNotFoundException e) {
19            System.out.println("Where is your Oracle JDBC Driver?");
20            e.printStackTrace();
21            return;
22        }
23        System.out.println("Oracle JDBC Driver Registered!");
24        Connection connection = null;
25
26        try {
27            // connection = DriverManager.getConnection(
28            // //"jdbc:oracle:thin:@localhost:1521:xe", "SYSTEM", //"1234");
29            connection = DriverManager.getConnection(URL, USERNAME, PASSWORD);
```

Figure 4.18 Test Connection

Figure 4.19 shows the list of java class in DAO packages. It consist customerDAO, staffDAO, packagesDAO and reservationDAO. Each DAO

class contain a few methods depends on its function to the system. Some of each method is create, update, delete and view.

Figure 4.19 DAO Folders

Next in figure 4.20 shows the JSP pages which writhe the code for user interface that has been show previously in phase 2 activities. The user interface for staff are separated with the customer and visitor.

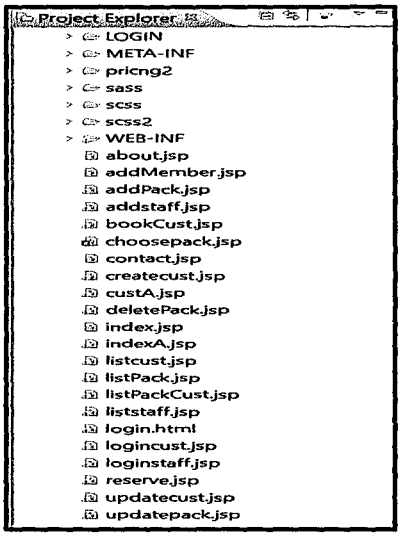


Figure 4.20 View-layer

```
40-     protected void doGet(HttpServletRequest request,
41              HttpServletResponse response) throws ServletException, java.io.I
42
43          System.out.println("----- masuk -----");
44
45      try {
46          packages user = new packages();
47          user.setPack_name(request.getParameter("pack_name"));
48          user.setPack_month(request.getParameter("pack_month"));
49          user.setPack_date(request.getParameter("pack_date"));
50          user.setPack_days(request.getParameter("pack_days"));
51          user.setPack_price(Integer.parseInt(request.getParameter("pack_price
52          user.setPack_location(request.getParameter("pack_location"));
53          user.setPack_maxseat(request.getParameter("pack_maxseat"));
54
55
56          boolean result = packagesDAO.addPack(user);
57
58          //HttpSession session = request.getSession(true);
59          //session.setAttribute("currentSessionUser", user);
60
61
62          PrintWriter out = response.getWriter();
63          response.setContentType("text/html");
64          out.print("<script type=\"text/javascript\">");
65          out.print("alert('Success add new packages');");
66      out.print("window.location = 'listPack';");
67      out.print("</script>");// logged-in page
68
69
70
71      }
72      catch (Throwable theException) {
73          System.out.println(theException);
```

Figure 4.21 Add packages coding in servlet

```
public void init() {
    // reads SMTP server setting from web.xml file
    ServletContext context = getServletContext();
    host = context.getInitParameter("host");
    port = context.getInitParameter("port");
    user = context.getInitParameter("user");
    pass = context.getInitParameter("pass");
}

protected void doPost(HttpServletRequest request,
        HttpServletResponse response) throws ServletException, IOException {
    // reads form fields
    String recipient = request.getParameter("recipient");
    String subject = request.getParameter("subject");
    String content = request.getParameter("content");

    String resultMessage = "";

    try {
        customerDAO.sendEmail(host, port, user, pass, recipient, subject,
                content);
        resultMessage = "The e-mail was sent successfully";
        System.out.println("-----"+resultMessage+"-----");
    } catch (Exception ex) {
        ex.printStackTrace();
        resultMessage = "There were an error: " + ex.getMessage();
    } finally {

        System.out.println("-----Email Done-----");
        request.setAttribute("Message", resultMessage);
        getServletContext().getRequestDispatcher("/reservation.jsp").forward(
                request, response);
```

Figure 4.20 Send email coding in servlet

Figure 4.20 show the coding in servlet for email. After customers confirm their reservation, the system will automatically send an confirmation email. The email will include the reservation details such as package name, members' details and price. The customer also given time within 48 hours for deposit payment or they also allow to make full payment.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

This chapter concludes overall for this project. This chapter also describe the limitations during conducted this project. Suggestions and recommendations also provided in this chapter to give future sight to other researcher that interested to enhance this project.

5.1 Conclusion

This project focused on making the reservation for Aliana Kembara travel agency. This project was carried out to minimize the problem faced by the stakeholder. The stakeholder record the information manually and has poor marketing activities such as advertising the latest packages on their Facebook.

A further study has been carried out to improve and have better understanding on the subject matter. Several type of IS were reviewed such as TPS, MIS and EIS that later give more clear understanding related to this project. Besides that, three current system were chosen to identify and analyze the features included. After that, the features of the proposed project was develop as show in table 4.2.

Waterfall model was identified as the best development model for this project. From five phase it was modified into three phase only which are gathering requirement, design and implementation. Within the given time all the three objectives were achieved. From the finding and analysis, it can be conclude that the process to make reservation is not simple and need to be complex in order to record and process the right data.

In order to complete this project and overcome the problem faced by the stakeholder, there are three objectives that need to be achieved. The first objective involved is to gather and analyse the requirements from Aliana Kembara. Second is to design the system for Aliana Kembara agency and last is to develop the system.

5.2 Strength of the System

The system give benefits to the user of the system which are customer and staff of Aliana Kembara agency. The system also provide knowledge to the academician, especially to the researcher who developed the system as the researcher need to have the deep knowledge on the methodology to use.

5.3 Limitations

There are some limitations during development of this project have been discovered:

i. Exclude testing phase

Firstly, the project do not include testing phase. This project used Waterfall model as the project methodology. However, the Waterfall model used for this project was improvised. The phase includes in this project were until implementation phase only. The system testing phase important to identify any problem arise in the system.

ii. Only cover the International Packages

Second, this project only include international package offer by Aliana Kembara Agency and not cover the domestic package. Besides that, the international package only apply to 10 current packages that most popular to Aliana Kembara Agency instead of 20 packages that they offer.

iii. No online transaction

Lastly, this system do not apply the online transaction payment for the customer who made booking for any packages. Nowadays, people always choose to use online transaction or other third party website such as paypal and ipay. In this system the customer make a payment via cash deposit and require to email the company the payment slip or receipt within 48 hours of purchases.

5.4 Recommendation

Based on the project limitation, a few recommendation are suggested by the researcher for the good of future improvement of the project. It can be used by the future developer if they are interested in enhancing this system. Below are the recommendation suggested:

i. Include testing phase

For the future researcher who want to enhance this system, it was suggested to include the testing phase in Waterfall model. This to phase can identify any problem and allow researcher to improve the system before its delivery

ii. Include more packages for customer

To attract more customer, this system should consider to include the domestic packages, as the number of Malaysia domestic tourism is increased as according to the Malaysia statistics department, the whole country recorded 60.7 million in domestic arrivals last year, marking a growth of 11.6 per cent.

iii. Add online transaction

Adding online transaction may ease the customer task in reservation. They do not have to do the manual cash deposit or online cash deposit to pay the reservation. By adding this features, it also can engage the customer to stay with Aliana Kembara Agency for the next holiday.

5.5 Personal Reflection

With the given time for developing this system from the documentation until the implementation using Waterfall Model, there are few personal reflection have been made by the researcher. First of all is the time management during the development process. The documentation must have done first before system development and the researcher also need to follow the deadline in report submission.

Next, in order to gather the requirement the most important skill in the researcher interpersonal skill. The good communication will result the needed information obtained during the interview. Besides that, the stakeholder also need to be explain clearly about the project purpose, benefit and limitation to their organization.

Lastly the researcher was challenged to have deeper understanding in programming knowledge and skill. The researcher need to find advance way to understand the coding and concept for this system by doing extra research and get some help from lecturers and friends. Besides that, the researcher need to build strong motivation during the development process in order to keep the work done on time.

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