Hong Kong Institute of Vocational Education (Tsing Yi)

Department of Information and Communications Technology

Higher Diploma in Software Engineering

System Development Project

Requirement Specification

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Group No. **Group 6**

Student	Contribution to the project (%) (Total 100%)	Signature
Au Chi Chung	25% / Total 100% in this team	
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System Development Project
Project Scenario: Integrated Tourism Management System

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1. Abstract

As the project development of the "Integrated Tourism Management System" in Ticket Tailor Ltd, our main target is planning and monitoring the development process that charge of designing the user interaction, strategies of the core design, along with implementing the gallery section and major sections that required interaction with different forms.

The objective of Integrated Tourism Management System is to develop a system in Ticket Tailor Ltd. which can automate the process and activities of a travel and tourism information. The purpose is to design a system using which one can perform all operations related to traveling, and users can select the places what the customer want to visit and make bookings for travel and accommodation for its customers. To review on the original system, it almost waste a lot of time for deal with the travel plan of the customers because only handles by man power. Also, the customers have to approach various agencies to find details of places and to book tickets. This is the problem that it often requires a lot of time and effort. The present system may be misguided the customer. It is tedious for the customer to plan a particular journey and have it executed properly.

The report is explaining the current problem and analyses the current system and the organization of Integrated Tourism Management System. In view of the present system is working by many complex manual, we are planning the trend of computerization which can connect to the database by network connecting that it can let the system user easier search the travel information. Moreover, the organization is easy to maintain a centralized repository of all related information. Our team also provides some solutions of the current system problem and optimizes the system processes. Also, we would explain how to use or simplify the processes by our designed system. For example, we design some function to improve the efficiency of the store, ensure the security and improve the data consistency.

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2. Assumption

1. Ticket Tailor Ltd. is a travel agency company locates in Hong Kong with more than 30 customer service centers and all deliver services are only available for Hong Kong. Their services penetrate in Hong Kong, Macau and Southern area of China, and they have customers across different scale of tour groups and individual travelers.

2. The present system is working by paper work for place customers order request in the retail outlets. And the way of travel order need many human resources that queue of the customers may lose any interest or time for the company. And which will make the work inefficiencies. Also, the deliver the document by written on paper to other department are not easily.

3. Customers have to approach various agencies to find details of places and to order tickets and it often requires a lot of time and effort in the present system. And then, the customers may not get the desired information from these offices and often they may be misguided.

4. Ticket Tailor Ltd. is an agency which will only charge payment intermediary costs but would not charge the pre-booking fees because all travel order will charge to the targeting company.

5. Staffs have no discount and no commission for purchasing any products of themselves from company because the overview didn't mention.

6. Ticket Tailor Ltd. may be lack of the after sales service after building the new computerization system. If the customer requires the after sales support, the branches of the company can only handle by salesman and the sales manager.

7. The company would provide the user training after building the new computerization system cause the staffs or customer may not know how to control the new system for enquiry the newest travel information and how to place the orders.

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3. Introduction

3.1 Company analysis

There is some information of Ticket Tailor Ltd. Ticket Tailor Ltd. is a travel agency company locates in Hong Kong with more than 30 customer service centers and all deliver services are only available for Hong Kong.

The retail outlets provide travel package order request and the travel information enquiry. In all of the brunches are two major positions, called sales manager and the salesman. And there are the main obligations of different positions:

Sales Manager

- Account Management
- Amend the system information and the order request
- After sales support
- Send out the customer order request to the targeting company

Salesman

- Place order request for the customers
- Generate ordering report
- Check the product quantity with the targeting company synchronize

3.2 Operating mechanism of present system

Although the operating mechanism of present system is holding a long time but it wasted many resources and inefficiencies. And there are the main actions of the system:

- Contact with supplier for accept the product offer
- Collect the information and details of the product
- Make the introduction for the product
- Sell for the different customers by salesman and sales manager
- Calculate the order records in paper work
- Generate the order report by manpower
- Change the product details , price, and re-order amount periodically
- Send the order request to the targeting supplier by phone contact or manpower

After building the new computerization system, we hope the above action can all-in-one for control in the information kiosk or computer.

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4. Problems Finding

4.1 Project background

We are received requirement from Ticket Tailor Ltd. to design the company daily operation and computerize the integrated tourism management system. At this stage, we develop the information system for the retail outlets as the pilot system. We also build any other additional functions for customers to enquiries and search product and price information.

The present system is defective, It would be inconvenient for the user, company, department. Due to there are defectives, we have proposed solution for each problem.

4.2 Problem from customer

Problem	Suggested Solutions
Problem from customer	
1. Customers may not get the desired information and may be misguided.	**Searching function** We can add a search function in new system. Customers have to search something through entering some keyword, system will look for all data of the database which it matches the customers' desired information. **Information filter** Refer to some Informational system or website, we suggest to build an information filter function for expend the keywords searching function. The system will provide some filter choice for customer by searching when they know what they want.
2. Customer need to read a lot of travel planning information that is really tedious for the customer	**Travel planning package** It is difficult to plan a travel for our customers, so we would provide some packages such as some planned attractions and hotel for them to choose, which is what other customers recommend. In view of this, our customers can easily collect and analyze the travel information. **Customize Travel Planning – For customer choice** In the new system, perhaps we could add a new button called "Combination packages" in the Module Selection Form. Customers have to choose some items such as 'city', 'price' and 'travel time'. Our system that filters out some packages which do not match their requirement shows some available packages to them. Therefore, it is convenient for customers to order without reading a lot of information.

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4.3 Problem from staff

Problem	Suggested Solutions
Problem from staff	
1. The system is defective that staff and customers need many paperwork for handle the orders, this often requires a lot of time and effort	**New computerization system connecting with database** We suggest using new software system to replace paperwork. New system not only integrates the air tickets and hotels information, but also provides cruise items and attractions. Customers only have to submit their personal profile one time because the system database would automatically store their data. If they want to book again, they only need to input some simple data, that it can reduce a lot of paperwork and processing time for customers and staff. **Reduce paperwork** Staff would use the online system without paperwork to help customers to place orders, which can reduce the time for handling data. Besides, after their booking, the system will automatically generate a Confirmation based on the input information instead of manpower.
2. In the present system, staff is difficult to explain and introduce the travel information by speech.	**Use multimedia to introduce the travel information** Our new system working on GUI operating system which allows using multimedia functions including text, audio, images and video. Those functions ease to express some abstract information. For example, using video or images to introduce attractions are more appealing. We through insert more multimedia functions in the system to reduce the time of introduction and explanation.
3. The staff may forget to cross out the air tickets have been sold so that make system error and customer cannot board a plane.	**Show the remaining amount of air tickets** Our new system is real-time synchronization with database. After transaction is completed, and the system will records the amount of air tickets has been sold in the order. The system calculates the total amount of air tickets for each flight in the database and then subtract the amount of sold, thus we obtain the remaining amount of air tickets. When the remaining amount less than one, the flight will be hidden. However, the remaining amount will be shown on each flight schedules, let our customer refer as well as avoid making mistakes.

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4.4 Problem from company

Problem	Suggested Solutions
Problem from company	
1. The process of handling customer is inefficient	**Multitasking** In the present system, handling many customers at the same time is very difficult due to paperwork only. So staffs are easy to forget some important things about the customers, which is very inefficient. **Support large data transfers and provide stable environment** We suggest arranging some computers at the kiosk and those computers will be installed our "Integrated Tourism Management System" for customers. The system allows one to easily enquire the relevant information, book tickets and make travel arrangement. Also, the customers themselves can use the new system to handle their travel plan without the service counter. Consequently, it can reduce the workload of the staff and improve the long queues problem.
2. Present system cannot confirm the identity of different staff. The confidential information may be leaked	**Login function** It can identify different users to login the system that it can restrict the function of different account in order to avoid all users can access some important information. For example, staff cannot access other staff information and get their password. System administrator will provide different user views in the database for every staff, that it is based on different position of the staff. Also, senior staffs have more functions and permissions to manage the information.
3. Present system is not environmentally friendly as it prints a lot of travel leaflets to promote trip.	**Provide more diversity detail to the customers** Our new system, which includes all travel information, provides the latest travel promotion under the menu page. So, the travel information will be updated regularly in the system for customers, which is an eco-friendly promotion. It can reduce printing a lot of travel leaflets. Moreover, if users want to get more details, they just need to click the promotion image or relevant link into the page for details.

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4. Poor data management	**Stable server of storing** Present method of maintaining data may appear data redundancy which also leads to data inconsistency. The company has a lot of data and information, but it does not has a system manage to decide which data should be store in same platform, which data should keep long time and which data should back up. For building the computerization system, we would improve the management data improve management of data which is about staffs, customers, products and travel order records. We can solve those problems by building a database. The database contains some relation such as staffs, hotels, and flight, etc. Also, The design goal with the database is that we can integrate the data into a single, logical structure. For the reason that, each data is recorded in only one place in the database that also minimize data redundancy while reducing the probability of inconsistencies. **Uninterruptible Power Supply** Since the system needs to process via the network and supply with the electronic power, the data may be loss from some case of accidents, such as the unstable power supply or virus attacking. For protect and keep the operating of the company, the system should use the Uninterruptible Power Supply. If suffer the case of power loss or unstable power, which can lead company continue for the company operations and have some time for the system backup.
5. Difficult to calculate financial operation for the department needs	**System status and the system record** Our new System not only provides travel information for customers but also it would record each deal and calculates the total fee. Then, The record would be automatically added to the database become tuple which clearly listed out staff who handle the orders, the order date, fee and others. The department manager can calculate highest turnover of staff and reward them. In addition, that is easy to calculate the agency's revenues by database which is convenient to make decision.

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5. Functional Requirement

5.1 Suggestions of the original system problem

To improve the performance of the company, we provide these functions to solve the different problems of present system. And we need to focus on the system data conversion which may have program-data dependence and the program-data independence.

5.2 Function for system management

Function	Description
System Management	
1. Login	Login is required before the staff using this system that it can prove to be system administrator and staff using this system. And different users have different permissions, that it can ensure the security of the Integrated Tourism Management System. Moreover, the user should register the account before using this system, and the login function have the enter records and the approved enter user list in the database system server, that must prevent strangers to entering the system and check out the users entering record. Each staff will use their staff ID or email account as a login name and password to use the system. In order to enhance the system security, the password should be encrypted by one of the hash function like md5, sha-1 or others. Decryption process will be used in verification of the password during login. Because of the encryption of user interface, the "Encrypt password function" is required for customers' privacy.
2. Sign out	Sign out is required before using the system that it can prove the system status of use at present for ensuring the security of the Integrated Tourism Management System. Moreover, the system will automatic sign out and ask user to re-enter the password or login another user account without any action.

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	For the customer user interface, the systems will automatically return to the home page without any action.
3. Encrypt password	If any password such as user password, bank account password etc. is inputted, each character will be replaced by "*" due to customers' privacy.
4. Account management console	**Register account(only for the management posts)** Staff should provide user ID, email address, password, date of birth etc. to register a user account for using the system. The personal information is used to confirm the user identity for using the "Forgot password function". Customer can control a "guest" account to operate the system that they can use the system function less than the register account (staff). The personal information such as name, email address, telephone number, bank account etc. will be asked to input only within any booking. **Account froze(only for the management posts)** It is used for the managers to prohibit some accounts during some situation (e.g. system test, malicious attacks, staff in blacklist) that they can use this function for improving the security. **Delete account(only for the management posts)** It is used for the managers to delete some account in the staff account database during some situation (e.g. labor turnover) that they can use this function for improving the management efficiency. **Forgot password(for staff)** The function can let the staff retriever their password, and increase the productivity of the employee. The system user (staff) can use this function when they forgot their password. The system will send the spare password after entering their user ID and some personal information. After inputting the spare password, system will ask the user to change the password again.

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5.3 Function for system information enquiry and reservation

Function	Description
System Information Enquiry & Reservation	
5. Module menu & Recommend journey package	A user form that have four menu selections to link four different forms. After user login for staff (full function) or "guest" for customers (partial function), this form will be displayed with their user name and photo.
6. Air tickets enquiry	The development involves the Air Ticket Enquiry Form with Flight Schedule table. It is used for helping the staff of Ticket Tailor to search the air tickets for customers. Customers also can use this enquiry user interface at the kiosk.
7. Hotel schedule enquiry	It is used for helping the staff to search the hotel schedule for customers. Customers also can use this enquiry user interface at the kiosk. Then, it will show the details of the hotel such as destination, check-in date, check-out date etc.
8. Air ticket order and Hotel schedule reservation	It is used for processing order of air ticket and hotel reservation in a form as well as storing the ordered information into the database. After the reservation, all the related orders will be displayed in this form. The orders will be divided into two major parts in one single form. The upper part of the form is air ticket and the lower part of the form is Hotel Schedule. Two parts also have an amount of order subtotal. Also, the grand total should be displayed on the bottom of the form. Moreover, the order function can let the staff (for customers) and customers cancel or confirm the order at any time.
9. Cruise tour enquiry form and Attraction enquiry form	Attraction Enquiry Form with Attraction table that it is used for helping the staff and customers to search the relevant traveling information for individual travelers. Both of enquiry functions can arrange a lot of tourist attraction for catering to the different customers.

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10. Cruise tour booking and Attraction booking	Cruise tour booking function is an extension of the cruise enquiry form as well as the staff and customers can select a particular cruise tour in the cruise enquiry form and click the confirm button in the cruise tour line. Similarity, Attraction booking function is also an operating mode that both are handled by staff.
11. Transportation fleet management	The customer who booked an attraction that are qualified to request a “Car” or “Coach” for pick-up and drop-off at the specified location. Customers will also select date from the “Pick-up Date”, “Drop-off Date” and the “Book Day” will be calculated automatically. The transportation charges will be calculated by times the book day.
12. Driver and roster for transportation bookings	This function can modify the Transportation Booking Module and apply the driver and its roster to the vehicle bookings for assigning the driver to the vehicle and recording the salary of the driver.
13. Verification code function	After customer entered their payment information, the system will ask the customer input the verification code for the payment that it can make sure the orders is not from the bots.

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5.4 Function for system report and additional function

Function	Description
System Report & Additional Function	
14. Data report of all bookings	It is a menu for developing a data report for particular customer which contains all bookings. And the report content includes flight information, hotel detail, cruise, attractions and vehicle bookings.
15. Graphics report for data analysis	It shows five data reports with different types of graphics, which should be generated in submenu "Performance" for analysis to meet the system requirements.
16. Check records for customers	This function used for checking their booking records. They should input their telephone number at the kiosk to check the records only. Moreover, they will get a schedule via their email address before their booking.
17. Check records for staff	Used for checking all customers booking records.
18. Grading system	This function used for marking for each item of attraction, tickets and hotel. The system will provide to customers for references. Surely, they would get an email to grade their booked item before travelling.
19. Provide map of place for the hotel	The system will provide more details for the customer and list the coordinate of the hotels.
20. Product searching filter	User can select their desired choice one by one within their budget.
21. Provide the most popular information on the home page	After collecting the order request from the customers at the kiosk, the system will send the orders request to relevant agencies in real time.
22. Orders request handed over to agencies	When collected the order request from the customers entered in the kiosk. The system will send the orders request to corresponding agencies in real time.
23. Orders counting management	When the agencies send back the orders completion message to the system, it will calculate the quantity with product and count the remaining booking orders.

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6. Non-Functional Requirement

6.1 Product Requirement

Non-Function	Description
1. Computer specification	The needs of minimum computer specification: Microsoft Windows 7 or lasted version, 4 GB RAM minimum, and at least 120 GB hard disk space, also the tablet on the information kiosk are using Microsoft operating system. For the hardware, there are some information of server and hardware. And it refers to Windows Server 2008 System Requirements. For the software, we design the company daily operation and computerize the information system developed by C#.NET. For the company website, the system will develop by ASP.NET. Also, the system database connection will develop by MySQL. When develop the integrated tourism management system with the C# programming language, we need some software for edit the program's source code. So we consider to use the Microsoft Visual Studio for develop the new system. Also, Microsoft Visual Studio is an integrated development environment (IDE) from Microsoft. It is used to develop computer programs for Microsoft Windows, as well as web sites, web applications and web services. The minimum specification example: • Processor - dual core @ 2.4 GHz (Core Duo Intel processor or equivalent AMD) • RAM - 4 GB • Hard Drive - 120 GB 5400 RPM hard drive • Wireless (for laptops) - 802.11g/n (WPA2 support required) • Monitor - 19" LCD - desktop only • Operating System - Windows 7 with Service Pack 1 or Apple OS X 10.8 • Backup Device - External hard drive

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2. Tablet specification in information kiosk	The important need is that the tablet should operate in the Microsoft OS environment. That there is the minimum tablet specification in the information kiosk: The minimum specification example: Name: Surface Pro Software: Window 8 Pro upgradeable to Windows 8.1 Dimensions: Dimensions: 27.5 cm x 17.3 cm x 13.46mm Weight: Less than 900 grams Storage and Memory: 64GB or 128GB CPU: 3rd Gen Intel Core i5 Processor Wireless: Wi-Fi (802.11a/b/g/n) Bluetooth®4.0 Battery Life 42 W-h Ram: 4 GB Ram
3. Server connection with MySQL database & Microsoft server engine	Using the most widely used open-source client-server model database management system can store the system data about travel information or saving the data of the staff. Free-software open-source projects that require a full-featured database management system often use MySQL. Moreover, it is easy to invite programmer for maintaining the database. Also, it can supply the function to coordinate the hardware of the system. The minimum specification example: Name: IBM System x3100 server Type: Upright server CPU: Dual-core Intel Pentium Dual Core Processor E2140 (1.60GHz) Ram: 1GB Support Ethernet network: 1GB Hard drives: 10TB SATA hard drives
4. Microsoft Windows 7 or latest version	The operating system for the back-end office computer which is enough for handling the order work. Microsoft operating system may be the good choice for developing the Integrated Tourism Management System by using Microsoft Visual Studio C#. It is because this OS has sufficient compatibility with database management for embedding in to the development tools.

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5. Microsoft.Net Framework 4 or latest version	Microsoft.Net Framework is used for the back-end office computer and the system communication. As the application for communicating to the system base and the programming language on the framework engine, it has highly compatibility by using the framework together with the C# programming language. So the system can write more easily for the asynchronous code.
6. Data Access Right Control	It is aim for the unique account to staff and each account has different data access permission which is based on the staff position.
7. Backup of mechanism	In order to the integrated tourism management system is storing a lot of data of travel information, order record, client's connection, etc. If the system and the database have a case of accidents, such as the unstable power supply or virus attacking. So we must have the backup of mechanism for avoiding the data loss. For example, the backup mechanism can use "RAID 6" and using "Uninterruptible Power Supply" for stable work.

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6.2 Organizational Requirement

Non-Function	Description
1. More user-friendly and accessibility (Audible-touch, Multi-language)	For match up with customers of Macau and Southern area of China, the system will provided English, Traditional Chinese and Simplified Chinese version to different user. And it may help for the blind for building with audible-touch software in the information kiosk.
2. System Security and Network Security	The system will only work for the online users for using web version database of the service. Also, the ordering record and the personal information around the web pages will be using MD5 or another method to encrypt. At the same time, it can prevent user data from being leaked. Internal management, the system will permit the relevant authorities to amend the relevant part. Then, the system shall not disclose any personal information about user apart from their name and password of the system. For example, the staff account will not make known to public and the customer order transaction data will hide for prevent account theft. In addition, the system will be backed up every day to prevent burst error.
3. Meet the needs of manager posts	The system can let the managers easier administrate the system action for their needs. In view of the old system in paper work, the computerized system is more high efficiency for handling the order request from the customers. And then, manager can supervise the staff account for controlling the staff commission.
4. Meet the needs of staffs	Staff can use the system before login that they can have the authentication for ordering the items. Also, it can improve the system personal security and it can display the personal volume of business. That staff have more high efficiency for handling the customer order request in the new management system.
5. Meet the needs of customers	The customers can place some orders, information enquiry, or order request enquiry at all time in the new system at the information kiosk. That the company and the customers can have high efficiency for ordering that they needs.

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6.3 External Requirement

Non-Function Needs	Description
1. The data connection for the staff personal information and account management	The system will connect the database of staff personal information for pick up the latest data.
2. The data connection for the customer personal information	The system will connect the database of customer personal information for pick up the latest data.
3. Connect with the hotel database to get most updated hotel details	The system will connect the database of hotel database for pick up the latest hotel booking details and the updated room information.
4. Connect with the airline database to get most updated flight details	The system will connect the database of airline database for pick up the latest flight booking details and the updated flight information.
5. The data connection for the updated details of attractions	The system will connect the database of recommend attractions information for pick up the latest data.
6. The data connection for the transport (vehicle & driver)	The system will connect the database of transports for pick up the latest data of vehicle renting and the driver reservation.

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7. Summary

In view of this report, we know that the original system has many problems that it affects our services quality. Also, it is difficult to find information when the customers need search something or place order. Due to the present problems, we have provided some information and suggestion to improve them.

Regarding the new online system “Integrated Tourism Management System”, there are some advantages and disadvantages. Firstly, as for the advantages, the system is efficient and organizational to collect the customers’ information. Not only can Staff manage their orders easily, but they also decrease using paper for handling the orders, which is very eco-friendly. Moreover, customers can conveniently get some information what they want by the new system.

Although our system has a lot of merits, there are many shortcomings for the system. New system is an online system that the building budget is high naturally. Besides, our staff will be trained for learning the system. It is also a difficulty for our system. Moreover, the result may not be my expectation for the reason that the new system has to be used at our kiosk, which is inconvenient for our customers. In view of the disadvantages, we would provide some improvement for the further update.

According to the fault of the system, we know that the budget is high. On the other hand, we do not lack the services for our customers, which is our obligation. Then, the training for the system is necessarily. If we could offer best services for them, the system should attract our customers. In the future we may optimize our system. If possible, we would design a website for the customers that they can use our system at home. Certainly, they have to handle the needs of minimum computer specification of the new system that are Microsoft® Windows® 7 or latest version.

Finally, about the system security and management, that are also very important, we would tighten control over our system and database, which can prevent user data from being leaked as well as ensure our customers’ privacy. Now, we are going to design the “System Analysis” and “Design Specification” parts.