

Temasek Polytechnic
School of Informatics and IT

Diploma in Information Technology (IT)

Software Requirement Specifications (SRS)

Project Particulars

Tutor	Mr Mel Goh
Class	P03
Project Title	Delonix Regia Hotel Management System

Project Team's Particulars

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Revision History

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1. DISTRIBUTION OF WORKLOAD

Requirement Gathering	Members
1 Distribution of Workload 2.3 General Constraints 2.5 Data Requirements 2.6 User Interface Requirements 5 References Compilation	Ron Soon JiaJun (Leader)
1 Distribution of Workload 2.7 Interface with Other Systems 2.8 Assumptions 3.4 Availability 5 References	Nicholas Foo
1 Distribution of Workload 2.1 System Functions 2.2 User Characteristics 2.4 Functional Requirements 3.5 Security and Access Control Requirements 5 References	Low Xin Yi
3.1 Operating Environment 3.2 Development Constraints 3.3 Performance 5 References	Joseph Koh

2. OVERVIEW OF REQUIREMENTS

2.1 System Functions

Room Availability & Booking

It shows the reservation made by guests and record the guest particulars.

Housekeeping & Staff Management

Record of staff details and schedule duty for staff.

Reporting

There are 5 types of report to keep track of:

- Room status (A report that keeps track of whether the rooms are vacant, occupied or taken and has been scheduled for cleaning)
- Room guest (A report that records the number of adults and children in one occupied room)
- Hotel guest (A report that keeps daily records of the guests staying in the rooms and it can be viewed according to the date)
- Room occupancy (A report that generates the statistic of room occupancy, based on daily, weekly, monthly or yearly)
- Housekeeping (A report that records the housekeeping schedule that the staff have been allocated based on the four different types of duties and it can be viewed by filtering the date, week or month)

User Account & Login Creation

It records all the staff and user accounts details (Username and password) that is created.

Print Preview

It allows users to view the report before printing.

2.2 User Characteristics

End Users: They(receptionist) usually work at the front desk that handles all the guest's room reservation that can be either made by calls, walk-in or online and allocate room for the arrival guest. When the guest checkout, the receptionist will need to print an invoice that shows the calculation of room rate and charges for them to make their payment.

Management Users: They supervise the performance of staffs and schedule duty for them. They will also need to keep track of the hotel progress and handles situation such as guest complaints.

Administrator: Mr. Wang has full control of all the systems and handles/create accounts for new users and staff.

2.3 General Constraints

Hardware:

The developed software should not be overly resource (CPU, RAM, Memory) consuming given the following hardware specifications of the computer the software is to be installed on:

- Pentium 4 (Intel processor)
- 1 GB RAM
- 160 GB HDD
- Broadband Internet Connection

Furthermore, as the system will be installed on this computer, it would prove difficult to upgrade the user terminal to support server capabilities to allow for guests to enquire about room availability online and timely.

Software:

The developed software should be Windows compatible at minimum as the computer is running on the following OS:

- Windows XP SP2

Single Computer:

As the system will be installed on a single computer, it is unlikely that the software will be accessible by multiple users at a given moment. As such, the various users will be unable to access the various functions simultaneously.

Budget:

The system will have to be completed within a budget of \$70 000, which affects the resources obtainable for development as well as the amount of functionality which can be developed.

Data Backup:

As mentioned by Mr. Wang, the system will likely be backed up once a month or the first Sunday of every month at 2-3am as he believes that is the best timing to do so. As such, in the event whereby the system requires the usage of the backup such as Hardware Failure, it could potentially suffer data loss of up to one month.

Terminology:

PC – Personal Computer

SP2 – Support Package 2

GB – Gigabyte

RAM – Random Access Memory

HDD – Hard Disk Drive

OS – Operating System

2.4 Functional Requirements

The room availability & booking system shall allow the user to search guest information and reservation by

- Guest Id
- First name
- Last name
- Card name
- Contact number
- Email
- Reservation Id
- Check in date
- Checkout date

The housekeeping and staff management system shall allow management to search staff by

- Staff Number
- First name
- Last name
- Bank account number
- Contact number
- Duty Id

The report system shall allow reports to be search by

- Report name
- Date
- Status (Vacant, occupied, taken, cleaning)
- Guest name (First name, Last name)
- Staff number
- Duty type

The account system shall allow account details to be search by

- Username
- Account type

The preview system shall allow user to edit report content before printing by

- Adjusting page margin
- Configure field (display or hide data)

2.5 Data Requirements

The minimum data inputs required after consideration of possible necessary additional data types is as follows:

Room Availability and Booking Module:

- Guest

- Details
 - Identification Number (NRIC, Passport No)
 - First Name
 - Last Name
- Contact Details
 - Contact Number
 - Email
- Guest Home and Mailing Address
 - Street Address
 - Block and/or House Number
 - Postal Code
 - City
 - Country

- Reservation/Stay/Booking

- Details
 - Reservation ID
 - Identification Number (Guest)
 - Staff ID
 - Number of Adults
 - Number of Children
 - Check-In Date
 - Check-In Time
 - Check-Out Date
 - Check-Out Time
 - Payment Method (Cash or Credit Card)
 - Room Type
 - Room Number
- Additional Information
 - Remarks/Requirements
 - Late Checkout Indicator
 - Booking Status (Pending, Ongoing, Completed, Cancelled)

- Payment Invoice

○ Details

- Invoice ID
- Invoice Date
- Reservation ID
- Guest Details (From Guests)
- Check-In Date
- Check-Out Date
- Number of Nights Stayed
- Room Rate Details (From Room Rates)
- Total Room Charges
- Additional Charges
- Total Charges
- Payment Mode
- Payment Status (Pending, Completed)

Housekeeping and Staff Management Module

- Staff

○ Details

- Staff ID
- Staff Name
- Identification Number (NRIC, Passport No, Work Permit No)
- Gender
- Date of Birth
- Bank Account Number
- Duty Type (General Maintenance, Room Maintenance, Estate Maintenance, Security)

○ Address

- Street Address
- Block and/or House Number
- Postal Code
- City
- Country

○ Contact Details

- Contact Number
- Email address

- Duty Roster

○ Details

- Duty ID
- Staff ID
- Duty Type
- Date
- Start Time
- End Time

User Accounts and Login Creation Module

- Account Details

- Username
- Password
- Account Type (End, Management, Administrator)

Additional

- Rooms

- Details
 - Room Number
 - Room Floor
 - Room Type
 - Smoking Room (Yes, No)
 - Room Status (Vacant, Booked, Occupied, Cleaning, Unavailable)

- Room Type Information

- Details
 - Room Type
 - Room Capacity
 - Room Rate
 - Room Weekend/Holiday Rates (x1.2)
 - Room Promotional Rates (x0.8)

- Promotions

- Details
 - Promotion Id
 - Promotion Name
 - Promotion Start Date
 - Promotion End Date

Credit Card Number is not stored in the database as it is not recommended by the PCI Security Standards Council (SSC) due to security risks of the data being compromised. If the numbers were to be stored, PCI guidelines would have to be followed. Cardholder name and expiry date are not included as the credit card number itself is not stored.

2.6 User Interface Requirements

2.6.1 Login Page

Field Type	Field Name	Field Description
Button	Login	Attempts login to terminal with inputted User ID and Password
Text Box	User ID	User ID input field
	Password	Password input field
Text Field	Delonix Regia Hotel	Hotel name indication
	Virtual Terminal	Software indication
	User ID:	User ID input field indication
	Password:	Password input field indication

Delonix Regia Hotel

Virtual Terminal

User ID:

Password:

Image 2.6.1: Login Page

2.6.2 Footer

Field Type	Field Name	Field Description
Text Field	Copyright	Copyright indication

© 2017 Ron Soon JiaJun

Image 2.6.2: Footer

2.6.3 Header

Field Type	Field Name	Field Description
Button	Logout	Attempt logout of terminal
Menu	Menu	Consists of Options
Options	Home	Links to Home Page
	Room Info and Booking	Consists of Dropdown Links Information, Statuses, Bookings, Checkout
	Housekeeping and Staff	Consists of Dropdown Links Housekeeping, Staff Records
	Report	Links to Report Page, where 5 different report types can be generated, viewed, and sent for printing
	More	Consists of Dropdown Links Accounts and Promotions
Text Field	Delonix Regia Hotel	Hotel name indication
	Current User:	Current user indication

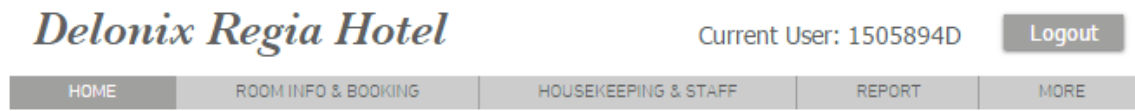


Image 2.6.3: Header

2.6.4 Home Page

Field Type	Field Name	Field Description
Image	Welcome	Welcoming image
Text Field	Navigation	Navigational Information



Navigation:

Room Info and Booking

- Information: Room types, rates, capacity, and additional details are provided in this page for reference.
- Statuses: Room numbers, floors, and statuses are provided here, grouped according to their types, along with an indication for ongoing promotions.
- Bookings: Making, editing, and cancellation of bookings/reservations are done here, along with the bookings' status management. Furthermore, new guests are registered here as well.
- Checkout: Bookings/reservations with an "ongoing" status are found here, allowing for them to be changed to "completed" status and used to generate an invoice for confirmation and payment purposes. Payment is also done here.

Housekeeping and Staff (Restricted to Management and Administrators)

- Housekeeping: Staff are assigned to scheduled duty through a duty roster here.
- Staff Records: Staff records are viewed, stored, edited, and deleted here.

Report

Reports consisting of data regarding

- all rooms in the hotel and their statuses
 - data regarding all guests in a particular room
 - all guests in all rooms at a particular date
 - statistics on room occupancy on a daily, weekly, monthly, as well as yearly (Restricted to management and administrators)
 - duties which staff have been allocated to on a daily, weekly, as well as monthly basis (Restricted to management and administrators)
- can be generated, viewed, and sent for printing here.

More

- Accounts: View, create, and delete accounts (Restricted to Administrators)
- Promotions: View, create, edit, and delete promotions (Restricted to Management and Administrators)

Image 2.6.4: Home Page

2.6.5 Room Information

Field Type	Field Name	Field Description
Button	Edit (x3)	Links to Room Information Edit page with data of selected Room Type
Image	Standard Room	Image of standard room
	Deluxe Room	Image of deluxe room
	Luxury Room	Image of luxury room
Text Field	Room Information	Current room indication
	Standard	Standard room details
	Deluxe	Deluxe room details
	Luxury	Luxury room details
	Restriction (x3)	Restriction indication

Room Information



Standard

Rates: Standard - \$100 | Weekend/Holiday - \$120 | Promotional - \$80
Capacity: 4
Smoking Rooms: Available

Edit

(Restricted to Management and Administrators)



Deluxe

Rates: Standard - \$150 | Weekend/Holiday - \$180 | Promotional - \$120
Capacity: 6
Smoking Rooms: Available

Edit

(Restricted to Management and Administrators)



Luxury

Rates: Standard - \$200 | Weekend/Holiday - \$240 | Promotional - \$160
Capacity: 8
Smoking Rooms: Not Available

Edit

(Restricted to Management and Administrators)

Image 2.6.5: Room Information

2.6.6 Room Information Edit Page

Field Type	Field Name	Field Description
Button	Save	Attempts saving of data and links to Room Information
	Cancel	Returns to Room Information without processing changes
Text Box	Type	Type input field
	Standard Rate	Standard Rate input field
	Capacity	Capacity input field
Text Field	Room Information Edit	Current room indication
	Type:	Type input field indication
	Standard Rate:	Standard Rate input field indication
	Capacity:	Capacity input field indication

Room Information Edit

Type:

Standard Rate:

Capacity:

Image 2.6.6: Room Information Edit Page (Standard Room)

2.6.7 Room Statuses Page

Field Type	Field Name	Field Description
Button	Yes	Attempts change of smoking room data to “Yes”
	No	Attempts change of smoking room data to “No”
	Set	Attempts change of room status data to “Unavailable”
	Remove	Attempts change of room status data to “Available”
Table	Standard	Table containing all standard rooms along with its data
	Deluxe	Table containing all deluxe rooms along with its data
	Luxury	Table containing all luxury rooms along with its data
Text Box	Room Number (x2)	Room Number input field
Text Field	Room Statuses	Current Room indication
	Standard	Standard table indication
	Deluxe	Deluxe table indication
	Luxury	Luxury table indication
	Smoking Room	Smoking Room function indication
	Set Smoking Room Status...	Smoking Room function description
	Availability	Availability function indication
	Set/Remove “Unavailable”...	Availability function description

Room Statuses

Standard

Room Number	Room Floor	Smoking Room	Status
201	2	Yes	Vacant
202	2	Yes	Booked
203	2	No	Occupied
204	2	No	Cleaning
205	2	No	Unavailable

Deluxe

Room Number	Room Floor	Smoking Room	Status
301	3	Yes	Vacant
302	3	Yes	Booked
303	3	No	Occupied
304	3	No	Cleaning
305	3	No	Unavailable

Luxury

Room Number	Room Floor	Smoking Room	Status
401	4	Yes	Vacant
402	4	Yes	Booked
403	4	No	Occupied
404	4	No	Cleaning
405	4	No	Unavailable

Smoking Room

Set Smoking Room status for room:

Yes

No

Availability

Set/Remove "Unavailable" status for room:

Set

Remove

Image 2.6.7: Room Statuses Page

2.6.8 Room Bookings Page

Field Type	Field Name	Field Description
Button	New Guest	Links to New Guest page
	Returning Guest	Links to New Booking page
	Edit	Links to Edit Booking page with data of inputted Reservation ID
	Check-In	Attempts change of Booking Status with data of inputted Reservation ID to "Ongoing"
	Cancel	Attempts change of Booking Status with data of inputted Reservation ID to "Cancelled"
Text Box	Reservation ID (x2)	Reservation ID input field
Text Field	Room Bookings	Current room indication
	Make Booking	Booking function indication
	Edit Booking	Edit Booking function indication
	Enter Reservation ID...	Edit Booking function instructions
	Check-In/Cancel Booking	Check-In/Cancel functions indication
	Change Booking Status...	Check-In/Cancel functions description

Room Bookings

Make Booking

New Guest

Returning Guest

Edit Booking

Enter Reservation ID of Booking:

Edit

Check-In/Cancel Booking

Change Booking Status to "Ongoing" or "Cancelled":

Check-In

Cancel

Image 2.6.8: Room Bookings Page

2.6.9 New Guest Page

Field Type	Field Name	Field Description
Button	Save	Attempts saving of data and links to New Booking
	Cancel	Returns to Room Bookings without processing changes
Text Box	Identification Number	Identification Number input field
	First Name	First Name input field
	Last Name	Last Name input field
	Contact Number	Contact Number input field
	Email	Email input field
	Street Address	Street Address input field
	Block/House Number	Block/House Number input field
	Postal Code	Postal Code input field
	City	City input field
	Country	Country input field
Text Field	New Guest	Current room indication
	Identification Number:	Identification Number input field indication
	First Name:	First Name input field indication
	Last Name:	Last Name input field indication
	Contact Number:	Contact Number input field indication
	Email:	Email input field indication
	Street Address:	Street Address input field indication
	Block/House Number:	Block/House Number input field indication
	Postal Code:	Postal Code input field indication
	City:	City input field indication
	Country:	Country input field indication

New Guest

Identification Number:

First Name:

Last Name:

Contact Number:

Email:

Street Address:

Block/House Number:

Postal Code:

City:

Country:

Image 2.6.9: New Guest Page

2.6.10 New Booking Page

Field Type	Field Name	Field Description
Button	Save	Attempts saving of data and links to Room Bookings
	Cancel	Returns to Room Bookings without processing changes
Calendar	DD-MM-YYYY (x2)	Opens calendar to select date
Dropdown	Payment Method	Dropdown list consisting of: Cash, Credit Card
	Room Type	Dropdown list consisting of: Standard, Deluxe, Luxury
	Late Check-Out	Dropdown list consisting of: Yes, No
Text Box	Identification Number	Identification Number input field
	Number of Adults	Number of Adults input field
	Number of Children	Number of Children input field
	HH:MM (x2)	HH:MM input field
	Remarks/Requirements	Remarks/Requirements input field
Text Field	New Booking	Current room indication
	Identification Number:	Identification Number input field indication
	Number of Adults:	Number of Adults input field indication
	Number of Children:	Number of Children input field indication
	Check-In Time:	HH:MM input field indication
	Check-In Date:	Calendar indication
	Check-Out Time:	HH:MM input field indication
	Check-Out Date:	Calendar indication
	Payment Method:	Payment Method dropdown list indication
	Room Type:	Room Type dropdown list indication
	Standard:	Room Type availability
	Deluxe:	Room Type availability
	Luxury:	Room Type availability
	Remarks/Requirements:	Remarks/Requirements input field indication
	Late Check-Out:	Late Check-Out dropdown list indication

New Booking


Identification Number:

Number of Adults:

Number of Children:

Check-In Time:

Check-In Date:



Check-Out Time:

Check-Out Date:



Payment Method:



Room Type:



Standard: Available

Deluxe: Available

Luxury: Unavailable

Remarks/Requirements:

Late Check-Out:



Save

Cancel

Image 2.6.10: New Booking Page

2.6.11 Edit Room Page

Field Type	Field Name	Field Description
Button	Save	Attempts saving of data and links to Room Bookings
	Cancel	Returns to Room Bookings without processing changes
Calendar	DD-MM-YYYY (x2)	Opens calendar to select date
Dropdown	Payment Method	Dropdown list consisting of: Cash, Credit Card
	Room Type	Dropdown list consisting of: Standard, Deluxe, Luxury
	Late Check-Out	Dropdown list consisting of: Yes, No
Text Box	Number of Adults	Number of Adults input field
	Number of Children	Number of Children input field
	HH:MM (x2)	HH:MM input field
	Remarks/Requirements	Remarks/Requirements input field
Text Field	Edit Booking	Current room indication
	Number of Adults:	Number of Adults input field indication
	Number of Children:	Number of Children input field indication
	Check-In Time:	HH:MM input field indication
	Check-In Date:	Calendar indication
	Check-Out Time:	HH:MM input field indication
	Check-Out Date:	Calendar indication
	Payment Method:	Payment Method dropdown list indication
	Room Type:	Room Type dropdown list indication
	Standard:	Room Type availability
	Deluxe:	Room Type availability
	Luxury:	Room Type availability
	Remarks/Requirements:	Remarks/Requirements input field indication
	Late Check-Out:	Late Check-Out dropdown list indication

Edit Booking

Number of Adults:

Number of Adults

Number of Children:

Number of Children

Check-In Time:

HH:MM

Check-In Date:

DD-MM-YYYY



Check-Out Time:

HH:MM

Check-Out Date:

DD-MM-YYYY



Payment Method:

Cash



Room Type:

Standard



Standard: Available

Deluxe: Available

Luxury: Unavailable

Remarks/Requirements:

Remarks/Requirements:

Late Check-Out:

Yes



Save

Cancel

Image 2.6.11: Edit Booking Page

2.6.12 Room Checkout Page

Field Type	Field Name	Field Description
Button	Check-Out	Attempts change of Booking Status with data of inputted Reservation ID to “Completed”, and links to Invoice Additional Charges page
	Edit	Links to Invoice page with data of inputted Reservation ID
	Cash	Attempts change of Payment Status with data of inputted Reservation ID to “Completed”
	Credit Card	Links to Credit Card Payment Page with data of inputted Reservation ID
Text Box	Reservation ID (x3)	Reservation ID input field
Text Field	Room Checkout	Current room indication
	Check-Out	Check-Out function indication
	Edit Invoice	Edit Invoice functions indication
	Payment	Payment functions indication
	Enter Reservation ID... (x3)	Check-Out/Edit Invoice function instructions

Room Checkout

Check-Out

Enter Reservation ID of Booking:

Check-Out

Edit Invoice

Enter Reservation ID of Booking:

Edit

Payment

Enter Reservation ID of Booking:

Cash

Credit Card

2.6.12: Room Checkout Page

2.6.13 Invoice Additional Charges Page

Field Type	Field Name	Field Description
Button	Generate	Attempts change of Payment Status to “Pending”, saving of data, printing of invoice, and links to Room Checkout
Dropdown	Item Value (x3)	Dropdown list consisting of values 0-10
Text Box	Damages	Damage costs input field
Text Field	Invoice Additional Charges	Current room indication
	Water Bottles:	Water Bottles dropdown list indication
	Potato Chips:	Potato Chips dropdown list indication
	Beers:	Beers dropdown list indication
	Damages:	Damage costs input field indication

Invoice Additional Charges

Water Bottles:

Potato Chips:

Beers:

Damages:

Generate

Image 2.6.13: Invoice Additional Charges Page

2.6.14 Credit Card Page

Field Type	Field Name	Field Description
Button	Process	Attempts processing of credit card payment, change of Payment Status to “Completed”, and links to Room Checkout page
	Cancel	Returns to Room Checkout without processing changes
Calendar	DD-MM-YYYY	Opens calendar to select date
Text Box	Number	Number input field (Censored)
	Holder’s Name	Holder’s Name input field
Text Field	Credit Card Payment	Current room indication
	Number:	Number input field indication
	Holder’s Name:	Holder’s Name input field indication
	Expiry Date:	Expiry Date calendar indication

Credit Card Payment

Number:

Holder’s Name:


Expiry Date:
 

Image 2.6.14: Credit Card Page

2.6.15 Housekeeping Page

Field Type	Field Name	Field Description
Button	Add (x4)	Attempts addition of Staff ID to duty roster in a datetime slot
	Remove (x4)	Attempts removal of Staff ID from duty roster in a datetime slot
Calendar	DD-MM-YYYY (x4)	Opens calendar to select date
Dropdown	HH:MM – HH:MM (x4)	Dropdown list consisting of values 00:00 – 11:59 and 12:00 – 23:59
	Staff ID (x4)	Dropdown list consisting of staff ID values with the same Duty Type
Table	General Maintenance	Table containing General Maintenance datetime and allocated staff
	Room Maintenance	Table containing Room Maintenance datetime and allocated staff
	Estate Maintenance	Table containing Estate Maintenance datetime and allocated staff
	Security	Table containing Security datetime and allocated staff
Text Field	Housekeeping	Current room indication
	Date: (x4)	Calendar indication
	Time: (x4)	HH:MM – HH:MM dropdown indication
	Staff: (x4)	Staff ID dropdown indication

Housekeeping

General Maintenance

Weekly Navigation: < >

Date	00:00 - 11:59	00:00 - 11:59	12:00 - 23:59	12:00 - 23:59
28-05-2017	1000000A	2000000A	3000000A	4000000A
29-05-2017	7000000A	5000000A	2000000A	9000000A
30-05-2017	3000000A	1000000A	6000000A	8000000A
31-05-2017	-	4000000A	8000000A	6000000A
01-06-2017	1000000A	2000000A	4000000A	8000000A
02-06-2017	3000000A	8000000A	-	5000000A
03-06-2017	7000000A	2000000A	9000000A	-

Date: Time: Staff:

Add Remove

Room Maintenance

Weekly Navigation: < >

Date	00:00 - 11:59	00:00 - 11:59	12:00 - 23:59	12:00 - 23:59
28-05-2017	1000000A	2000000A	3000000A	4000000A
29-05-2017	7000000A	5000000A	2000000A	9000000A
30-05-2017	3000000A	1000000A	6000000A	8000000A
31-05-2017	-	4000000A	8000000A	6000000A
01-06-2017	1000000A	2000000A	4000000A	8000000A
02-06-2017	3000000A	8000000A	-	5000000A
03-06-2017	7000000A	2000000A	9000000A	-

Date: Time: Staff:

Add Remove

Image 2.6.15.1: Housekeeping Page Part 1

Estate Maintenance

Weekly Navigation: < >

Date	00:00 - 11:59	00:00 - 11:59	12:00 - 23:59	12:00 - 23:59
28-05-2017	1000000A	2000000A	3000000A	4000000A
29-05-2017	7000000A	5000000A	2000000A	9000000A
30-05-2017	3000000A	1000000A	6000000A	8000000A
31-05-2017	-	4000000A	8000000A	6000000A
01-06-2017	1000000A	2000000A	4000000A	8000000A
02-06-2017	3000000A	8000000A	-	5000000A
03-06-2017	7000000A	2000000A	9000000A	-

Date: Time: Staff:

Add Remove

Security

Weekly Navigation: < >

Date	00:00 - 11:59	00:00 - 11:59	12:00 - 23:59	12:00 - 23:59
28-05-2017	1000000A	2000000A	3000000A	4000000A
29-05-2017	7000000A	5000000A	2000000A	9000000A
30-05-2017	3000000A	1000000A	6000000A	8000000A
31-05-2017	-	4000000A	8000000A	6000000A
01-06-2017	1000000A	2000000A	4000000A	8000000A
02-06-2017	3000000A	8000000A	-	5000000A
03-06-2017	7000000A	2000000A	9000000A	-

Date: Time: Staff:

Add Remove

Image 2.6.15.2: Housekeeping Page Part 2

2.6.16 Staff Records Page

Field Type	Field Name	Field Description
Button	Create	Links to New Staff
	Edit	Links to Edit Staff with data of inputted Staff ID
	Delete	Attempts removal of Staff Data of inputted Staff ID
Table	Staff Data	Table containing all Staff Data
Text Box	Staff ID	Staff ID input field
Text Field	Staff Records	Current room indication
	New Staff	New Staff function indication
	Edit/Delete Staff	Edit/Delete Staff function indication
	Enter ID of Staff:	Edit/Delete Staff function instruction

Staff Records

New Staff

Create

Edit/Delete Staff

Enter ID of Staff:

Edit

Delete

Staff Data						Scroll: < >
Staff ID	Name	Identification	Gender	DOB	...	
1000000A	Clarence Lim	12345678	F	DD-MM-YYYY	...	
2000000A	Daniel Koh	12345678	M	DD-MM-YYYY	...	
3000000A	Robert Soh	12345678	M	DD-MM-YYYY	...	
4000000A	Claire Wong	12345678	F	DD-MM-YYYY	...	
5000000A	Example Data	12345678	M	DD-MM-YYYY	...	
6000000A	Example Data	12345678	M	DD-MM-YYYY	...	
7000000A	Example Data	12345678	M	DD-MM-YYYY	...	

Image 2.6.16: Staff Records Page

2.6.17 New Staff Page

Field Type	Field Name	Field Description
Button	Save	Attempts saving of data and links to Staff Records
	Cancel	Returns to Staff Records without processing changes
Calendar	DD-MM-YYYY	Opens calendar to select date
Dropdown	Gender	Dropdown list consisting of values M and F
	Duty Type	Dropdown list consisting of the four duty types
Text Box	Staff Name	Staff Name input field
	Identification Number	Identification Number input field
	Bank Account Number	Bank Account Number input field (Censored)
	Street Address	Street Address input field
	Block/House Number	Block/House Number input field
	Postal Code	Postal Code input field
	City	City input field
	Country	Country input field
	Contact Number	Contact Number input field
	Email	Email input field
Text Field	New Staff	Current room indication
	Staff Name:	Staff Name input field indication
	Identification Number:	Identification Number input field indication
	Gender:	Gender dropdown indication
	Date of Birth:	Calendar indication
	Bank Account Number:	Bank Account Number input field indication
	Duty Type:	Duty Type dropdown indication
	Street Address:	Street Address input field indication
	Block/House Number:	Block/House Number input field indication
	Postal Code:	Postal Code input field indication
	City:	City input field indication
	Country:	Country input field indication
	Contact Number:	Contact Number input field indication
	Email:	Email input field indication

New Staff


Staff Name:

Identification Number:

Gender:


 

Date of Birth:

Bank Account Number:

Duty Type:

Street Address:

Block/House Number:

Postal Code:

City:

Country:

Contact Number:

Email:

Save

Cancel

Image 2.6.17: New Staff Page


2.6.18 Edit Staff Page

Field Type	Field Name	Field Description
Button	Save	Attempts saving of data and links to Staff Records
	Cancel	Returns to Staff Records without processing changes
Dropdown	Duty Type	Dropdown list consisting of the four duty types
Text Box	Bank Account Number	Bank Account Number input field (Censored)
	Street Address	Street Address input field
	Block/House Number	Block/House Number input field
	Postal Code	Postal Code input field
	City	City input field
	Country	Country input field
	Contact Number	Contact Number input field
	Email	Email input field
Text Field	Edit Staff	Current room indication
	Bank Account Number:	Bank Account Number input field indication
	Duty Type:	Duty Type dropdown indication
	Street Address:	Street Address input field indication
	Block/House Number:	Block/House Number input field indication
	Postal Code:	Postal Code input field indication
	City:	City input field indication
	Country:	Country input field indication
	Contact Number:	Contact Number input field indication
	Email:	Email input field indication

Edit Staff

Bank Account Number:

Duty Type:

Street Address:

Block/House Number:

Postal Code:

City:

Country:

Contact Number:

Email:

Image 2.6.18: Edit Staff Page

2.6.19 Report Page

Field Type	Field Name	Field Description
Button	Preview (x5)	Links to Report Preview of the selected type with retrieved data using inputted field, if any
	Generate and Export (x5)	Generates and exports report for printing
Calendar	DD-MM-YYYY	Opens calendar to select date
Text Box	Room Number	Room Number input field
Text Field	Report	Current room indication
	Room Status Report	Room Status Report function indication
	Guests in Room Report	Guests in Room Report function indication
	Enter Room Number:	Room Number input field indication
	Guests in All Rooms Report	Guests in All Rooms Report function indication
	Enter Date:	Calendar indication
	Room Occupancy Report	Room Occupancy Report function indication
	Housekeeping Report	Housekeeping Report function indication

Report

Room Status Report

Preview

Generate and Export

Guests in Room Report

Enter Room Number:

Preview

Generate and Export

Guests in All Rooms Report

Enter Date:

Preview

Generate and Export

Room Occupancy Report

Preview

Generate and Export

Housekeeping Report

Preview

Generate and Export

Image 2.6.19: Report Page

2.6.20 Report Preview Page

Field Type	Field Name	Field Description
Button	Export	Exports report for printing
	Return	Links to Report
Gallery	Preview	Gallery to preview report
Text Box	Room Number	Room Number input field
Text Field	Report Preview	Current room indication

Report Preview

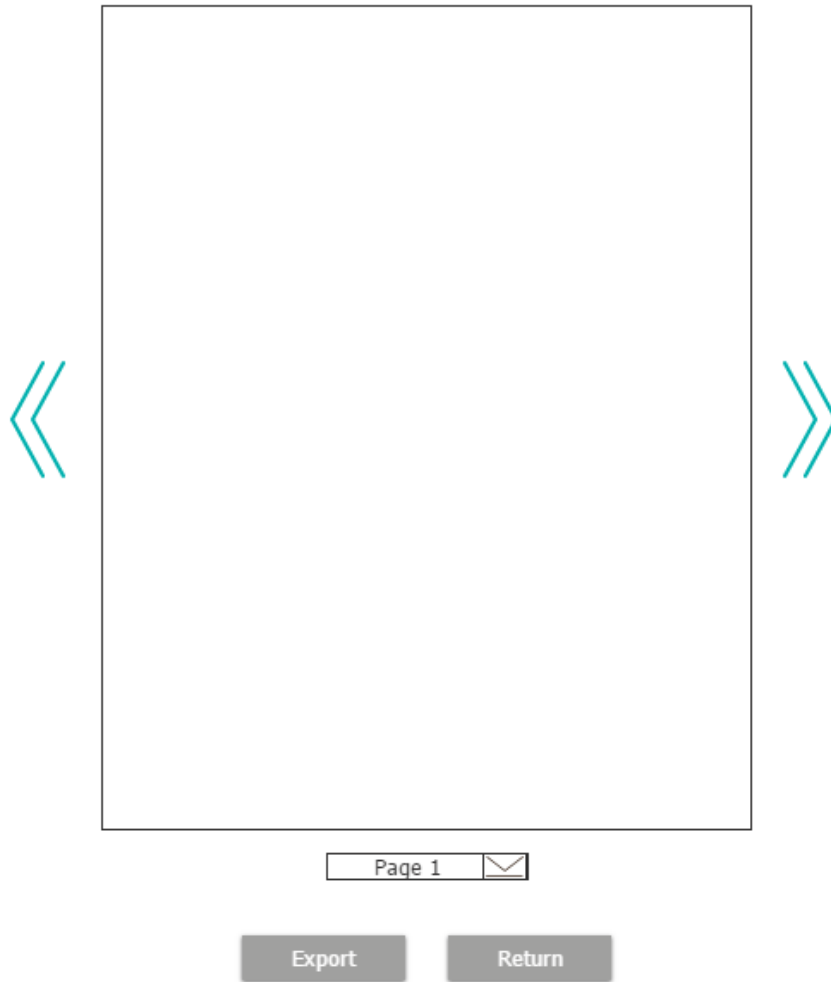


Image 2.6.20: Report Preview Page

2.6.21 Accounts Page


Field Type	Field Name	Field Description
Button	Create	Attempts saving of data of new account
	Delete	Attempts removal of an account based on an inputted username
Dropdown	Account Type	Dropdown list consisting of End, Management, and Administrator
Table	Accounts	Table containing all Account data
Text Box	Username (x2)	Username input field
	Password	Password input field
Text Field	Accounts	Current room indication
	Create Account	Create Account function indication
	Username: (x2)	Username input field indication
	Password:	Password input field indication
	Acc Type:	Account Type dropdown indication
	Delete Account	Delete Account function indication

Accounts

Create Account

Username:

Password:

AccType: 

Create

Delete Account

Username:

Delete

Accounts		
Username	Password	Account Type
1000000A	Aa345678	End
2000000A	Aa345678	End
3000000A	Aa345678	End
4000000A	Aa345678	Management
5000000A	Aa345678	Management
6000000A	Aa345678	Management
7000000A	Aa345678	Administrator

Image 2.6.21: Accounts Page

2.6.22 Promotions Page

Field Type	Field Name	Field Description
Button	Create	Attempts saving of new promotion data
	Edit	Attempts saving of edited promotion data
	Delete	Attempts removal of a promotion based on an inputted promotion ID
Calendar	DD-MM-YYYY (x4)	Opens calendar to select date
Table	Promotions	Table containing all Promotions data
Text Box	Promotion	Promotion input field
	Promotion ID (x2)	Promotion ID input field
Text Field	Promotions	Current room indication
	Create Promotions	Create Promotions function indication
	Promotion:	Promotion input field
	Start Date: (x2)	Calendar indication
	End Date: (x2)	Calendar indication
	Edit Promotion	Edit Promotion function indication
	Promotion ID: (x2)	Promotion ID input field indication
	Delete Promotion	Delete Promotion function indication

Promotions

Create Promotions

Promotion:

Start Date:

End Date

Create

Edit Promotion

Promo ID:

Start Date:

End Date

Edit

Edit Promotion

Promo ID:

Delete

Promotions			
ID	Name	Start Date	End Date
01	Example	DD-MM-YYYY	DD-MM-YYYY
02	Example	DD-MM-YYYY	DD-MM-YYYY
03	Example	DD-MM-YYYY	DD-MM-YYYY
04	Example	DD-MM-YYYY	DD-MM-YYYY
05	Example	DD-MM-YYYY	DD-MM-YYYY
06	Example	DD-MM-YYYY	DD-MM-YYYY
07	Example	DD-MM-YYYY	DD-MM-YYYY

Image 2.6.22: Promotions Page

2.7 Interface with Other Systems

There is number of requirements that is needed in order for the new system to be able to work compatibility with the other systems.

Interfaces for Visual Studio

- Creating and typed datasets – provides a dataset property that enables you to separate the dataset and TableAdaptors into discrete projects.
- LINQ to SQL Tool – provides settings to auto generate the DataContext and Data classes into separate namespaces
- LINQ to SQL – provides an attach method to enable all the DataContext from different tiers together.

The system that we will be using will be the N-tier application system. The software that we will be using is Microsoft Visual Studio 2017. It will be the latest version by Microsoft and it has some limitations and requirements in order to implement it. Firstly, a clear separation is needed between all other systems. This is to ensure that as more things are added, it will not be so difficult or complex to manage.

Secondly, the distributed applications must be distributed between the client and server. When the application is developed and have access data, a clear separation is needed between the various tiers that make up the application.

Lastly, a typical N-tier application consist of a presentation tier, a middle tier, and a data tier. The easiest way to separate all the tiers is to create individual discrete projects for each tier. By having all the tiers separated in individual projects, it will help increase the maintainability and scalability of the project.

2.8 Assumptions

The assumptions made are:

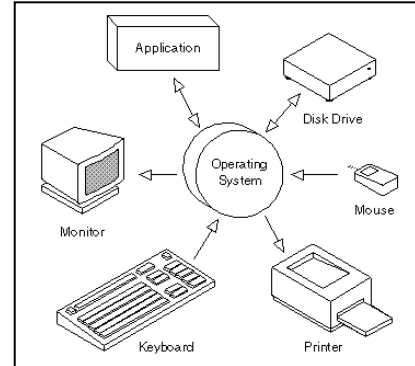
- Visual Studio is able to handle all the different types of organization tiers in Mr Wang's company. (No other interfaces or software is needed)
- Mr Wang's old company system will be able to be supported by Visual Studio. (Example will be the MySQL is supported in Visual Studio)
- The employees are all new and young employees who are adaptor and are fast to learn new software and technology.
- Assuming that there are only 3 systems that is required to integrate into the N-tier system.
- Majority of the people will be asleep from 3-4am as it will be used for the data backup downtime.

3 OPERATIONAL AND QUALITY REQUIREMENTS

3.1 Operating Environment

The system will be deployed in Windows operating environment rather than using Linux or Mac operating systems (OS). Windows serves as the best OS for business use due to its widely compatibility in managing and integrating systems. Mac OS is relatively new and do not support many features and are not compatible with many software. Even though Linux is an open source and are available for free, it does not have support agreement as OS and software have to be deployed, monitored, maintained,

supported, updated, patched and protected. Hence, using Linux OS will render unreliable, inefficient in terms of cost and performance in the long run. With Windows OS as the operating environment for the Delonix Regia's Hotel Management System (HMS), the staff uses the software applications in the monitor to perform various hotel operations such as checking-in guest, recording guest information and staff details based on a Graphical User Interface (GUI). The disk drive may serve as a back-up drive for retrieving sensitive information in severe case of data memory loss. The printer serves as a hardcopy generator by printing receipts, invoices and performance reports as a physical evidence or proof for transactions made in Delonix Regia Hotel.



3.2 Development Constraints

Development constraint is defined as the limitation of a freedom of action during the development of a system. There are 3 types of constraints during system development: Schedule, Cost and Scope. These constraints are also sometimes referred to as triple constraint.

Schedule

When developing Delonix Regia Hotel Management System, limitations could arise in the project schedule.

Such limitations are:

- A task in the project schedule ^{E.g.} Online reservation feature take longer than expected to complete
- A task in the project schedule ^{E.g.} Online payment feature might be complex and require manpower with expertise

Cost

It is imperative to note that having constraints in the development schedule might affect the development cost as well.

Such financial limitations are:

- Development extended over deadline requiring more financial support
- Increasing the scope of the project may need additional cost
- Difficult to give a rough estimate of funds needed to cover the entire development phase as unexpected issues may arise

Scope

Clients may add in project scope increasing the workload and thus shortening the time to complete the project.

Such limitations are:

- New requirements are added thus creating more task to complete in a given amount of time
- When Mr. Wang intended to change the feature that has already been developed and thus may be impossible to adhere to the client's request
- Some additional requirements require more resources such as manpower and funds to achieve due to its level of complexity
- A change in project scope may affect and require a change in methodology in the development process

3.3 Performance

System response time is defined as the time taken a functional unit takes to response to an input. It is important to have fast and reliable performance on the management system as guests do not want to spend a lot of their time waiting. Below represents the system response time each function takes to perform on the average and during peak hours.

User	System Function	System Response Time (On Average)	System Response Time (Peak Hours)
Online Guest	Reserve Room (Room & Availability Module)	1-2s	2-4s
Receptionist	Check-in Guest (Room & Availability Module)	2-4s	4-6s
Receptionist	Check-out Guest (Room & Availability Module)	1-2s	2-4s
Receptionist	Cancel Reservation (Room & Availability Module)	2s	3s
Receptionist	Generate Bill (Room & Availability Module)	2s	3s
Administrator	Generate Report (Reporting Module)	5-7s	5-7s
Administrator	Preview Report (Reporting Module)	2-4s	2-4s
Administrator	Assign Housekeeping Duties (Housekeeping & Staff Management Module)	2s	4s
Manager	Manage Staff Schedule (Housekeeping & Staff Management Module)	1s	2s
Manager	Add Staff (Housekeeping & Staff Management Module)	2-4s	2-4s
Manager	Edit Staff (Housekeeping & Staff Management Module)	2-4s	2-4s
Manager	Delete Staff (Housekeeping & Staff Management Module)	1-2s	1-2s

3.4 Availability

The system will be required to work for 24 by 7. (24 hours a week). This is because Mr Wang's computer startup business will continue to generate revenue and still continue to be able to collect orders even after their employees have ended their working hours at 6pm.

The data down time for Mr Wang's business is considered rather smaller scale so 1 hour will be sufficient for the data backup downtime. It will probably occur from 3-4am on Thursday when the traffic is the lowest(majority of the people are sleeping).

3.5 Security and Access Control Requirements

End users can only access to room availability & booking system, and selected reports such as room status, room guest and hotel guest report. They have the authority to control these systems since they have to manage the guest and allocating rooms to them

Administrator (Mr. Wang) and management users can access to the Room Availability & Booking system, Housekeeping & Staff Management system, and all 5 reports. However, only Mr. Wang has full access to all the system, including the User Account & Login Creation system whereby he has the authority to create/modify the account for the user. Management user has the authority to control the data in Housekeeping & Staff Management system and housekeeping report since they have to manage all the staffs and schedule duty for the. In order to protect the system from being accessed by any unauthorized user, all users are required to record their username, timestamp, purpose, system accessed and any modification done to the system in the log file before logging in. This is to monitor the user activities to the systems and helps the administrator to easily trace the user if the system goes wrong.

There are several data security measures.

Authentication: The user must have his access rights before accessing to the protected information. The common way of authenticating is using the log in form which require the user to enter their username and password. However, it is important for a user to have a unique username (avoid using his name) and strong password which includes uppercase and lowercase letter, number and symbol to prevent unauthorized user to hack into their account.

A highly-secured way of authenticating is using biometric technology which includes fingerprints. It is a unique identification that identify the user authorization by requiring him to scan his fingerprint before he is granted to access to the system.

Antivirus Software: The systems are required to install and frequently update the antivirus software to prevent virus such as malware, trojans from attacking the data in the computer. It protects the data in Mr. Wang system from losing

Data Encryption: The data in the database should be encrypted. This means that during the transmitting of data, it transforms to cipher text which makes it unreadable to anyone and protect data from being accessed by unauthorized users with intentions. In this case, the sensitive data in the database are guests' credit card information and user account password. Example the password of a particular user is "ABc1234qwer", it will show as "GDJ2ybE4D" after encrypted.

4 SPECIAL REQUIREMENTS

-NIL-

5 REFERENCES

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