Express front-end printing system

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Chapter 4

System Design

System Design

In chapter 4, this chapter will describes the various areas of design for the Express printing system. The areas of design may include screen design, database and reports. The author will describe the various tools and techniques used, the rationale for using them, any problems faced and how they resort to solve or reduce the impact of the problems faced. For example, the typical techniques will use for design that include sequence diagram and ERD diagram.

4.1 System Design

System design will describe and illustrate all the necessary designs that will related to proposed system. For example, user interface, ERD diagram, Sequence diagram, data dictionary and report. The author will separate all the diagram into separate section and all diagram will provide explained and labeled with proper caption.

4.1.1 Sequence diagram

Customer Module

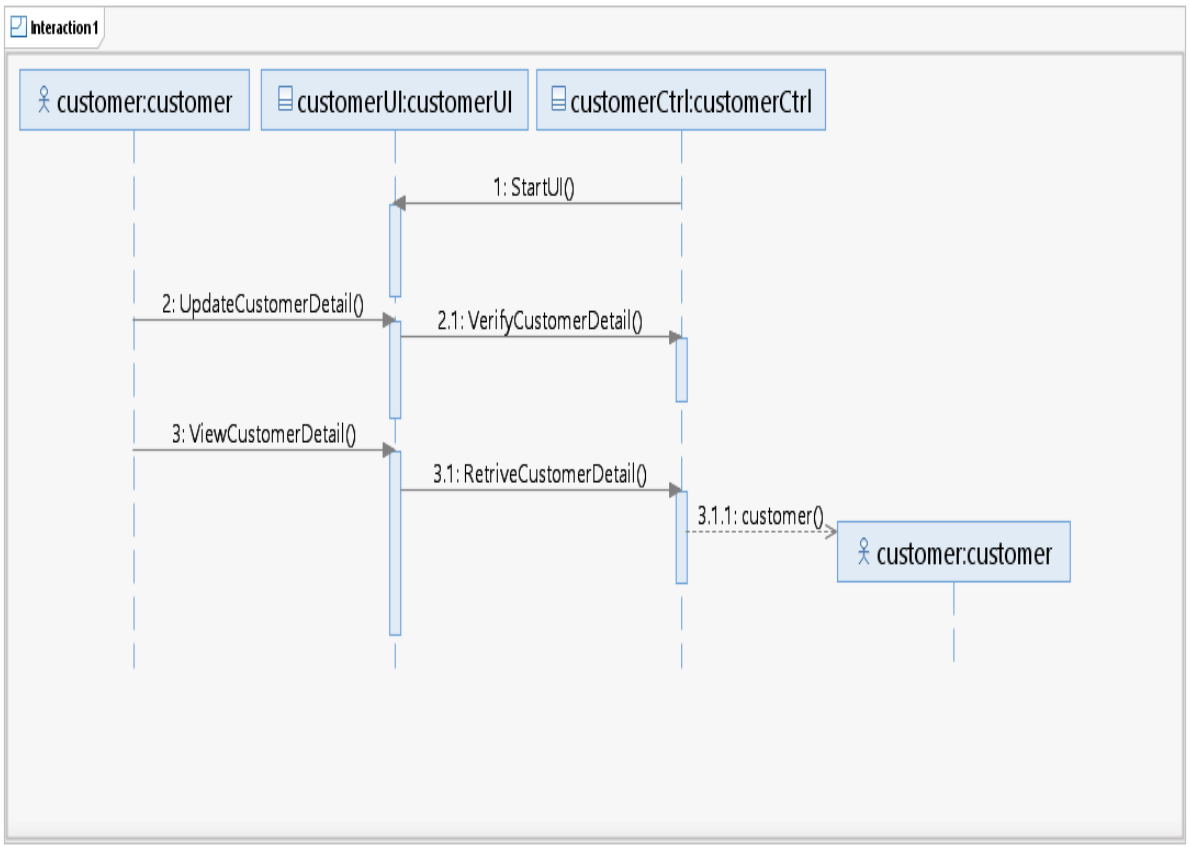


Figure 4.1 Sequence Diagram for Customer Module

The figure 4.1 sequence diagram are show the Customer module in the express printing system. The diagram describe process of the customer maintenance their information.

Order module

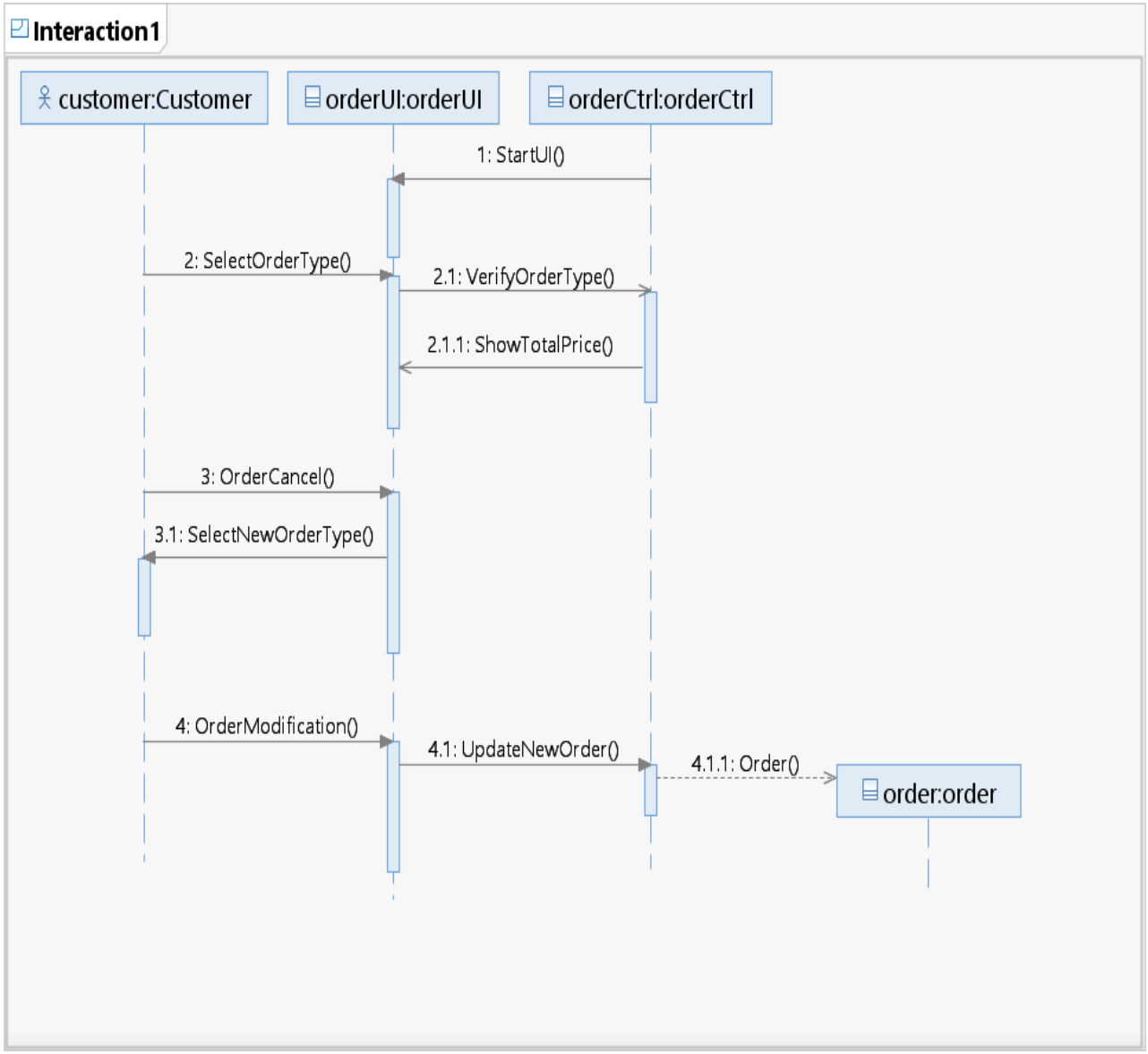


Figure 4.2 Sequence Diagram for Order Module

The figure 4.2 sequence diagram are show the order module in the express printing system. The diagram describe the process of customer to make order.

Payment diagram

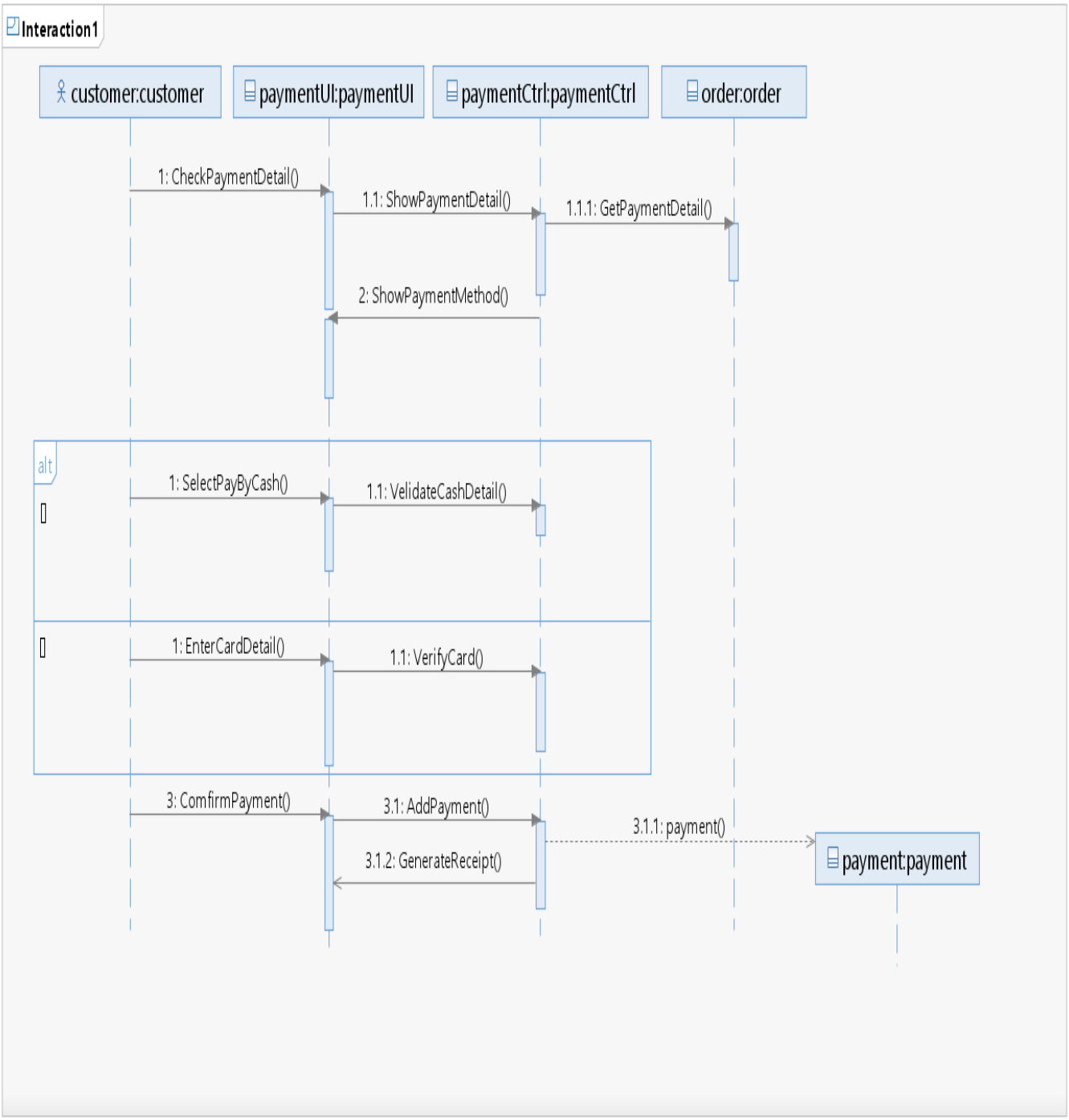


Figure 4.3 Sequence Diagram for Payment Module

The figure 4.3 sequence diagram are show the payment module in the express printing system. The diagram describe the flow of the process of customer to make transaction after done the order.

4.1.2 Screen Design

Login Screen

Figure 4.4 Screen design of login module

The figure 4.4 is show the screen design of login module. It will allow the user to login the system and click forget password**.**

Order module

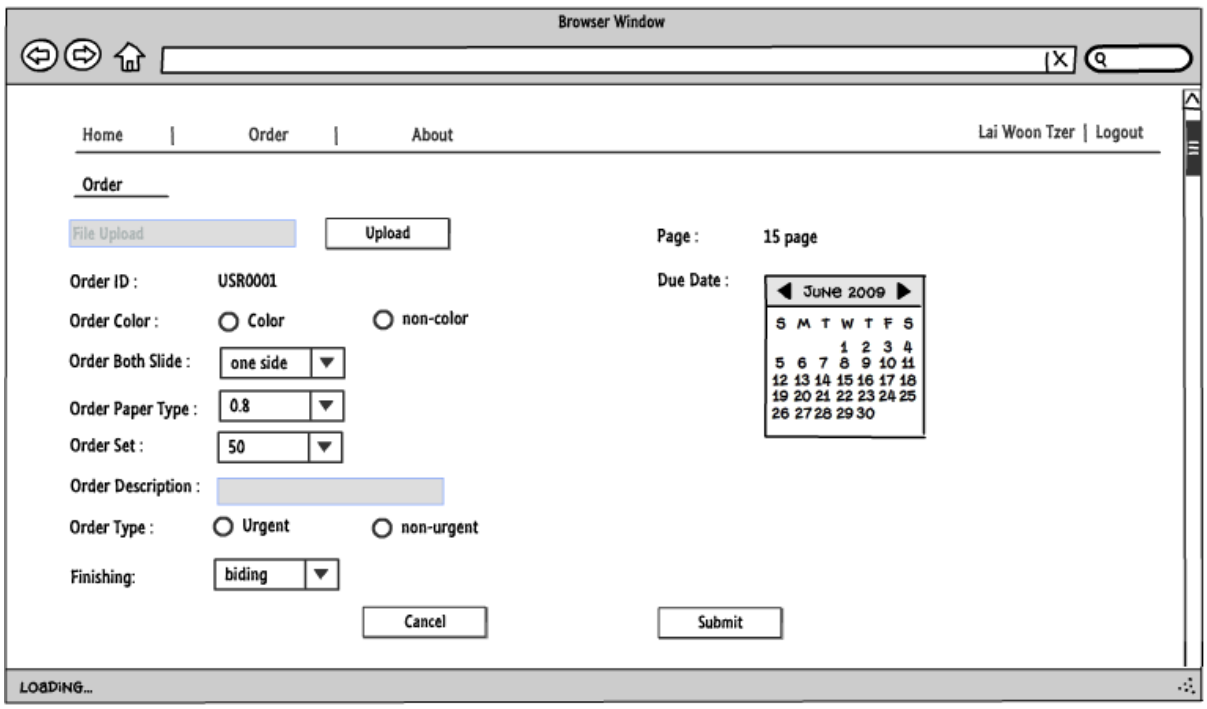


Figure 4.5 Screen design of order module

The figure 4.5 is show the screen design of the order module. It will allow customer to upload file and make order.

Payment Module

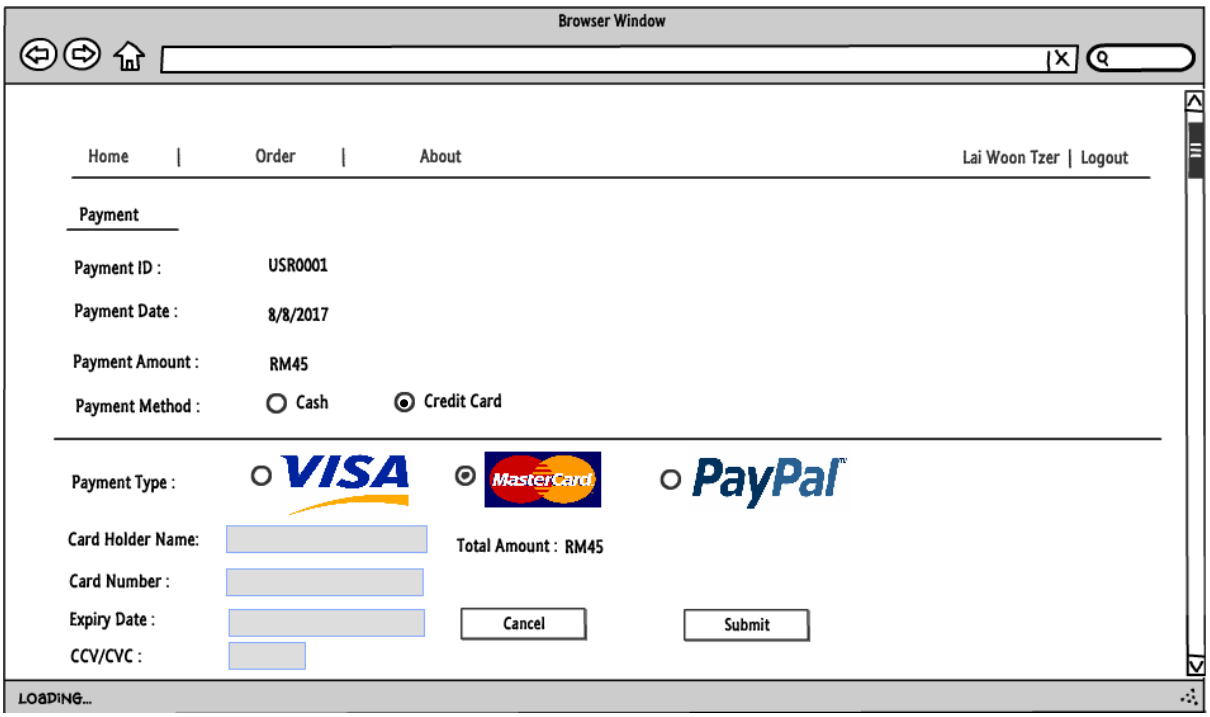


Figure 4.6 Screen design of payment module

The figure 4.6 is show the screen design of payment module. After done the order, it will display out the payment detail and allow customer to choose what type of payment method to pay transaction.

4.1.3 Entity Relationship Diagram

The purpose of drawing entity relationship diagram is allowing author easy understand the relationship between each entity and that will use into database (Ling and Teo, 1994). So the author can know which the primary key and foreign key.

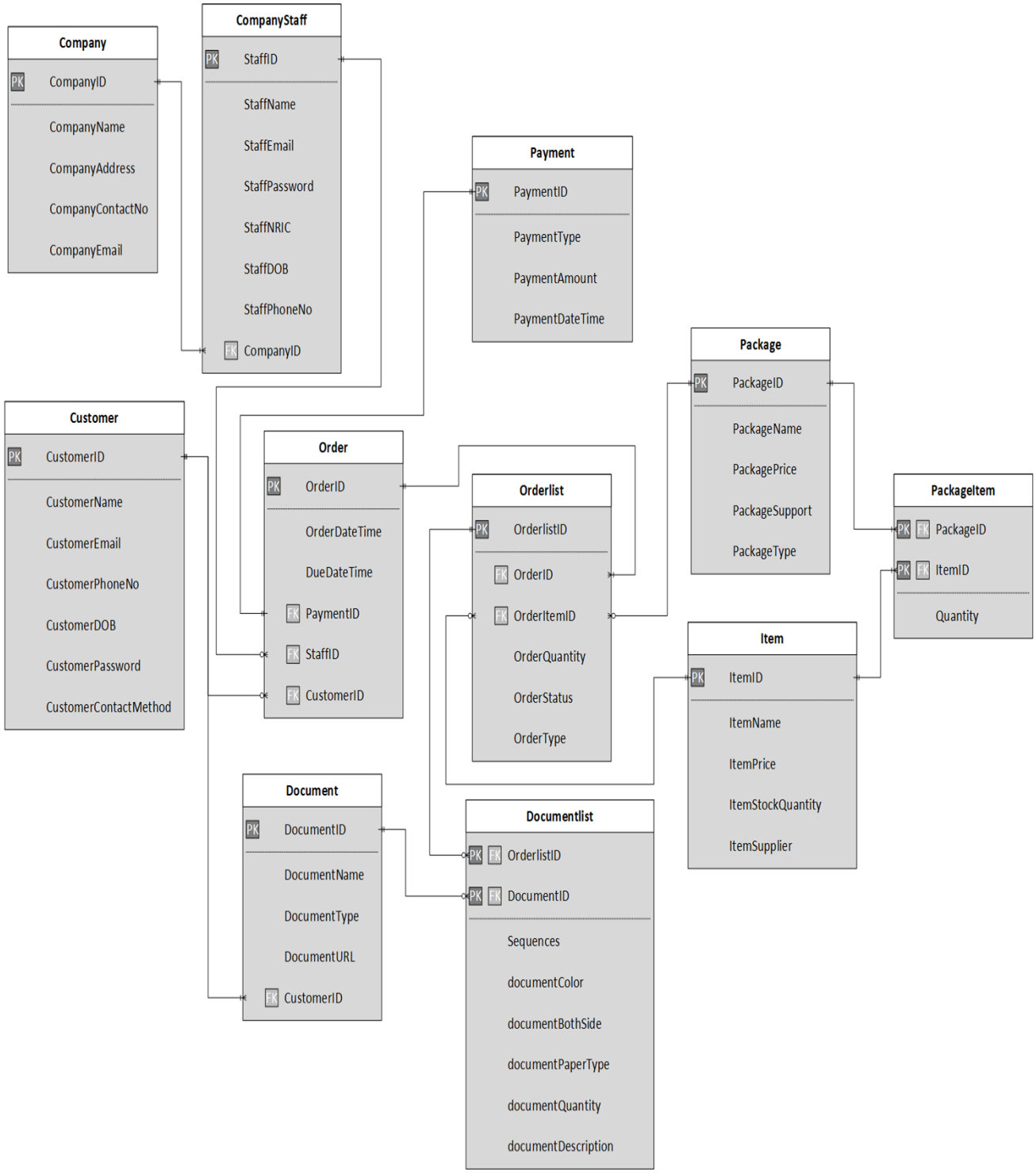


Figure 4.7 ERD for Express printing system

Figure 4.7 show all the entity, attribute and relationship between each entity. The entity relationship diagram are show the entire entity of the express printing system. This including the author express front-end printing system and his partner in charge system like express back-end printing system.

4.1.4 Data Dictionary

Company Table

Name	Type	Allow Null	Description	Key (PK/ FK)	Reference
companyID	VARCHAR	NO	The ID number of company such as CO1001.	PK	
companyName	VARCHAR		The name of company.		
companyAddress	VARCHAR		The address of the company.		
companyContactNo	BYTE		The contact number of the company.		
companyEmail	NUMBER		The email address of the company format must similar xxx@.xxx.com .		

Table 4.1 Data Dictionary for Company Table

Company Staff

Name	Type	Allow Null	Description	Key (PK/ FK)	Reference
StaffID	Varchar	No	The format of staff ID will begin with the company ID and follow by a 'S' word with 3 series number behind, E.g. "CO1001S001".	PK	
StaffName	Varchar	No	The full name of the staff		
StaffEmail	Varchar	No	The email of the staff. The format of email must contain an '@' symbol and dot behind. E.g. "jack21@gmail.com"		
StaffPassword	Byte	No	The password string which already hashed		
StaffNRIC	Varchar	No	The staff IC number. The IC number will be stored		

			with '-' in it.		
StaffDOB	Date	No	The date of birth of the staff. It is stored in the format of "DD/MM/YYYY"		
StaffPhoneNo	Varchar	No	The staff's contact number		
CompanyID	varchar	No	The unique number that represent the company. The format of the company ID is begin with "CO" which represent the word company and follow by 4 series number. E.g. "CO1001".	FK	Company (CompanyID)

Table 4.2 Data Dictionary for Company Staff Table

Customer Table

Name	Type	Allow Null	Description	Key (PK/ FK)	Reference
customerID	VARCHAR	NO	The ID number of customer such as CO1001	PK	
customerName	VARCHAR		The name of customer.		
customerEmail	VARCHAR		The Email of customer such as must similar xxx@.xxx.com.		
customerPasswordNumber	BYTE		The password number of customer such as minimum 8 number.		
customerPhoneNumber	NUMBER		The phone number of customer.		
customerBOD	DATE		The birth of date of customer such as dd/mm/yyyy.		
customerContactMethod	VARCHAR		The contact method of customer such as whatsapp, wechat, email and messenger.		

Table 4.3: Data Dictionary for customer Table

Order Table

Name	Type	Allow Null	Description	Key (PK/ FK)	Reference
orderID	VARCHAR	No	The ID number of order such as 170810D10001.	PK	
orderDateTime	DATE		The date and time of order format should be like dd/mm/yyyy and h/mm/ss.		
dueDateTime	DATE		The due date and time of order format should be like dd/mm/yyyy and h:mm:ss.		
orderType	VARCHAR		The order type of order such as urgent or normal.		
customerID	VARCHAR	No	The ID number of customer such as CU10001.	FK	Customer(customerID)

Table 4.4 Data Dictionary for Order Table

Orderlist Table

Name	Type	Allow Null	Description	Key (PK/ FK)	Reference
orderlistID	VARCHAR	No	The ID number of the order list such as 170810OR10001OL10.	PK	
Quantity	NUMBER		The quantity of the order list.		
orderID	VARCHAR	No	The ID number of the order such as 170810OR10001.	FK	Order (orderID)
packageID	VARCHAR	No	The ID number of the package such as P1001.	FK	Package(packageID)

Table 4.5 Data Dictionary for Package Table

Payment Table

Name	Type	Allow Null	Description	Key (PK/ FK)	Reference
PaymentID	VARCHAR	NO	The ID number of payment such as 170810PM10001.	PK	
paymentType	VARCHAR	NO	The type for make payment such as cash and credit card.		
paymentAmount	NUMBER	NO	The amount of payment.		
paymentDateTime	DATE	NO	The date and time of payment like dd/mm/yyyy and h:mm:ss .		

Table 4.6 Data Dictionary for Payment Table

Document Table

Name	Type	Allow Null	Description	Key (PK/ FK)	Reference
documentID	VARCHAR	NO	The ID number of document such as 170810D10001.	PK	
documentName	VARCHAR	NO	The document of name.		
documentType	VARCHAR	NO	The document of type such as doc, pdf, pptx.		
documentURL	VARCHAR	NO	The URL of the document.		
customerID	VARCHAR	NO	The ID number of member such as CU10001.	FK	customer(customerID)

Table 4.7 Data Dictionary for Document Table

Document List Table

Name	Type	Allow Null	Description	Key (PK/ FK)	Reference
orderListID	VARCHAR	NO	The ID number of the order list such as 170810OR10001OL10.	FK	Order list(orderlistID)
documentID	VARCHAR	NO	The ID number of the document such as 170810D10001.	FK	Document(documentID)
sequences	VARCHAR		To arrange the sequence of the document.		
documentColor	VARCHAR		To determine the colour of order document.		
documentBothSide	VARCHAR		To determine the order document is both side or one side.		
documentPaperType	NUMBER		To determine the quality of paper.		
documentQuantity	NUMBER		The quantity of the page.		
documentDescription	VARCHAR		The description of the order.		

Table 4.8 Data Dictionary for Document List Table

Item table

Name	Type	Allow Null	Description	Key (PK/ FK)	Reference
ItemID	Varchar	No	The item id format is begin with the word 'I' and follow by 4 series number, e.g. "I1001".	PK	

ItemName	Varchar	No	The name of the item		
ItemPrice	Double	No	The unit price of the item		
ItemStockQuantity	Number	No	The quantity of item left in the stock		
ItemSupplier	Varchar	No	The supplier of the item		

Table 4.9 Data Dictionary for Item Table

Package Table

Name	Type	Allow Null	Description	Key (PK/FK)	Reference
PackageID	Varchar	No	The package id is contain the word 'P' and 4 series number, e.g. "P1001".	PK	
PackageName	Varchar	No	The name of the package		
PackagePrice	Varchar	No	The price of the package		
PackageSupport	Varchar	No	The format of document the package be able to support (only for printing request package)		
PackageType	Varchar	No	The type of package (E.g. printing or goods only)		

Table 4.10 Data Dictionary for Package Table

Package Item Table

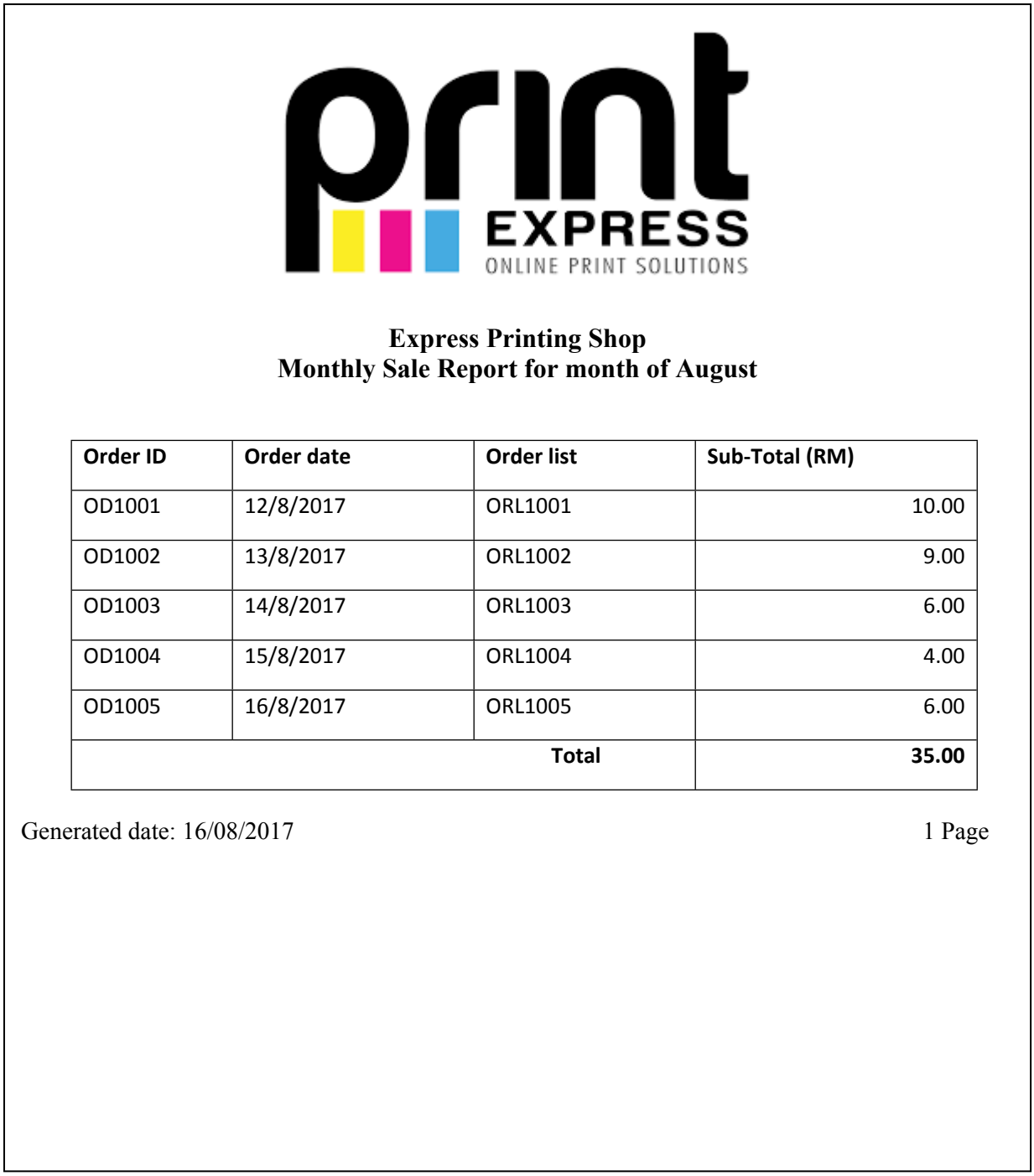
Name	Type	Allow Null	Description	Key (PK/FK)	Reference
PackageID	Varchar	No	The package id is contain the word 'P' and 4 series number, e.g. "P1001".	PK+FK	Package (PackageID)
ItemID	Varchar	No	The item id format is begin with the	PK+FK	Item (ItemID)

			word 'I' and follow by 4 series number, e.g. "I1001".		
Quantity	Number	No	The quantity of the item included in the package		

Table 4.11 Data Dictionary for Package Item Table

4.1.5 Report Design

Monthly Sales Report



Express Printing Shop
Monthly Sale Report for month of August

Order ID	Order date	Order list	Sub-Total (RM)
OD1001	12/8/2017	ORL1001	10.00
OD1002	13/8/2017	ORL1002	9.00
OD1003	14/8/2017	ORL1003	6.00
OD1004	15/8/2017	ORL1004	4.00
OD1005	16/8/2017	ORL1005	6.00
		Total	**35.00**

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Figure 4.8 Yearly Sales Report

Report Title: Yearly Sales Report

Report Purpose: The figure 4.8 is show the total amount of yearly sales. The report will list all of the order ID that is being make sales in 2017.

Pending order Report

Express Printing Shop
Pending order Report for daily in 2017

Customer ID	Contact Number	Order ID	Order Date	Order Type	Order list ID	Package ID
CU1001	016-2231546	OD1001	12/8/2017	Urgent	ORL1001	PA1001
CU1002	016-3453456	OD1002	12/8/2017	Urgent	ORL1002	-
CU1003	012-5556666	OD1003	12/8/2017	Urgent	ORL1003	PA1002
CU1004	017-4445555	OD1004	12/8/2017	normal	ORL1004	-
CU1005	016-2337788	OD1005	12/8/2017	normal	ORL1005	PA1003

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Figure 4.9 pending order report

Report Title: Pending order report

Report Purpose: The figure 4.9 show the Report is used to list out all the pending request in the system. The purpose of generating this report is to let owner can view the pending request. The report will list out all the pending order and order list and package list.

4.2 Chapter Summary and Evaluation

The 4.1 system design is the harder part facing by the author. It is because the system design need to draw a sequence diagram. It need to think what the next step of the going flow is and which class is handle the step (Wheeler, 2017). Besides that, the screed design also one of the problem faced. Due to the system is never do before, so the author need to think a good interface inside of the mind and start to draw it out. For example, the author is using lumzy to draw the website interface. Furthermore, the 4.1.3 Entity relationship diagram is most important for doing a system, it is because ERD is implement in database (Pigott and Hobbs, 2011)**.** If the database not doing well it will affect the system to store data or retrieve data. So the author and partner need to discuss and rectify many time. Besides that, the author also go to website for search some correct way to do a data dictionary. For example the data type and key (Brandenburg, 2017).

Last but not least, report is generated for the CEO know how the result of the sales (Mark Kolakowski, 2017). So, the author need to generate a meaningful report. Conclusion, the all of the problem have been solve due to the partner and teacher helping for given some guideline.

4.3 References/Bibliography

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Pigott, D. and Hobbs, V. (2011). Complex knowledge modelling with functional entity relationship diagrams. *VINE*, 41(2), pp.192-211.

Ling, T. and Teo, P. (1994). *A normal form object-oriented entity relationship diagram*. Kent Ridge, Singapore: National University of Singapore, Dept. of Information Systems and Computer Science.

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