SECD2523
(DATABASE)

SECTION 10

PHASE 2
PROJECT: UNILAUNDRY

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DATAMATES

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1.0 INTRODUCTION

For our first task of this project, we are required to create a system which meets our user requirements. In this proposal, we will introduce our client's existing system on how to increase efficiency for the current laundry system in UTM. This is by creating a computerized system that eases both users and administrators using our proposed laundry system. We decided to develop this system because, in the context of today's fast-paced learning environment, colleges and universities are always looking for ways to improve the lives of their students by offering resources that foster both personal and intellectual development. We made the decision to create this system because colleges and universities are constantly seeking methods to improve the quality of life of their students by providing resources that support both intellectual and personal development in the context of today's fast-paced learning environment.

This proposal describes the main goals, advantages, and specifics of our suggested university laundry system, emphasizing how it will meet the many demands of our student body, promote a feeling of community, and support our university's sustainability efforts. With the help of this cutting-edge system, we hope to offer our students a dependable and practical solution that will improve their lives and, in the end, their university experience.

The problem of our current system is that, Students must wait for extended periods of time under our client's existing manual system. The reason for this is that there aren't enough machines, so students have to wait in line for a long period, especially during peak periods. This causes delays and inconveniences. In addition, some users leave their clothes unattended, which results in longer than usual wait times for other users. As a result, our goal is to lessen these issues by developing a system that addresses them.

Finally, but just as importantly, we want to support administrators in their efforts to develop a self-service laundry system that is more efficient, well-maintained, and satisfies the requirements and expectations of its users, especially UTM students.

2.0 DATA FLOW DIAGRAM

Contextual Diagram

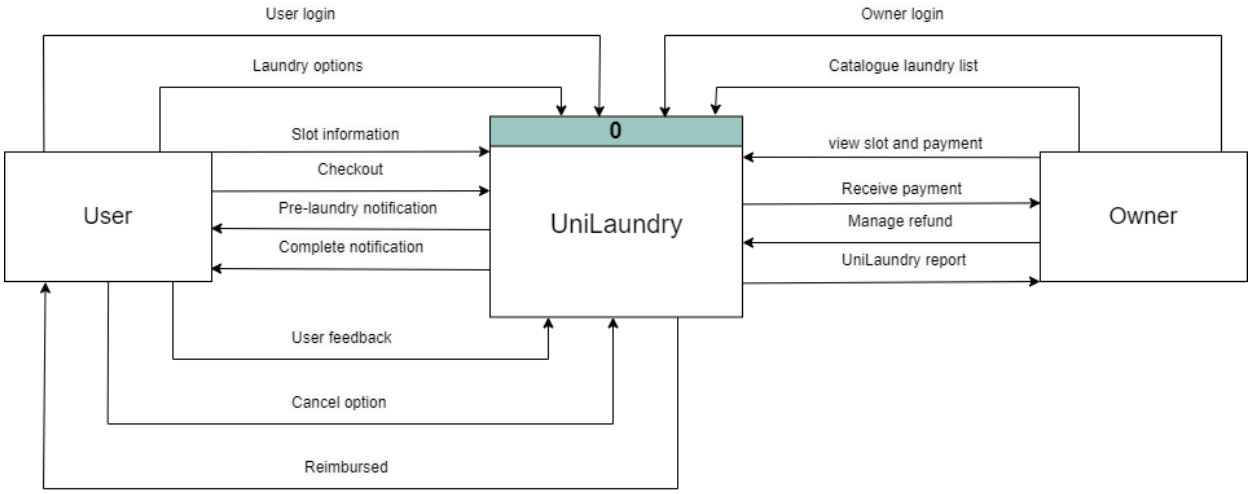
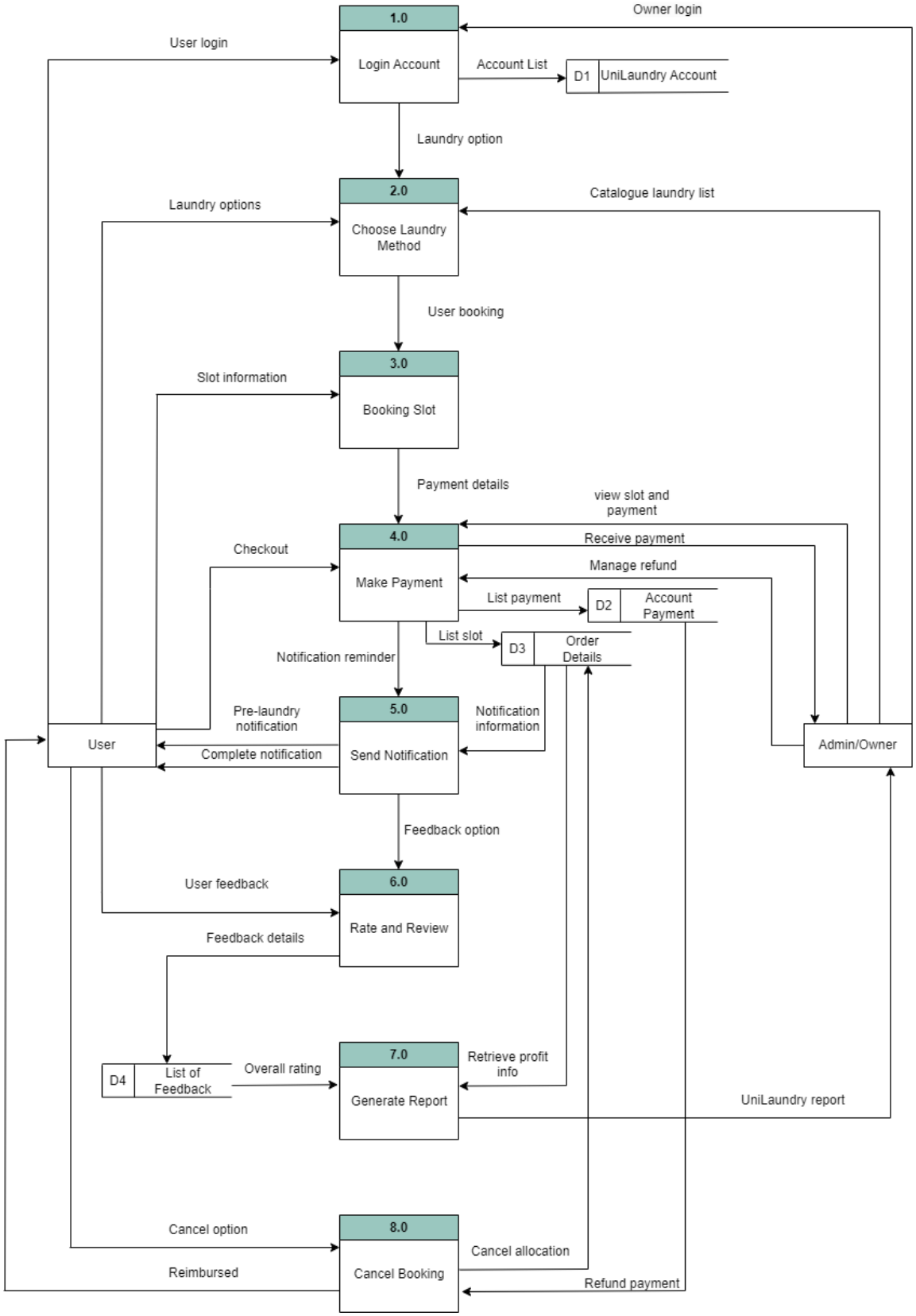
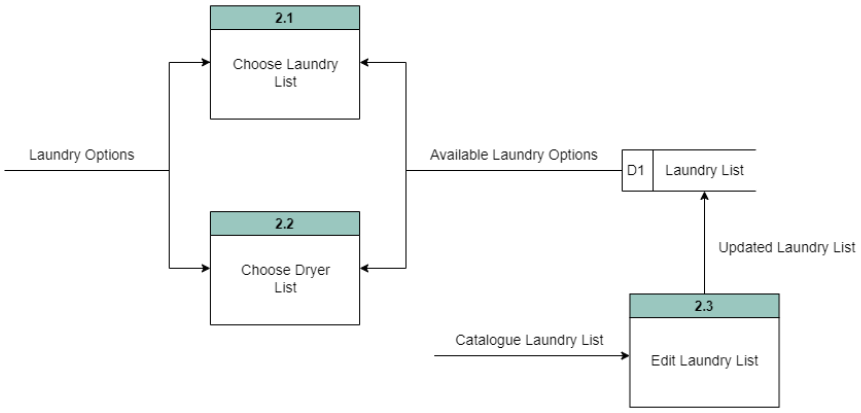


Diagram 0

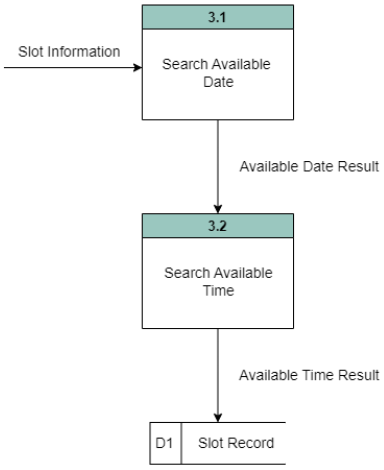

1.0
Login Account
Owner login
User login
Account List
D1
UniLaundry Account
Laundry option
2.0
Choose Laundry Method
Laundry options
Catalogue laundry list
User booking
3.0
Booking Slot
Slot information
Payment details
view slot and payment
4.0
Make Payment
Checkout
Receive payment
Manage refund
List payment
D2
Account Payment
List slot
D3
Order Details
Notification reminder
5.0
Send Notification
Pre-laundry notification
Notification information
Complete notification
User
Admin/Owner
Feedback option
6.0
Rate and Review
User feedback
Feedback details
D4
List of Feedback
Overall rating
7.0
Generate Report
Retrieve profit info
UniLaundry report
8.0
Cancel Booking
Cancel option
Cancel allocation
Reimbursed
Refund payment

Child Diagram

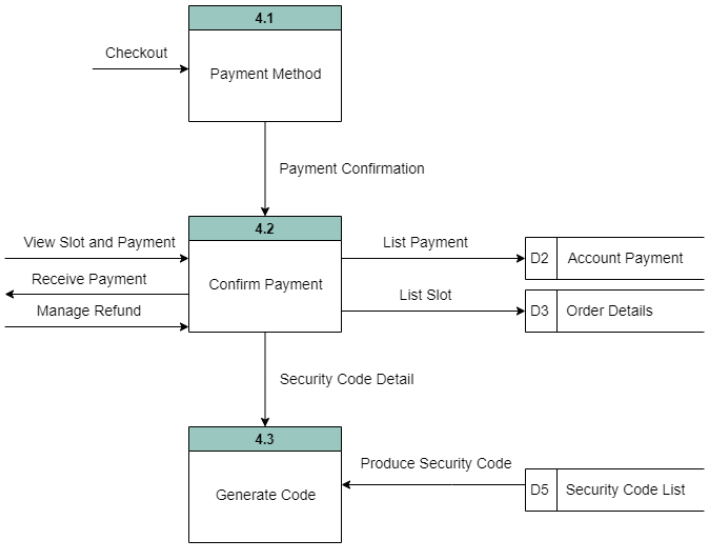
Process 2.0



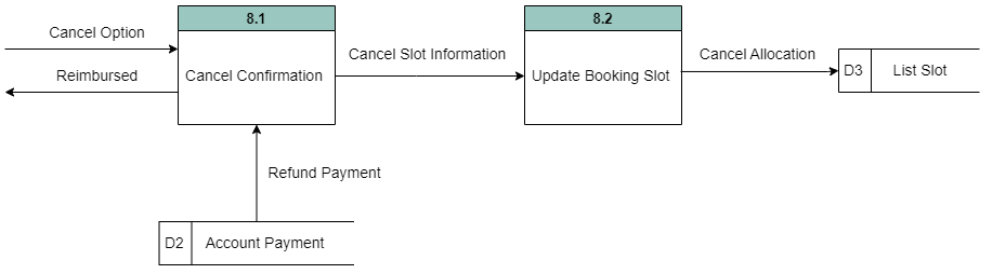
Process 3.0



Process 4.0



Process 8.0


8.1
Cancel Option
Reimbursed
Cancel Confirmation
Cancel Slot Information
8.2
Update Booking Slot
Cancel Allocation
D3
List Slot
Refund Payment
D2
Account Payment

3.0 DATA & TRANSACTION REQUIREMENT

3.1 Proposed Business Rule

1. The UniLaundry is open 24 hours and operates as a self-service facility.
2. The users are required to install the UniLaundry application to access the services provided by the UniLaundry system.
3. The users need to create a user account by providing their essential details, including full name, email address and phone number during the registration process.
4. The owner is required to use a specific username and password to secure access and prevent unauthorized users.
5. The users are required to book a slot by selecting a specific date and time during the booking session.
6. The UniLaundry only offers two essential services which are laundry and dryer.
7. The users have the flexibility to book any quantity of laundry or dryer services as the system does not have maximum or minimum booking quantities.
8. The UniLaundry only accepts online banking and e-wallet as their payment method.
9. The users can only access the laundry and dryer machines by entering the unique security code that will be sent after the payment.
10. The users have the option to cancel the booking by using a cancellation feature with a reasonable reason option provided.
11. Each booking slot is allocated for 40 minutes duration, allowing for flexibility in the length for each session, although the machines will be operational for 25 minutes for each slot time.
12. The users have an option to give their rating and review after using the laundry system.

3.2 Proposed Data & Transactional

3.2.1 Data Requirement

User

User is someone who logs into the UniLaundry system to make a booking slot for laundry. This data consists of the users' personal information such as user ID, user first name, user last name and user phone number.

Shop Staff

Shop staff is someone who logs into the UniLaundry system to manage the system, in other words an employee. This data consists of the staff's personal information such as staff ID, staff first name, staff last name, staff phone number, staff salary, staff start working time and staff end working time.

Feedback

Feedback is information gained from the user regarding their complaints or satisfaction with the UniLaundry system and is used as a basis for improvement. This data consists of feedback details such as feedback number, feedback and user ID.

Payment

Payment is the process of paying made by the user to confirm their laundry booking slot. This data consists of payment details such as payment number, payment amount, payment status, payment date, sales number, order number and user number.

Order

Order is a laundry slot that is requested by the user to show order as well as laundry progress. This data consists of order details such as order number, price, order status, laundry status, user ID, menu number and laundry time.

Menu

Menu is a display of laundry catalogue list for users to enter their laundry setting preferences. This data consists of menu details such as menu number, temperature, water level, heat level, machine number, starting time and ending time.

Machine

Machine is a physical device that performs the tasks of washing and drying a laundry. This data consists of machine details such as machine number, machine type, machine quantity, washer quantity and dryer quantity.

Sales

Sales is a list of profit gained as a result from the payment made by the user. This data consists of sales details such as sales number, sales date and daily sale.

3.2.2 Transaction Requirement

Data Entry

1. Enter the details of user information.
2. Enter the details of shop staff information.
3. Enter the details of feedback given by the user.
4. Enter the details of payment made by the user.
5. Enter the details of the order placed by the user.
6. Enter the details of the laundry menu.
7. Enter the details of machine type and quantity.

Data Update/Deletion

1. Update/Delete the details of user information.
2. Update/Delete the details of shop staff information.
3. Update/Delete the details of feedback given by the user based on Feedback_No.
4. Update/Delete the details of payment made by the user based on Payment_No and payment_amount.
5. Update/Delete the details of the order placed by the user based on order_No.
6. Update/Delete the details of the laundry menu based on Menu_No.
7. Update/Delete the details of machine type and quantity based on Machine_No.

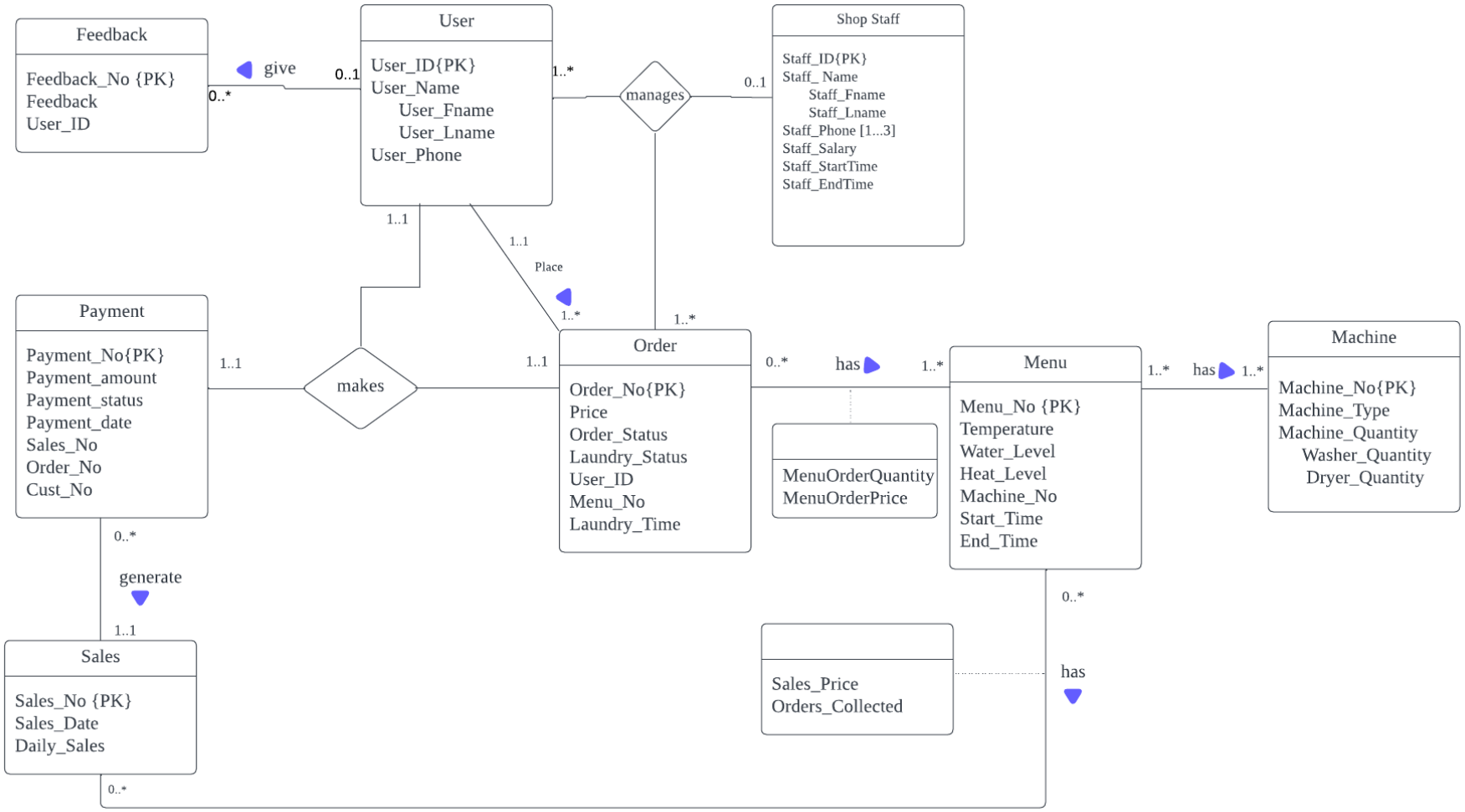
Data Queries

1. List the details of user information.
2. List the details of shop staff information.
3. List the details of payment made by the user based on Payment_amount, Payment_date, Order_No and User_No.
4. List the details of feedback given by the user based on Feedback and User_ID.
5. List the details of the laundry menu based on Machine_No, Start_Time and End_Time.
6. List the details of the order placed by the user based on Order_Status, Laundry_Status and User_ID.
7. List the details of machine type and quantity based on Machine_Type and Machine_Quantity.

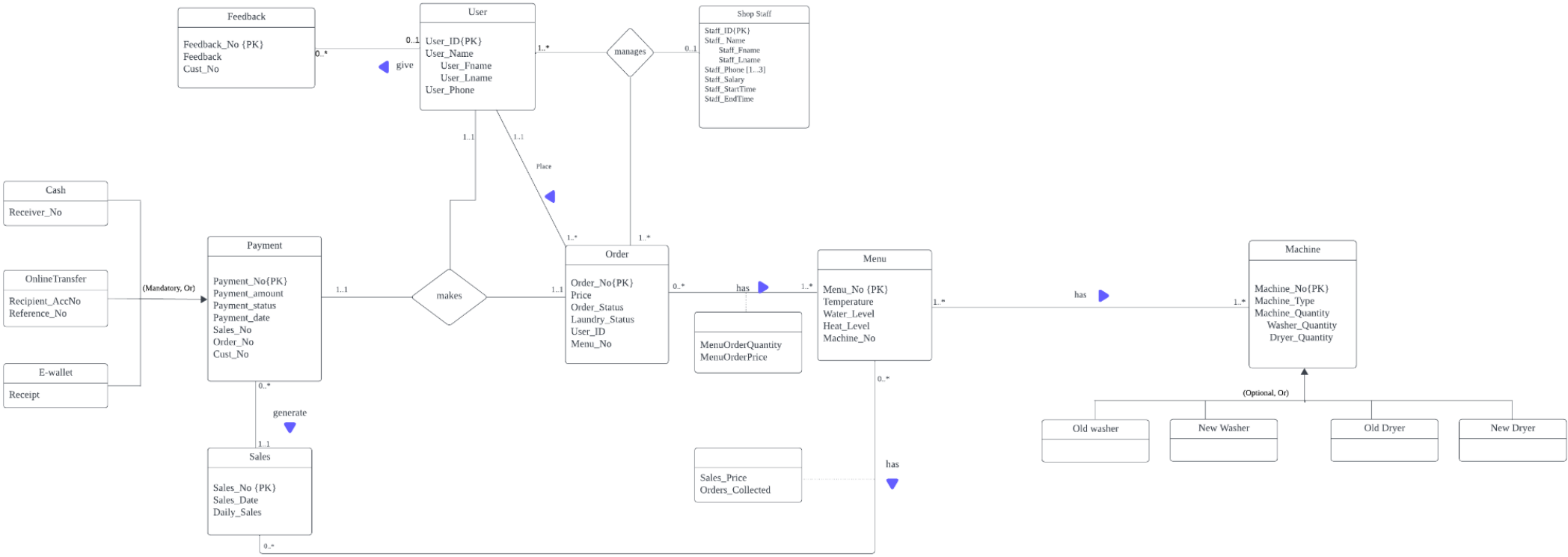
8. List the details of the sales report based on Sales_No.

4.0 DATABASE CONCEPTUAL DESIGN

4.1 Conceptual ERD



4.2 Enhanced ERD (EERD)



5.0 DATA DICTIONARY

5.1 Description of Entity

Entity	Description	Occurrence
User	Holds user's information	Users place machine orders. Users may or may not give feedback. Users make payment for the orders. Users can be associated with multiple sales.
Order	Holds user's order information	Order has a menu provided to the user for placing order. Each user makes a payment after order status is successful.
Menu	Holds machine's menu information	Each menu can be used by many machines. Each machine has one or more menus.
Machine	Holds the machine's information	Each menu is associated with one or more machines
Payment	Holds payment's information	Payment can be made by one user only.
Sales	Holds sales' information	Sales are recorded when payment is done.
Shop Staff	Holds shop staff's information	Shop staff may or may not manage users. Shop staff may or may not manage orders.
Feedback	Holds user's feedback	Feedback is sent by users.

5.2 Description of Relationship

Entity	Multiplicity	Relationship	Multiplicity	Entity
User	0..1	Give	0..*	Feedback
User	1..1	Place	1..*	Order
User	1..1	Makes	1..1	Payment
Sales	1..1	Generate	0..*	Payment
Order	0..*	Has	1..*	Menu
Machine	1..*	Has	1..*	Menu
Menu	0..*	Has	0..*	Sales
Shop Staff	0..1	Manages	1..*	User
Shop Staff	0..1	Manages	1..*	Order

5.3 Description Attributes

Entity	Attributes	Description	Data Type	Null	Multi-Valued
User	User_ID	Uniquely Identifies a user {PK}	VARCHAR2(5)	No	No
	User_Name User_Fname User_Lname	Name of the user First Name of the user Last Name of the user	VARCHAR2(30) VARCHAR2(15) VARCHAR2(15)	No No No	No No No
	User_Phone	Phone number of the user	VARCHAR2(11)	No	No
Order	Order_No	Uniquely Identifies Order {PK}	VARCHAR2(4)	No	No
	Price	Price of order	FLOAT(4)	No	No

	Order_Status	Status of user's order	VARCHAR2 (10)	No	No
	Laundry_Status	Status of Laundry	VARCHAR2 (10)	No	No
	User_ID	Foreign Key of order which uniquely identifies a user.	VARCHAR2 (5)	No	No
	Menu_No	Foreign Key of order which identify a menu {FK}	VARCHAR2 (10)	No	No
	Laundry_Time	Time of laundry of user	VARCHAR2(10)	No	No
Menu	Menu_No	Uniquely identifies a menu	VARCHAR2 (5)	No	No
	Temperature	Selecting temperature of menu	VARCHAR2 (10)	No	No
	Water_Level	Selecting water level of menu	VARCHAR2 (10)	No	No
	Heat_Level	Selecting heat level of menu	VARCHAR2(10)	No	No
	Machine_No	Foreign key of menu which uniquely identify a machine	NUMBER(3)	No	No
	Start_Time	Start time of menu	TIMESTAMP	No	No
	End_Time	End time of menu	TIMESTAMP	No	No
Machine	Machine_No	Uniquely identifies a machine	VARCHAR2 (2)	No	No
	Machine_Type	Type of machines available	VARCHAR2(20)	No	No
	Machine_Quantity Washer_Quantity Dryer_Quantity	No of machine available No of washing machine available No of dryer machine	NUMBER (2) NUMBER (2) NUMBER (2)	No No No	No No No

		available			
Payment	Payment_No	Uniquely identifies a payment {PK}	VARCHAR2(6)	No	No
	Payment_amount	Amount of payment	FLOAT (5)	No	No
	Payment_status	Status of Payment	VARCHAR2(20)	No	No
	Payment_date	Payment Transaction date	DATE	No	No
	Sales_No	Foreign key of payment which uniquely identify a sale {FK}	VARCHAR2(10)	No	No
	Order_No	Foreign key of payment which uniquely identify an order {FK}	VARCHAR2 (10)	No	No
	User_No	Foreign key of payment which uniquely identify a user {FK}	VARCHAR2 (10)	No	No
Sales	Sales_No	Uniquely identifies sales {PK}	VARCHAR2 (10)	No	No
	Sales_Date	Sales date	TIMESTAMP	No	No
	Daily_Sale	Earned profit in a 24-hour period	FLOAT(8)	Yes	No
Shop Staff	Staff_ID	Uniquely identifies staff {PK}	VARCHAR2(10)	No	No
	Staff_Name Staff_Fname Staff_Lname	Name of a staff First Name of Staff Last Name of Staff	VARCHAR2(30) VARCHAR2(15) VARCHAR2(15)	No No No	No No No
	Staff_Phone	Phone no of staff	VARCHAR2(11)	No	Yes

	Staff_Salary	Salary of staff	FLOAT(8)	No	No
	Staff_StartTime	Start Time of Staff working time	TIMESTAMP	No	No
	Staff_EndTime	End Time of staff working time	TIMESTAMP	No	No
Feedback	Feedback_No	Uniquely identify a feedback	VARCHAR2(2)	No	No
	Feedback	Feedback provided from users about the laundry system	VARCHAR2(100)	Yes	No
	User_ID	Foreign key of feedback which identifies a user{FK}	VARCHAR2 (5)	No	No

6.0 SUMMARY

In summary, our group has successfully completed the conceptual design database for the UniLaundry system. In the envisioned laundry system (TO-BE), we have included the necessary requirements needed by the stakeholders and users. This automated system is designed to enhance the efficiency and effectiveness of the laundry process as the users can select and choose their preferred booking slots during their free time, eliminating the need to wait in long queues to do the laundry. The users also can conveniently check the machines availability through the UniLaundry application as the new features in this system allow them to know the current status of laundry machines and available time slots without the need for physical presence at the laundry facility. Certainly, the UniLaundry system also provides valuable insights for the laundry business owner by having automated weekly and monthly reports, including the sales information and the satisfaction level of customers that can be accessed from the rate and review feature. This new proposed system allows the owner to gain a comprehensive view of his business performance as he can identify the problems faced by the customer. By receiving these reports, the owner can.improve the services in order to ensure the success and efficiency of the laundry business.

Other than that, the entity relationship diagram is used to show the relationship between each entity that represents different types of data. This conceptual ERD will help us to have a better view and understanding of the structure of UniLaundry data. All the data information in this proposed UniLaundry system will be automatically stored in the database with each of the data having been assigned with a unique identifier that acts as the primary key in its respective entity. The data stored functionality ensures that the information provided is securely saved for the future reference such as history bookings, sales and feedback record for analysis and reporting purposes.