



BITP1323 DATABASE PROJECT (20%)

TITLE: ASYAN GALLERY (Rental Boutique System)

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CHAPTER 1 - INTRODUCTION

INTRODUCTION

Asyan Gallery is an online boutique that provides a variety of clothes like costumes, tuxedos and dresses for rental services. The boutique management will manage all the clothing rental business. We will control the rental record of the costumes easily using a detailed rental business system. The objective of this project is to create a system that can be accessed to fill in and store the customers and costume rental information. So that the rental management can be more efficient and effective for the staff and customers.

PROBLEM STATEMENTS

- Customer details cannot be stored neatly.
- Cannot detect late return of clothes without additional fees, payment problems.
- The staff cannot identify either the costume available or not at a given time.
Double tenancies will happen.

OBJECTIVES

This project is proposed with the following objectives :

- To design, test and implement a model of database for online costume rental.
- To manage a search column to search availability of costumes to rent.
- To develop a system for online costume rental.
- Implementing database as a way to have a better management of costume rental to lessen the difficulties that the employees will face while managing the rent.
- To generate rental management and customer information from the more efficient and effective database.

SCOPES

1. Modules to be developed:

- To make it easier for employees to check customer details such as the customer's personal information and their rental.
- Customers can choose the costume they want to rent without going to the boutique.
- It will also notify the customer of whether that costume is available or not.

2. Target Users:

- Anime or cartoon fans
 - + Cosplay Runway etc.
- Dresses and tuxedos
 - + Wedding
 - + Prom night
 - + Graduation event
- Costume
 - + Halloween celebration
 - + Birthday Party
 - + Christmas Day

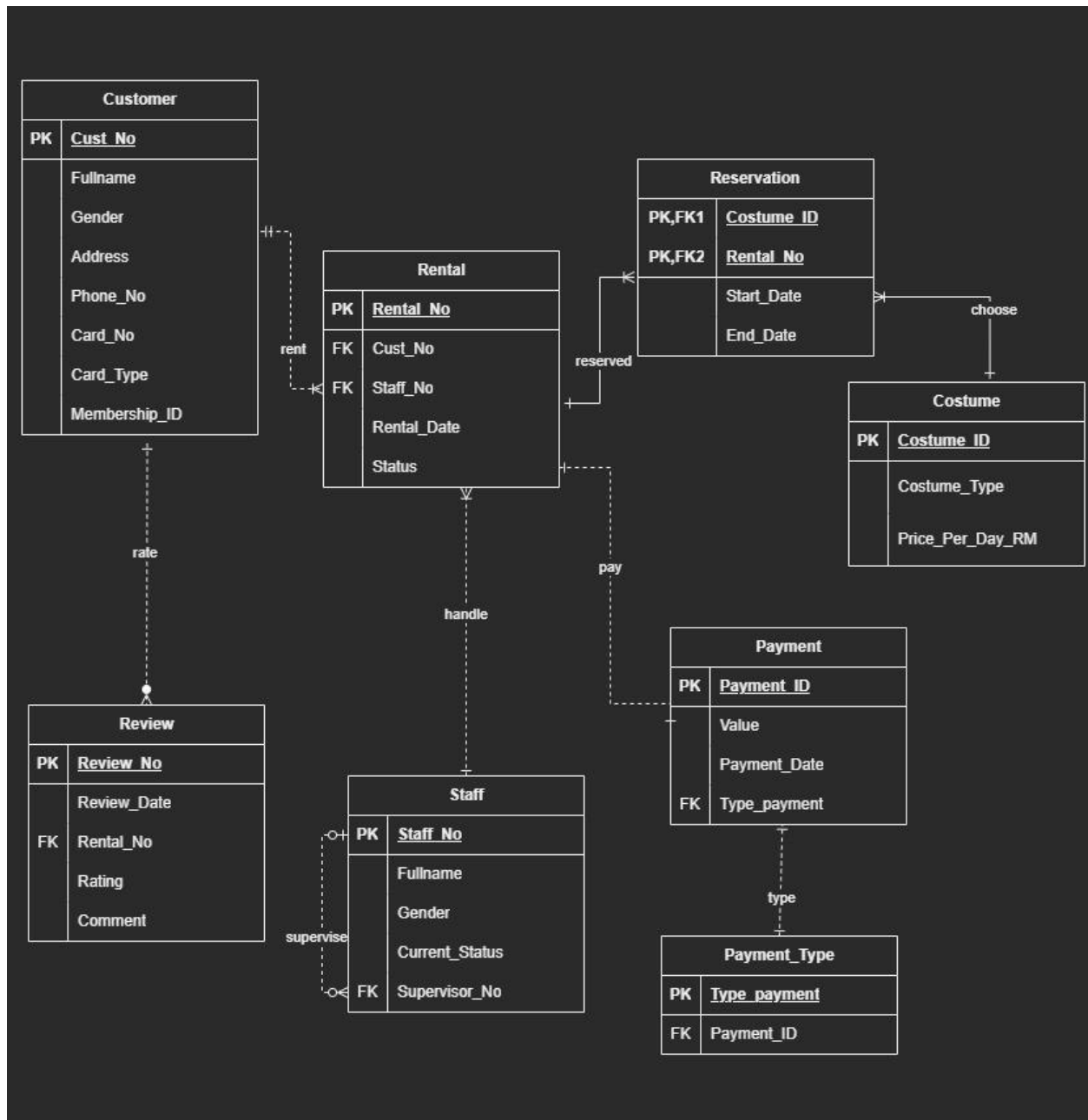
SIGNIFICANCE

-This system will keep the borrower's personal details, rental and maintain the information in the system.

-This will also help the admin to keep track of the rental record in the system. For example, how many clothes that have been rented, how long the rental is going on and what type of costume that want to be rented.

CHAPTER 2 - DATABASE DESIGN

ENTITY RELATION DIAGRAM (ERD)



CUSTOMER TABLE

| CUST_NO | FULLNAME | GENDER | ADDRESS | PHONE_NO | CARD_NO | CARD_TYPE | MEMBERSHIPID |
|---------|------------------------|--------|--|------------|------------------|--------------|--------------|
| A1 | Alia Maisarah Bt Halim | Female | NO.1,Jalan Jujur 3,Bandar Tun Razak,56000 Kuala Lumpur | 172884567 | 234567893456 | Visa Debit | M03 |
| A2 | Hafiz Zamani Bin Adam | Male | NO.2,Persiaran 5,Taman Pusaka 36800 Kampar,Perak | 1788345678 | 87654323456 | Visa Debit | M04 |
| A3 | Najwa Izzati Bt Abu | Female | T22,Taman Midah,Bandar Bahr 54180,Kuala Lumpur | 153456788 | 9876543234567 | Visa Credit | M05 |
| A4 | Aira Binti Zamri | Female | NO.6,Taman Pelangi ,27000,Jerantut,Pahang | 145678923 | 987654345676 | Master Debit | M06 |
| A5 | Arif Bin Ariffin | Male | NO.44,Jalan Zamrud,56000 Cheras,Selangor | 1345678876 | 2345678987654 | Master Debit | M07 |
| A6 | Akhmal Bin Ibrahim | Male | NO.12,Taman Tun Jamal 61700,Durian Tunggal,Melaka | 196565656 | 4293189100000008 | Visa Debit | M08 |
| A7 | Talib Bin Razif | Male | Lot6,Jalan Tanjung Rambutan,54600 Negeri Sembilan | 12345678 | 87652345677 | Visa Credit | M09 |
| A8 | Selena | Female | No.3,Jalan Dalam,15000 Kota Bharu Kelantan | 137654903 | 98366426 | Visa Debit | M10 |
| A9 | John | Male | NO.18,Jalan Melati ,54100 Kuala Lumpur | 120099931 | 4567382922 | Visa Debit | M11 |
| A10 | Siti Binti Arshad | Female | Lot10,Jalan Speedy,36800 kampung gajah ,Perak | 110090012 | 908766373733 | Visa Credit | M12 |

STAFF TABLE

| STAFF_NO | FULLNAME | GENDER | CURRENT_STATUS | SUPERVISOR_NO |
|----------|-------------------------------------|--------|----------------|---------------|
| S1 | Sahirah Binti Muhammad Hafas | Female | Active | - |
| S2 | Siti Nurhayuni Binti Haron | Female | Active | S1 |
| S3 | Nurul Elyyana Natasha Binti Yusli | Female | Unpaid Leave | S1 |
| S4 | Siti Aina Nabilah Binti Aidie Azman | Female | Active | S1 |
| S5 | Aisyatul Aaleya Binti Abdull Rahim | Female | Active | S1 |
| S6 | Muhammad Aqil Arman Bin Azman | Male | Unpaid Leave | S1 |
| S7 | Rayyan Iskandar Bin Akmal | Male | Active | S1 |
| S8 | Muhammad Ali bin Ahmad | Male | Unpaid Leave | S1 |

RENTAL TABLE

| RENTAL_NO | CUST_NO | STAFF_NO | RENTAL_DATE | STATUS |
|-----------|---------|----------|-------------|--------|
| R1 | A1 | S1 | 08/02/2022 | Paid |
| R2 | A2 | S2 | 03/08/2022 | Paid |
| R3 | A3 | S3 | 09/12/2022 | Paid |
| R4 | A4 | S4 | 04/18/2022 | Paid |
| R5 | A5 | S2 | 03/10/2022 | Paid |
| R6 | A6 | S6 | 05/06/2022 | Refund |
| R7 | A7 | S5 | 09/09/2022 | Paid |
| R8 | A2 | S4 | 09/12/2022 | Refund |
| R9 | A4 | S3 | 09/29/2022 | Refund |
| R10 | A4 | S3 | 10/19/2022 | Paid |

RESERVATION TABLE

| COSTUME_ID | RENTAL_NO | START_DATE | END_DATE |
|------------|-----------|------------|------------|
| C4677 | R1 | 08/02/2022 | 08/05/2022 |
| C5946 | R2 | 08/08/2022 | 08/11/2022 |
| C9264 | R3 | 09/12/2022 | 09/14/2022 |
| C6543 | R4 | 09/18/2022 | 09/25/2022 |
| C7364 | R5 | 09/10/2022 | 09/15/2022 |
| C9564 | R6 | 09/06/2022 | 09/10/2022 |
| C9866 | R7 | 09/09/2022 | 09/14/2022 |

COSTUME TABLE

| COSTUME_ID | COSTUME_TYPE | PRICE_PER_DAY_RM |
|------------|----------------|------------------|
| C4677 | Wedding Dress | 700 |
| C5946 | Cosplay | 200 |
| C9264 | Prom Night | 300 |
| C6543 | Christmas | 150 |
| C7364 | Halloween | 150 |
| C9564 | Birthday Party | 200 |
| C9866 | Graduation | 150 |

PAYMENT TABLE

| PAYMENT_ID | VALUE | PAYMENT_DATE | TYPE_PAYMENT |
|------------|-------|--------------|----------------|
| P1 | 150 | 07/04/2022 | Credit |
| P2 | 265 | 09/20/2022 | Debit |
| P3 | 350 | 01/08/2022 | Credit |
| P4 | 100 | 04/15/2022 | Debit |
| P5 | 500 | 04/19/2022 | E-Wallet |
| P6 | 650 | 10/03/2022 | Credit |
| P7 | 179 | 02/08/2022 | E-Wallet |
| P8 | 700 | 05/17/2022 | Online Banking |
| P9 | 1100 | 09/25/2022 | Online Banking |
| P10 | 289 | 04/30/2022 | Debit |

PAYMENT TYPE TABLE

| TYPE_TRANS | PAYMENT_ID |
|----------------|------------|
| Credit | P2 |
| Online Banking | P3 |
| Debit | P1 |
| E-Wallet | P4 |

REVIEW TABLE

| REVIEW_NO | REVIEW_DATE | RENTAL_NO | RATING | COMMENTS |
|-----------|-------------|-----------|--------|---|
| RV1 | 08/03/2022 | R1 | 4 | Had to wait for 2 hours to get the costume. |
| RV2 | 09/13/2022 | R7 | 3 | - |
| RV3 | 01/13/2022 | R3 | 5 | Excellent Service |
| RV4 | 09/14/2022 | R5 | 5 | Excellent Service And Nice Service |
| RV5 | 09/26/2022 | R11 | 4 | Excellent Service |
| RV6 | 03/03/2022 | R8 | 5 | Excellent Staff and Services |
| RV7 | 05/19/2022 | R4 | 4 | Excellent Service |
| RV8 | 01/21/2022 | R9 | 5 | Excellent Service and Good staff |
| RV9 | 08/14/2022 | R2 | 3 | The staff is Late to give services |

BUSINESS RULES

- Each customer can choose one or many costumes. Each costume can be chosen by one and only one customer.
- Each customer can make one or many rentals. Each rental can be made by one customer.
- Each customer can make one or many reservations. Each reservation can be reserved by one customer.
- Each rental can make a payment by each customer. Each payment is for one rental.
- Customers can choose a payment type which is e-wallet, online banking, credit and debit.
- One or many rentals will be handled by one and only one staff member. Each staff member can handle one or many rentals.
- One staff member will be supervised by many supervisors. Each supervisor can have one staff member.
- Each customer can make a review. Many reviews can be made by each customer.

DATA DICTIONARY

Data Dictionary

| Data Dictionary | | | | | | | | | |
|-----------------------------|-----------------------|--------------------|--------|-------|-----------|---------------|---------|----------|---------------------|
| Product Purchasing Database | | | | | | | | | |
| CUSTOMER | | | | | | | | | |
| ATTRIBUTE NAME | CONTENTS | DATA TYPE AND SIZE | FORMAT | RANGE | REQUIRED? | DEFAULT VALUE | UNIQUE? | PK OR FK | FK REFERENCED TABLE |
| Cust_No | Customer number | VARCHAR2(5) | | | | | | PK | |
| FullName | Customer fullname | VARCHAR2(50) | | | YES | | | | |
| Gender | Customer gender | VARCHAR2(6) | | | YES | | | | |
| Address | Customer address | VARCHAR2(100) | | | YES | | | | |
| Phone_No | Customer phone number | NUMBER(11) | | | YES | | | | |
| Card_No | Customer card number | NUMBER(30) | | | YES | | YES | | |
| Card_Type | Customer card type | VARCHAR2(50) | | | YES | | | | |
| MembershipID | Customer membership | VARCHAR2(50) | | | | | | | |

| STAFF | | | | | | | | | |
|----------------|-------------------|--------------------|--------|-------|-----------|---------------|---------|----------|---------------------|
| ATTRIBUTE NAME | CONTENTS | DATA TYPE AND SIZE | FORMAT | RANGE | REQUIRED? | DEFAULT VALUE | UNIQUE? | PK OR FK | FK REFERENCED TABLE |
| Staff_No | Staff number | VARCHAR2(5) | | | | | | PK | |
| FullName | Staff fullname | VARCHAR2(50) | | | YES | | | | |
| Gender | Staff gender | VARCHAR2(6) | | | YES | | | | |
| Current_Status | Current status | VARCHAR2(50) | | | YES | | | FK | STAFF |
| Supervisor_No | Supervisor number | VARCHAR2(5) | | | | | | FK | STAFF |

| COSTUME | | | | | | | | | |
|------------------|-----------------------|--------------------|--------|-------|-----------|---------------|---------|----------|---------------------|
| ATTRIBUTE NAME | CONTENTS | DATA TYPE AND SIZE | FORMAT | RANGE | REQUIRED? | DEFAULT VALUE | UNIQUE? | PK OR FK | FK REFERENCED TABLE |
| Costume_ID | Customer costume ID | VARCHAR2(5) | | | | | | PK | |
| Costume_Type | Customer costume type | VARCHAR2(25) | | | YES | | | | |
| Price_per_day_rm | Costume price per day | NUMBER(8,2) | | | YES | | | | |

| RENTAL | | | | | | | | | |
|----------------|------------------------|--------------------|--------|-------|-----------|---------------|---------|----------|---------------------|
| ATTRIBUTE NAME | CONTENTS | DATA TYPE AND SIZE | FORMAT | RANGE | REQUIRED? | DEFAULT VALUE | UNIQUE? | PK OR FK | FK REFERENCED TABLE |
| Rental_No | Customer rental number | VARCHAR2(5) | | | | | | PK | |
| Cust_No | Customer number | VARCHAR2(5) | | | YES | | | FK | CUSTOMER |
| Staff_No | Staff number | VARCHAR2(5) | | | YES | | | FK | STAFF |
| Rental_Date | Customer rental date | DATE | | | YES | | | | |
| Status | status | VARCHAR2(50) | | | YES | | | | |

| RESERVATION | | | | | | | | | |
|----------------|------------------------|--------------------|--------|-------|-----------|---------------|---------|----------|---------------------|
| ATTRIBUTE NAME | CONTENTS | DATA TYPE AND SIZE | FORMAT | RANGE | REQUIRED? | DEFAULT VALUE | UNIQUE? | PK OR FK | FK REFERENCED TABLE |
| Costume_ID | Customer costume ID | VARCHAR2(5) | | | | | | PK FK | COSTUME |
| Rental_No | Customer rental number | VARCHAR2(5) | | | | | | PK FK | RENTAL |
| Start_Date | Rental start date | DATE | | | YES | | | | |
| End_Date | Rental end date | DATE | | | YES | | | | |

| REVIEW | | | | | | | | | |
|----------------|------------------------|--------------------|--------|-------|-----------|---------------|---------|----------|---------------------|
| ATTRIBUTE NAME | CONTENTS | DATA TYPE AND SIZE | FORMAT | RANGE | REQUIRED? | DEFAULT VALUE | UNIQUE? | PK OR FK | FK REFERENCED TABLE |
| Review_No | Customer review ID | VARCHAR2(5) | | | | | | PK | |
| Review_Date | Customer review date | DATE | | | YES | | | | |
| Rental_No | Customer rental number | VARCHAR2(5) | | | YES | | | FK | RENTAL |
| Rating | Customer rating | NUMBER(1) | | | YES | | | | |
| Comments | Customer comments | VARCHAR2(500) | | | | | | | |
| PAYMENT | | | | | | | | | |
| ATTRIBUTE NAME | CONTENTS | DATA TYPE AND SIZE | FORMAT | RANGE | REQUIRED? | DEFAULT VALUE | UNIQUE? | PK OR FK | FK REFERENCED TABLE |
| Payment_ID | Customer payment ID | VARCHAR2(5) | | | | | | PK | |
| Value | Amount of rental | NUMBER(7) | | | YES | | | | |
| Payment_Date | Customer payment date | DATE | | | YES | | | | |
| PAYMENT_TYPE | | | | | | | | | |
| ATTRIBUTE NAME | CONTENTS | DATA TYPE AND SIZE | FORMAT | RANGE | REQUIRED? | DEFAULT VALUE | UNIQUE? | PK OR FK | FK REFERENCED TABLE |
| Type_Trans | Payment type | VARCHAR2(20) | | | | | | PK | |
| Payment_ID | Customer payment ID | VARCHAR2(5) | | | YES | | | FK | PAYMENT |

CHAPTER 3 - DATABASE IMPLEMENTATION

SQL DATA DEFINITION LANGUAGE (DDL)

```
DROP TABLE REVIEW;  
DROP TABLE RESERVATION;  
DROP TABLE RENTAL;  
DROP TABLE PAYMENT_TYPE;  
DROP TABLE CUSTOMER;  
DROP TABLE STAFF;  
DROP TABLE COSTUME;  
DROP TABLE PAYMENT;
```

```
-- TABLE CUSTOMER  
CREATE TABLE CUSTOMER
```

```
(  
    Cust_No VARCHAR2(5),  
    Fullname VARCHAR2(50) NOT NULL,  
    Gender VARCHAR2(6) NOT NULL CHECK (Gender IN ('Male','Female')),  
    Address VARCHAR2(100) NOT NULL,  
    Phone_No NUMBER(11) NOT NULL,  
    Card_No NUMBER(30) NOT NULL UNIQUE,  
    Card_Type VARCHAR2(50) NOT NULL CHECK (Card_Type IN ('Visa Debit','Visa  
Credit','Master Debit','Master Credit')),  
    MembershipID VARCHAR2(50),
```

```
    PRIMARY KEY (Cust_No)  
);
```

```
INSERT INTO CUSTOMER VALUES ('A1','Alia Maisarah Bt Halim','Female','NO.1,Jalan  
Jujur 3,Bandar Tun Razak,56000 Kuala Lumpur',0172884567,234567893456,'Visa  
Debit','M03');
```

```
INSERT INTO CUSTOMER VALUES ('A2','Hafiz Zamani Bin  
Adam','Male','NO.2,Persiaran 5,Taman Pusaka 36800  
Kampar,Perak',01788345678,87654323456,'Visa Debit','M04');
```

```
INSERT INTO CUSTOMER VALUES ('A3','Najwa Izzati Bt Abu','Female','T22,Taman  
Midah,Bandar Bahru 54180,Kuala Lumpur',0153456788,9876543234567,'Visa  
Credit','M05');
```

```
INSERT INTO CUSTOMER VALUES ('A4','Aira Binti Zamri','Female','NO.6,Taman  
Pelangi ,27000,Jerantut,Pahang',0145678923,987654345676,'Master Debit','M06');
```

```
INSERT INTO CUSTOMER VALUES ('A5','Arif Bin Ariffin','Male','NO.44,Jalan
```

```

Zamrud,56000 Cheras,Selangor',01345678876,2345678987654,'Master Debit','M07');
INSERT INTO CUSTOMER VALUES ('A6','Akhmal Bin Ibrahim','Male','N0.12,Taman
Tun Jamal 61700,Durian Tunggal,Melaka ', 0196565656,4293189100000008, 'Visa
Debit','M08');
INSERT INTO CUSTOMER VALUES ('A7','Talib Bin Razif','Male','Lot6,Jalan Tanjung
Rambutan,54600 Negeri Sembilan',012345678,87652345677, 'Visa Credit','M09');
INSERT INTO CUSTOMER VALUES ('A8','Selena','Female','No.3,Jalan Dalam,15000
Kota Bharu Kelantan',0137654903,98366426, 'Visa Debit','M10');
INSERT INTO CUSTOMER VALUES ('A9','John','Male','NO.18,Jalan Melati ,54100
Kuala Lumpur',0120099931,4567382922, 'Visa Debit','M11');
INSERT INTO CUSTOMER VALUES ('A10','Siti Binti Arshad','Female','Lot10,Jalan
Speedy,36800 kampong gajah ,Perak',0110090012,908766373733, 'Visa Credit','M12');

```

```
-- TABLE STAFF
```

```
CREATE TABLE STAFF
```

```

(
  Staff_No VARCHAR2(5),
  Fullname VARCHAR2(50) NOT NULL,
  Gender VARCHAR2(6) NOT NULL CHECK (Gender IN ('Male','Female')),
  Current_Status VARCHAR2(50) NOT NULL,
  Supervisor_No VARCHAR2(5),

  PRIMARY KEY (Staff_No),
  FOREIGN KEY (Supervisor_No) REFERENCES STAFF (Staff_No)
);

```

```

INSERT INTO STAFF VALUES ('S1','Sahirah Binti Muhammad
Hafas','Female','Active',NULL);
INSERT INTO STAFF VALUES ('S2','Siti Nurhayuni Binti Haron','Female','Active','S1');
INSERT INTO STAFF VALUES ('S3','Nurul Elyyana Natasha Binti
Yusli','Female','Unpaid Leave','S1');
INSERT INTO STAFF VALUES ('S4','Siti Aina Nabilah Binti Aidie
Azman','Female','Active','S1');
INSERT INTO STAFF VALUES ('S5','Aisyatul Aaleya Binti Abdull
Rahim','Female','Active','S1');
INSERT INTO STAFF VALUES ('S6','Muhammad Aqil Arman Bin
Azman','Male','Active','S1');
INSERT INTO STAFF VALUES ('S7','Rayyan Iskandar Bin Akmal','Male','Active','S1');
INSERT INTO STAFF VALUES ('S8','Muhammad Ali bin Ahmad','Male','Unpaid
Leave','S1');

```

```
-- TABLE COSTUME
```

```
CREATE TABLE COSTUME
```

```

(
  Costume_ID VARCHAR2(5),
  Costume_Type VARCHAR2(25) NOT NULL,

```

```

Price_Per_Day_RM NUMBER(8,2) NOT NULL,

PRIMARY KEY (Costume_ID)
);

INSERT INTO COSTUME VALUES ('C4677','Wedding Dress','700.00');
INSERT INTO COSTUME VALUES ('C5946','Cosplay','200.00');
INSERT INTO COSTUME VALUES ('C9264','Prom Night','300.00');
INSERT INTO COSTUME VALUES ('C6543','Christmas','150.00');
INSERT INTO COSTUME VALUES ('C7364','Halloween','150.00');
INSERT INTO COSTUME VALUES ('C9564','Birthday Party','200.00');
INSERT INTO COSTUME VALUES ('C9866','Graduation','150.00');

-- TABLE RENTAL
CREATE TABLE RENTAL
(
    Rental_No VARCHAR2(5),
    Cust_No VARCHAR2(5) NOT NULL,
    Staff_No VARCHAR2(5) NOT NULL,
    Rental_Date DATE NOT NULL,
    Status VARCHAR2(50) NOT NULL,

    PRIMARY KEY (Rental_No),
    FOREIGN KEY (Cust_No) REFERENCES CUSTOMER (Cust_No),
    FOREIGN KEY (Staff_No) REFERENCES STAFF (Staff_No)
);

INSERT INTO RENTAL VALUES ('R1', 'A1', 'S1', TO_DATE('2022-08-02',
'YYYY-MM-DD'), 'Paid');
INSERT INTO RENTAL VALUES ('R2', 'A2', 'S2', TO_DATE('2022-03-08',
'YYYY-MM-DD'), 'Paid');
INSERT INTO RENTAL VALUES ('R3', 'A3', 'S3', TO_DATE('2022-09-12',
'YYYY-MM-DD'), 'Paid');
INSERT INTO RENTAL VALUES ('R4', 'A4', 'S4', TO_DATE('2022-04-18',
'YYYY-MM-DD'), 'Paid');
INSERT INTO RENTAL VALUES ('R5', 'A5', 'S2', TO_DATE('2022-03-10',
'YYYY-MM-DD'), 'Paid');
INSERT INTO RENTAL VALUES ('R6', 'A6', 'S6', TO_DATE('2022-05-06',
'YYYY-MM-DD'), 'Refund');
INSERT INTO RENTAL VALUES ('R7', 'A7', 'S5', TO_DATE('2022-09-09',
'YYYY-MM-DD'), 'Paid');
INSERT INTO RENTAL VALUES ('R8', 'A2', 'S4', TO_DATE('2022-09-12',
'YYYY-MM-DD'), 'Refund');
INSERT INTO RENTAL VALUES ('R9', 'A4', 'S3', TO_DATE('2022-09-29',
'YYYY-MM-DD'), 'Refund');
INSERT INTO RENTAL VALUES ('R10', 'A4', 'S3', TO_DATE('2022-10-19',

```

```
'YYYY-MM-DD'), 'Paid');
INSERT INTO RENTAL VALUES ('R11', 'A3', 'S2', TO_DATE('2022-12-17',
'YYYY-MM-DD'), 'UnPaid');
INSERT INTO RENTAL VALUES ('R12', 'A8', 'S1', TO_DATE('2022-01-23',
'YYYY-MM-DD'), 'UnPaid');
```

-- TABLE RESERVATION

CREATE TABLE RESERVATION

```
(
  Costume_ID VARCHAR2(5),
  Rental_No VARCHAR2(5),
  Start_Date DATE NOT NULL,
  End_Date DATE NOT NULL,

  PRIMARY KEY (Costume_ID, Rental_No),
  FOREIGN KEY (Costume_ID) REFERENCES COSTUME (Costume_ID),
  FOREIGN KEY (Rental_No) REFERENCES RENTAL (Rental_No)
);
```

```
INSERT INTO RESERVATION VALUES ('C4677','R1','AUG-02-2022','AUG-05-2022');
INSERT INTO RESERVATION VALUES ('C5946','R2','AUG-08-2022','AUG-11-2022');
INSERT INTO RESERVATION VALUES ('C9264','R3','SEP-12-2022','SEP-14-2022');
INSERT INTO RESERVATION VALUES ('C6543','R4','SEP-18-2022','SEP-25-2022');
INSERT INTO RESERVATION VALUES ('C7364','R5','SEP-10-2022','SEP-15-2022');
INSERT INTO RESERVATION VALUES ('C9564','R6','SEP-06-2022','SEP-10-2022');
INSERT INTO RESERVATION VALUES ('C9866','R7','SEP-09-2022','SEP-14-2022');
```

-- TABLE REVIEW

CREATE TABLE REVIEW

```
(
  Review_No VARCHAR2(5),
  Review_Date DATE NOT NULL,
  Rental_No VARCHAR2(5) NOT NULL,
  Rating NUMBER(1) NOT NULL CHECK (Rating IN (1,2,3,4,5)),
  Comments VARCHAR2(500),

  PRIMARY KEY (Review_No),
  FOREIGN KEY (Rental_No) REFERENCES RENTAL (Rental_No)
);
```

```
INSERT INTO REVIEW VALUES ('RV1',TO_DATE('2022-08-03',
'YYYY-MM-DD'),'R1',4,'Had to wait for 2 hours to get the costume. ');
INSERT INTO REVIEW VALUES ('RV2',TO_DATE('2022-09-13',
'YYYY-MM-DD'),'R7',3,NULL);
```

```

INSERT INTO REVIEW VALUES ('RV3',TO_DATE('2022-01-13',
'YYYY-MM-DD'),'R3',5,'Excellent Service');
INSERT INTO REVIEW VALUES ('RV4',TO_DATE('2022-09-14',
'YYYY-MM-DD'),'R5',5,'Excellent Service And Nice Service');
INSERT INTO REVIEW VALUES ('RV5',TO_DATE('2022-09-26',
'YYYY-MM-DD'),'R11',4,'Excellent Service');
INSERT INTO REVIEW VALUES ('RV6',TO_DATE('2022-03-03',
'YYYY-MM-DD'),'R8',5,'Excellent Staff and Services');
INSERT INTO REVIEW VALUES ('RV7',TO_DATE('2022-05-19',
'YYYY-MM-DD'),'R4',4,'Excellent Service');
INSERT INTO REVIEW VALUES ('RV8',TO_DATE('2022-01-21',
'YYYY-MM-DD'),'R9',5,'Excellent Service and Good staff');
INSERT INTO REVIEW VALUES ('RV9',TO_DATE('2022-08-14',
'YYYY-MM-DD'),'R2',3,'The staff is Late to give services');

```

```

-- TABLE PAYMENT
CREATE TABLE PAYMENT
(
    Payment_ID VARCHAR2(5),
    Value NUMBER(7) NOT NULL,
    Payment_Date DATE NOT NULL,
    Type_payment VARCHAR2(20),
    PRIMARY KEY (Payment_ID)
);

```

```

INSERT INTO PAYMENT VALUES ('P1', 150.00, DATE '2022-07-04','Credit');
INSERT INTO PAYMENT VALUES ('P2', 265.00, DATE '2022-09-20','Debit');
INSERT INTO PAYMENT VALUES ('P3', 350.00, DATE '2022-01-08','Credit');
INSERT INTO PAYMENT VALUES ('P4', 100.00, DATE '2022-04-15','Debit');
INSERT INTO PAYMENT VALUES ('P5', 500.00, DATE '2022-04-19','E-Wallet');
INSERT INTO PAYMENT VALUES ('P6', 650.00, DATE '2022-10-03','Credit');
INSERT INTO PAYMENT VALUES ('P7', 179.00, DATE '2022-02-08','E-Wallet');
INSERT INTO PAYMENT VALUES ('P8', 700.00, DATE '2022-05-17','Online Banking');
INSERT INTO PAYMENT VALUES ('P9', 1100.00, DATE '2022-09-25','Online Banking');
INSERT INTO PAYMENT VALUES ('P10', 289.00, DATE '2022-04-30','Debit');

```

```

-- TABLE PAYMENT_TYPE
CREATE TABLE PAYMENT_TYPE
(
    Type_Trans VARCHAR2(20),
    Payment_ID VARCHAR2(5) NOT NULL,

```



```
PRIMARY KEY (Type_Trans),  
FOREIGN KEY (Payment_ID) REFERENCES PAYMENT (Payment_ID)  
);
```

```
INSERT INTO PAYMENT_TYPE VALUES ('Credit', 'P2');  
INSERT INTO PAYMENT_TYPE VALUES ('Online Banking', 'P3');  
INSERT INTO PAYMENT_TYPE VALUES ('Debit', 'P1');  
INSERT INTO PAYMENT_TYPE VALUES ('E-Wallet', 'P4');
```

SQL DATA MANIPULATION LANGUAGE (DML)

Query:

Retrieve staff's number and full names whose current status is 'Active'

Relational Algebra (RA):

staff_no, fullname, current_status (σ current_status like '%Active%' (staff))

SQL statement (SQL) :

```
select staff_no, fullname, current_status
from staff
where current_status like '%active%'
```

Result:

| STAFF_NO | FULLNAME | CURRENT_STATUS |
|----------|-------------------------------------|----------------|
| S1 | Sahirah Binti Muhammad Hafas | Active |
| S2 | Siti Nurhayuni Binti Haron | Active |
| S4 | Siti Aina Nabilah Binti Aidie Azman | Active |
| S5 | Aisyatul Aaleya Binti Abdull Rahim | Active |
| S6 | Muhammad Aqil Arman Bin Azman | Active |
| S7 | Rayyan Iskandar Bin Akmal | Active |

SQL DATA MANIPULATION LANGUAGE (DML)

Query:

Retrieve the rental number and the count of rentals with a status containing the word 'Paid' from the rental table. Group the results by the rental number.

Relational Algebra (RA):

π rental_no, count(status)(σ status LIKE '%Refund%' (ρ rental_no, status (RENTAL)))

SQL statement (SQL):

```
select rental_no, count(status)
from rental
where status like '%Refund%'
group by rental_no;
```

Result:

| RENTAL_NO | COUNT(STATUS) |
|-----------|---------------|
| R8 | 1 |
| R9 | 1 |
| R6 | 1 |

SQL DATA MANIPULATION LANGUAGE (DML)

Query:

Retrieve the name, gender and status of staff who handled reservations made by guests from Kuala Lumpur.

Relational Algebra (RA):

$\pi \text{ fullname,gender,current_status } (\sigma \text{ address like ' \%Kuala Lumpur\%' } (\text{staff} \bowtie (\text{rental} \bowtie \text{customer})))$

SQL statement (SQL):

```
select s.fullname,s.gender,s.current_status
from staff s join rental r
on s.staff_no=r.staff_no
join customer t
on t.cust_no = r.cust_no
where t.address like ' \%Kuala Lumpur\%'
```

Result:

| FULLNAME | GENDER | CURRENT_STATUS |
|-----------------------------------|--------|----------------|
| Sahirah Binti Muhammad Hafas | Female | Active |
| Nurul Elyyana Natasha Binti Yusli | Female | Unpaid Leave |
| Siti Nurhayuni Binti Haron | Female | Active |

SQL DATA MANIPULATION LANGUAGE (DML)

Query:

Construct the relational algebra expression and SQL multi-row subquery statement to display the reservation number, reservation date and reservation status of the 'cosplay' and 'christmas' types.

Relational Algebra (RA):

$$\pi_{\text{rental_no}, \text{rental_date}, \text{status}} (\sigma_{\text{rental_no} \in A}(\text{rental}))$$
$$A \leftarrow \pi_{\text{rental_no}} (\sigma_{\text{costume_id} \in B}(\text{reservation}))$$
$$B \leftarrow \pi_{\text{costume_id}} (\sigma_{\text{costume_type} \in \{\text{'Cosplay'}, \text{'Christmas'}\}}(\text{costume}))$$

SQL statement (SQL):

```
select rental_no, rental_date, status
from rental
where rental_no in
(
    select rental_no
    from reservation
    where costume_id in
    (
        select costume_id
        from costume
        where costume_type in ('Cosplay','Christmas')
    )
);
```

Result:

| RENTAL_NO | RENTAL_DATE | STATUS |
|-----------|-------------|--------|
| R4 | 04/18/2022 | Paid |
| R2 | 03/08/2022 | Paid |

SQL DATA MANIPULATION LANGUAGE (DML)

Query:

Retrieve the minimum and maximum price per day for all Costumes.

Relational Algebra (RA):

π MINIMUM PRICE PER DAY, MAXIMUM PRICE PER DAY
(price_per_day_rm)^(Costume)

SQL statement (SQL):

```
select min (price_per_day_rm) "MINIMUM PRICE PER DAY" ,  
max(price_per_day_rm) "MAXIMUM PRICE PER DAY"  
from Costume;
```

Result:

| MINIMUM PRICE PER DAY | MAXIMUM PRICE PER DAY |
|-----------------------|-----------------------|
| 150 | 700 |

SQL DATA MANIPULATION LANGUAGE (DML)

Query:

Display the rental details that took place in September and received excellent comments?

Relational Algebra (RA):

SQL statement (SQL):

```
SELECT R.Rental_No, R.Rental_Date, RV.Review_No, RV.Review_Date, RV.Rating,
RV.Comments
FROM RENTAL R
JOIN REVIEW RV ON R.Rental_No = RV.Rental_No
WHERE to_char(RENTAL_DATE, 'MONTH') like '%SEPTEMBER%' AND Comments
like '%Excellent%';
```

Result:

| RENTAL_NO | RENTAL_DATE | REVIEW_NO | REVIEW_DATE | RATING | COMMENTS |
|-----------|-------------|-----------|-------------|--------|----------------------------------|
| R3 | 09/12/2022 | RV3 | 01/13/2022 | 5 | Excellent Service |
| R8 | 09/12/2022 | RV6 | 03/03/2022 | 5 | Excellent Staff and Services |
| R9 | 09/29/2022 | RV8 | 01/21/2022 | 5 | Excellent Service and Good staff |

SQL DATA MANIPULATION LANGUAGE (DML)

Query:

Retrieve all the type payment and total sale of each type payment.

Relational Algebra (RA):

π type_payment, SUM(value)(σ condition(payment))
(ρ type_payment/type_payment, value/payment)

SQL statement (SQL):

```
select type_payment, sum(value)
from payment
group by type_payment
order by sum(value)DESC;
```

Result:

| TYPE_PAYMENT | SUM(VALUE) |
|----------------|------------|
| Debit | 654 |
| E-Wallet | 679 |
| Online Banking | 1800 |
| Credit | 1150 |

CHAPTER 4 - CONCLUSION

SYSTEM CONTRIBUTION

- Customer's details and boutique's data are stored and well organized. Examples of databases include employee records and product catalogs.
- Easy for staff members to identify customer's details. Information systems store a large amount of private data and facilitate thousands of business transactions on these data every day.
- Enables easier management of certain business processes so as to save on time and labor. For instance, buyers can have a seamless shopping experience at an online retailer as they can select a particular product display based on best-selling items, price range and customer ratings.

SYSTEM DRAWBACKS

- May have some lack of security. Company and customer data will be misused by unauthorized third-parties.
- Systems break down, interrupting smooth operations and causing customer dissatisfaction.
- Can cost data conversion. If the database is changed or modified in some manner, all the data needs to be converted to the new form.

SUGGESTIONS FOR IMPROVEMENT

- Companies are responsible for handling and correcting the defective operation of the systems in order to avoid loss of customer loyalty.
- Centralized systems to hold all the data from both staff's members and customers in on