

## **[CREATING THE DATABASE]**

CREATE DATABASE Sports

CONNECT TO Sports

## **[CREATING ALL THE TABLES]**

```
CREATE TABLE OnlineStore(  
Store_ID CHAR(5) NOT NULL,  
Store_Name VARCHAR(30),  
Store_Contact VARCHAR(15) NOT NULL,  
Store_Link_Address VARCHAR(30) NOT NULL,  
CONSTRAINT OnlineStore_pk PRIMARY KEY(Store_ID))
```

```
CREATE TABLE Customer(  
Cus_ID CHAR(5) NOT NULL,  
Cus_Fname VARCHAR(10) NOT NULL,  
Cus_Lname VARCHAR(10) NOT NULL,  
Cus_Contact VARCHAR(15) NOT NULL UNIQUE,  
Cus_Address VARCHAR(30) NOT NULL,  
CONSTRAINT Customer_pk PRIMARY KEY(Cus_ID))
```

```
CREATE TABLE Sports(  
Sports_ID CHAR(5) NOT NULL,  
Sports_Name VARCHAR(20) NOT NULL,  
CONSTRAINT Sports_pk PRIMARY KEY(Sports_ID))
```

```
CREATE TABLE Facility(  
Facility_ID CHAR(5) NOT NULL,  
Facility_Name VARCHAR(30) NOT NULL,  
Hourly_Rate DECIMAL(7,2) NOT NULL,  
Sports_ID CHAR(5) NOT NULL,  
CONSTRAINT Facility_pk PRIMARY KEY(Facility_ID),  
FOREIGN KEY(Sports_ID) REFERENCES Sports)
```

```
CREATE TABLE Staff(  
Staff_ID CHAR(5) NOT NULL,  
Staff_Fname VARCHAR(10) NOT NULL,  
Staff_Lname VARCHAR(10) NOT NULL,  
Staff_Contact VARCHAR(15) NOT NULL UNIQUE,  
Staff_Gender CHAR(1) CHECK(Staff_Gender in('F','M')),  
Staff_Age INT NOT NULL,  
Staff_Country VARCHAR(20) DEFAULT 'Malaysia',  
Staff_HireDate DATE,  
Facility_ID CHAR(5) NOT NULL,  
CONSTRAINT Staff_pk PRIMARY KEY(Staff_ID),  
FOREIGN KEY(Facility_ID) REFERENCES Facility)
```

```
CREATE TABLE Booking(  
Booking_ID CHAR(5) NOT NULL UNIQUE,  
Cus_ID CHAR(5) NOT NULL,  
Facility_ID CHAR(5) NOT NULL,  
Booking_Date DATE NOT NULL,  
Booking_Time TIME NOT NULL,  
Booking_Duration VARCHAR(10) NOT NULL,  
Payment_Total DECIMAL(10,2) NOT NULL,  
Payment_Date DATE NOT NULL,  
Payment_Time TIME NOT NULL,  
Store_ID CHAR(5) NOT NULL,  
CONSTRAINT Booking_pk PRIMARY KEY(Booking_ID, Cus_ID, Facility_ID),  
FOREIGN KEY(Cus_ID) REFERENCES Customer,  
FOREIGN KEY(Facility_ID) REFERENCES Facility,  
FOREIGN KEY(Store_ID) REFERENCES OnlineStore)
```

```
CREATE TABLE Voucher(  
Voucher_ID CHAR(5) NOT NULL,  
V_Discount DECIMAL(7,2),  
Booking_ID CHAR(5) NOT NULL,  
CONSTRAINT Voucher_pk PRIMARY KEY(Voucher_ID),  
CONSTRAINT Voucher_Booking_fk FOREIGN KEY(Booking_ID) REFERENCES  
Booking(Booking_ID))
```

```
CREATE TABLE Description (  
Des_ID CHAR(5) NOT NULL,  
Des_Note VARCHAR(500),  
Booking_ID CHAR(5) NOT NULL,  
CONSTRAINT Description_pk PRIMARY KEY(Des_ID),  
CONSTRAINT Description_Booking_fk FOREIGN KEY (Booking_ID) REFERENCES  
Booking (Booking_ID))
```

```
CREATE TABLE Rating(  
Rating_ID CHAR(5) NOT NULL,  
Reviews VARCHAR(500),  
Booking_ID CHAR(5) NOT NULL,  
CONSTRAINT Rating_pk PRIMARY KEY(Rating_ID),  
CONSTRAINT Rating_Booking_fk FOREIGN KEY(Booking_ID) REFERENCES  
Booking(Booking_ID))
```

## [DATA INSERTION]

```
INSERT INTO OnlineStore (Store_ID, Store_Name, Store_Contact, Store_Link_Address)
VALUES
('6001', 'Frenzo Riko', '0123456789', 'https://www.frenzoriko.com')
```

```
INSERT INTO Customer (Cus_ID, Cus_Fname, Cus_Lname, Cus_Contact, Cus_Address)
VALUES
('1001', 'John', 'Doe', '0129342913', '123 Main Street'),
('1002', 'Jane', 'Smith', '0172849382', '456 Elm Avenue'),
('1003', 'Michael', 'Johnson', '0135846283', '789 Oak Lane'),
('1004', 'Emily', 'Davis', '0122940101', '321 Pine Road'),
('1005', 'Daniel', 'Wilson', '0122947381', '567 Maple Avenue')
```

```
INSERT INTO Sports (Sports_ID, Sports_Name)
VALUES
('2001', 'Badminton'),
('2002', 'Tennis'),
('2003', 'Swimming'),
('2004', 'Netball'),
('2005', 'Basketball'),
('2006', 'Volleyball'),
('2007', 'Soccer')
```

```
INSERT INTO Facility (Facility_ID, Facility_Name, Hourly_Rate, Sports_ID)
VALUES
('3001', 'Badminton Court 1', 10.00, '2001'),
('3002', 'Badminton Court 2', 10.00, '2001'),
('3003', 'Badminton Court 3', 10.00, '2001'),
('3004', 'Tennis Court 1', 15.00, '2002'),
('3005', 'Tennis Court 2', 15.00, '2002'),
('3006', 'Tennis Court 3', 15.00, '2002'),
('3007', 'Swimming Pool 1', 20.00, '2003'),
('3008', 'Swimming Pool 2', 20.00, '2003'),
('3009', 'Netball Field 1', 12.00, '2004'),
('3010', 'Netball Field 2', 12.00, '2004'),
('3011', 'Basketball Court 1', 12.50, '2005'),
('3012', 'Basketball Court 2', 12.50, '2005'),
('3013', 'Volleyball Court 1', 10.00, '2006'),
('3014', 'Volleyball Court 2', 10.00, '2006'),
('3015', 'Soccer Field', 25.00, '2007')
```

### [Staff for Badminton Court]

```
INSERT INTO Staff (Staff_ID, Staff_Fname, Staff_Lname, Staff_Contact, Staff_Gender, Staff_Age, Staff_Country, Staff_HireDate, Facility_ID)
```

```
VALUES
```

```
('5001', 'Jack', 'Frost', '0123456789', 'M', 25, 'New Zealand', '2023-01-01', '3001'),
('5002', 'The', 'Rock', '0191037583', 'F', 28, 'DEFAULT', '2023-02-01', '3001'),
('5003', 'David', 'Johnson', '0176543210', 'M', 32, 'DEFAULT', '2023-03-01', '3001'),
('5004', 'Emily', 'Brown', '0112345678', 'F', 27, 'India', '2023-04-01', '3002'),
('5005', 'Michael', 'Jones', '0187654321', 'M', 29, 'DEFAULT', '2023-05-01', '3002'),
('5006', 'Sarah', 'Davis', '0165432109', 'F', 31, 'England', '2023-06-01', '3002'),
('5007', 'Daniel', 'Wilson', '0125555555', 'M', 26, 'DEFAULT', '2023-07-01', '3003'),
('5008', 'Olivia', 'Taylor', '0198765432', 'F', 30, 'India', '2023-08-01', '3003'),
('5009', 'Matthew', 'Anderson', '0111111111', 'M', 33, 'DEFAULT', '2023-09-01', '3003')
```

### [Staff for Tennis Court]

```
INSERT INTO Staff (Staff_ID, Staff_Fname, Staff_Lname, Staff_Contact, Staff_Gender, Staff_Age, Staff_Country, Staff_HireDate, Facility_ID)
```

```
VALUES
```

```
('5011', 'William', 'Martinez', '0112222222', 'M', 27, 'DEFAULT', '2023-01-01', '3004'),
('5012', 'Ava', 'Garcia', '0113333333', 'F', 30, 'DEFAULT', '2023-02-01', '3004'),
('5013', 'James', 'Rodriguez', '0114444444', 'M', 32, 'DEFAULT', '2023-03-01', '3004'),
('5014', 'Mia', 'Lopez', '0115555555', 'F', 25, 'DEFAULT', '2023-04-01', '3005'),
('5015', 'Benjamin', 'Hernandez', '0116666666', 'M', 28, 'DEFAULT', '2023-05-01', '3005'),
('5016', 'Charlotte', 'Ramirez', '0117777777', 'F', 31, 'DEFAULT', '2023-06-01', '3005'),
('5017', 'Daniel', 'Gonzalez', '0118888888', 'M', 26, 'China', '2023-07-01', '3006'),
('5018', 'Amelia', 'Perez', '0119999999', 'F', 29, 'England', '2023-08-01', '3006'),
('5019', 'Joseph', 'Sanchez', '0121111111', 'M', 33, 'China', '2023-09-01', '3006')
```

### [Staff for Swimming Pool]

```
INSERT INTO Staff (Staff_ID, Staff_Fname, Staff_Lname, Staff_Contact, Staff_Gender, Staff_Age, Staff_Country, Staff_HireDate, Facility_ID)
```

```
VALUES
```

```
('5021', 'Michael', 'King', '0122222222', 'M', 32, 'DEFAULT', '2023-01-01', '3007'),
('5022', 'Abigail', 'Lee', '0123333333', 'F', 27, 'DEFAULT', '2023-02-01', '3007'),
('5023', 'Ethan', 'Wong', '0124444444', 'M', 29, 'DEFAULT', '2023-03-01', '3007'),
('5024', 'Elizabeth', 'Tan', '0128888888', 'F', 31, 'DEFAULT', '2023-04-01', '3008'),
('5029', 'Daniel', 'Wong', '0126666666', 'M', 28, 'DEFAULT', '2023-09-01', '3008'),
('5030', 'Chloe', 'Lim', '0127777777', 'F', 31, 'DEFAULT', '2023-10-01', '3008')
```

### **[Staff for Netball Field]**

```
INSERT INTO Staff (Staff_ID, Staff_Fname, Staff_Lname, Staff_Contact, Staff_Gender,
Staff_Age, Staff_Country, Staff_HireDate, Facility_ID)
VALUES
('5031', 'Andrew', 'Tan', '0129999999', 'M', 27, DEFAULT, '2023-01-01', '3009'),
('5032', 'Grace', 'Teo', '0130000000', 'F', 29, DEFAULT, '2023-02-01', '3009'),
('5033', 'Benjamin', 'Lau', '0131111111', 'M', 32, DEFAULT, '2023-03-01', '3009'),
('5034', 'Sophia', 'Koh', '0132222222', 'F', 25, DEFAULT, '2023-04-01', '3010'),
('5035', 'Ryan', 'Tay', '0133333333', 'M', 28, 'India', '2023-05-01', '3010'),
('5036', 'Emma', 'Wong', '0134444444', 'F', 31, DEFAULT, '2023-06-01', '3010')
```

### **[Staff for Basketball Court]**

```
INSERT INTO Staff (Staff_ID, Staff_Fname, Staff_Lname, Staff_Contact, Staff_Gender,
Staff_Age, Staff_Country, Staff_HireDate, Facility_ID)
VALUES
('5041', 'Jackson', 'Yap', '0135555555', 'M', 32, DEFAULT, '2023-01-01', '3011'),
('5042', 'Hannah', 'Lee', '0136666666', 'F', 25, DEFAULT, '2023-02-01', '3011'),
('5043', 'Elijah', 'Chin', '0137777777', 'M', 28, DEFAULT, '2023-03-01', '3011'),
('5044', 'Victoria', 'Tan', '0138888888', 'F', 31, DEFAULT, '2023-04-01', '3012'),
('5045', 'Samuel', 'Lim', '0139999999', 'M', 26, DEFAULT, '2023-05-01', '3012'),
('5046', 'Avery', 'Koh', '0140000000', 'F', 30, DEFAULT, '2023-06-01', '3012')
```

### **[Staff for Volleyball Court]**

```
INSERT INTO Staff (Staff_ID, Staff_Fname, Staff_Lname, Staff_Contact, Staff_Gender,
Staff_Age, Staff_Country, Staff_HireDate, Facility_ID)
VALUES
('5051', 'Chrishen', 'Tan', '0141111111', 'M', 32, DEFAULT, '2023-01-01', '3013'),
('5052', 'Natalie', 'Goh', '0142222222', 'F', 25, DEFAULT, '2023-02-01', '3013'),
('5053', 'Andrew', 'Wong', '0143333333', 'M', 28, DEFAULT, '2023-03-01', '3013'),
('5054', 'Sophie', 'Lim', '0144444444', 'F', 31, DEFAULT, '2023-04-01', '3014'),
('5055', 'Samuel', 'Chen', '0145555555', 'M', 26, DEFAULT, '2023-05-01', '3014'),
('5056', 'Chloe', 'Lau', '0146666666', 'F', 30, DEFAULT, '2023-06-01', '3014')
```

### **[Staff for Soccer Field]**

```
INSERT INTO Staff (Staff_ID, Staff_Fname, Staff_Lname, Staff_Contact, Staff_Gender,
Staff_Age, Staff_Country, Staff_HireDate, Facility_ID)
VALUES
('5061', 'William', 'Lim', '0151111111', 'M', 32, DEFAULT, '2023-01-01', '3015'),
('5062', 'Ava', 'Goh', '0152222222', 'F', 25, DEFAULT, '2023-02-01', '3015'),
('5063', 'James', 'Tan', '0153333333', 'M', 28, 'New Zealand', '2023-03-01', '3015'),
('5064', 'Mia', 'Chen', '0154444444', 'F', 31, 'New Zealand', '2023-04-01', '3015'),
('5065', 'Benjamin', 'Lau', '0155555555', 'M', 26, DEFAULT, '2023-05-01', '3015')
```

```

INSERT INTO Booking (Booking_ID, Cus_ID, Facility_ID, Booking_Date, Booking_Time,
Booking_Duration, Payment_Total, Payment_Date, Payment_Time, Store_ID)
VALUES
('7001', '1001', '3006', '2023-02-03', '15:45:00', '2 Hours', 30.00, '2023-01-20', '17:23:34',
'6001'),
('7002', '1002', '3007', '2023-02-12', '16:20:00', '2 Hours', 35.00, '2023-02-01', '12:12:13',
'6001'),
('7003', '1001', '3013', '2023-02-13', '17:00:00', '1 Hour', 5.00, '2023-02-01', '15:34:11',
'6001'),
('7004', '1003', '3012', '2023-02-13', '17:00:00', '2 Hours', 15.00, '2023-02-02', '13:23:10',
'6001'),
('7005', '1004', '3001', '2023-02-14', '16:00:00', '2 Hours', 20.00, '2023-02-10', '08:34:55',
'6001'),
('7006', '1005', '3001', '2023-02-14', '18:00:00', '1 Hour', 7.00, '2023-02-11', '14:56:13',
'6001'),
('7007', '1001', '3015', '2023-02-20', '18:00:00', '2 Hours', 35.00, '2023-02-11', '12:34:00',
'6001')

```

```

INSERT INTO Voucher (Voucher_ID, V_Discount, Booking_ID)
VALUES
('9001', 5.00, '7002'),
('9002', 5.00, '7003'),
('9003', 10.00, '7004'),
('9004', 3.00, '7006'),
('9005', 15.00, '7007')

```

```

INSERT INTO Description (Des_ID, Des_Note, Booking_ID)
VALUES
('8001', 'Please provide the tennis balls.', '7001'),
('8002', 'Put the net up beforehand.', '7003'),
('8003', 'Basketball balls not needed', '7004'),
('8004', 'Place the rackets and shuttlecocks by the post', '7005')

```

```

INSERT INTO Rating (Rating_ID, Reviews, Booking_ID)
VALUES
('10001', 'Open space with not a lot of shade, but good enough for tennis.', '7001'),
('10002', 'Large area for playing with good ventilation', '7003'),
('10003', 'Facility and equipment were well taken care of. Good service.', '7005'),
('10004', 'Friendly staff and clean space.', '7006')

```

## **[DATA MANIPULATION]**

### **I. AGGREGATE FUNCTION**

#### **[COUNT]**

```
SELECT COUNT (DISTINCT Payment_Total)
FROM Booking;
```

```
SELECT COUNT (DISTINCT Payment_Total)
FROM Booking
WHERE Payment_Total > 10.00;
```

```
SELECT COUNT(*)
FROM BOOKING
WHERE PAYMENT_DATE >'2023-02-01'
```

```
SELECT COUNT (*)
FROM Booking
WHERE Payment_Total > 10.00;
```

```
SELECT COUNT (*)
FROM Booking
WHERE Payment_Total < 10.00;
```

```
SELECT COUNT(Sports_Name)
FROM Sports
WHERE Sports_Name LIKE 'B%'
```

#### **[MAX]**

```
SELECT MAX(Payment_Total)
FROM Booking;
```

```
SELECT Booking_ID, Cus_ID, Facility_ID, Booking_Date, Booking_Time, Booking_Duration,
Payment_Total, Payment_Date, Payment_Time, Store_ID
FROM Booking
WHERE Payment_Total = (SELECT MAX(Payment_Total) FROM Booking);
```

#### **[MIN]**

```
SELECT MIN(Payment_Total)
FROM Booking;
```

```
SELECT Booking_ID, Cus_ID, Facility_ID, Booking_Date, Booking_Time, Booking_Duration,
Payment_Total, Payment_Date, Payment_Time, Store_ID
FROM Booking
WHERE Payment_Total = (SELECT MIN(Payment_Total) FROM Booking);
```

## **[AVG]**

```
SELECT AVG(Hourly_Rate) AS Average_Rate  
FROM Facility
```

## **ii. QUERY GROUP BY AND HAVING CLAUSE**

```
SELECT Staff_Fname, Staff_Lname  
FROM Staff  
WHERE Staff_Country = 'Malaysia'  
GROUP BY Staff_Fname, Staff_Lname  
HAVING COUNT(*) > 0
```

## **iii. TRIGGERS**

```
CREATE TRIGGER updateTotal  
AFTER INSERT ON Booking  
REFERENCING NEW AS n  
FOR EACH ROW MODE DB2SQL  
UPDATE Booking  
SET Payment_Total=Facility.Hourly_Rate*n.Booking_Duration  
WHERE Facility.Facility_ID=n.Facility_ID  
AND Booking.Booking_ID=n.Booking_ID
```

## **iv. STORED PROCEDURE**

```
CREATE PROCEDURE VoPro(IN VoucherID CHAR(5), IN Discount Decimal(7,2))  
BEGIN  
UPDATE Voucher SET V_Discount = V_Discount + Discount  
WHERE Voucher_ID = VoucherID;  
END;
```

## **v. VIEW**

```
CREATE VIEW FacilityView AS  
SELECT Facility_ID, Facility_Name, Hourly_Rate, Sports_ID  
FROM Facility  
WHERE Hourly_Rate > 10.00
```

## **vi. NESTED QUERIES**

```
SELECT Facility_ID, Facility_Name, Hourly_Rate  
FROM Facility  
WHERE Sports_ID IN (  
SELECT Sports_ID FROM Sports WHERE Sports_Name = 'Badminton')
```



#### **vii. 4 OTHER QUERIES**

##### **[LIMIT]**

```
SELECT * FROM Staff  
LIMIT 15
```

##### **[UNION]**

```
SELECT Facility_Name FROM Facility  
UNION  
SELECT Sports_Name FROM Sports
```

##### **[CASE]**

```
SELECT Booking_ID,  
CASE  
WHEN Booking_Duration = '2 Hours' THEN 'Long Duration'  
WHEN Booking_Duration = '1 Hour' THEN 'Short Duration'  
ELSE 'Unknown Duration'  
END AS Duration_Category  
FROM Booking
```

##### **[CONCAT]**

```
SELECT Cus_Fname || ' ' || Cus_Lname AS Full_Name, Cus_Address || ', ' || Cus_Contact  
AS Full_Address FROM Customer
```

