Deakin University

Database Fundamentals

OnTrack Submission

Miniproject Part-2 - Database Implementation

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Outcome	Weight
Fundamental concepts of database	♦♦♦♦♦
Relational Database Modelling	♦♦♦♦♦
Structured Query Language (SQL)	♦♦♦♦♦
Reflection	♦♦♦♦♦
Research and critical review	♦♦♦♦♦

The task is aglined with the ULO

September 8, 2025

SIT103/SIT772: Database Fundamentals

7.2C: Mini-project Part 2

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1. Table Creation SQL Statements

```
use sit772;
-- Customer table
CREATE TABLE Customer (
    CustomerID INT AUTO_INCREMENT PRIMARY KEY,
    FirstName VARCHAR(50) NOT NULL,
    LastName VARCHAR(50) NOT NULL,
    Email VARCHAR(100) UNIQUE NOT NULL,
    Phone VARCHAR(20),
    Address VARCHAR(255),
    Status ENUM('active','inactive','closed') DEFAULT 'active'
);

-- Staff table
CREATE TABLE Staff (
    StaffID INT AUTO_INCREMENT PRIMARY KEY,
    FirstName VARCHAR(50) NOT NULL,
    LastName VARCHAR(50) NOT NULL,
    Position VARCHAR(50) NOT NULL,
    Email VARCHAR(100),
    ActiveFlag BOOLEAN DEFAULT TRUE
);

-- Discount table
CREATE TABLE Discount (
    DiscountID INT AUTO_INCREMENT PRIMARY KEY,
    DiscountType VARCHAR(50) NOT NULL,
    Description VARCHAR(255),
    Percentage DECIMAL(5,2) NOT NULL,
    StartDate DATE NOT NULL,
    EndDate DATE NOT NULL
);

-- Policy table
CREATE TABLE Policy (
```

```
    PolicyID INT AUTO_INCREMENT PRIMARY KEY,
    CustomerID INT NOT NULL,
    PolicyType VARCHAR(50) NOT NULL,
    CoverageDetails TEXT,
    Premium DECIMAL(10,2) NOT NULL,
    ExcessAmount DECIMAL(10,2),
    Status ENUM('active','expired','cancelled','closed') NOT NULL,
    StartDate DATE NOT NULL,
    ExpiryDate DATE NOT NULL,
    DiscountID INT,
    FOREIGN KEY (CustomerID) REFERENCES Customer(CustomerID),
    FOREIGN KEY (DiscountID) REFERENCES Discount(DiscountID)
);

-- CoveredItem table
CREATE TABLE CoveredItem (
    CoveredItemID INT AUTO_INCREMENT PRIMARY KEY,
    PolicyID INT NOT NULL,
    ItemType VARCHAR(50) NOT NULL,
    RegistrationNumber VARCHAR(50),
    Address VARCHAR(255),
    Make VARCHAR(50),
    Model VARCHAR(50),
    Year YEAR,
    Description VARCHAR(255),
    FOREIGN KEY (PolicyID) REFERENCES Policy(PolicyID)
);

-- Claim Table
CREATE TABLE Claim (
    ClaimID INT AUTO_INCREMENT PRIMARY KEY,
    PolicyID INT NOT NULL,
    CoveredItemID INT NOT NULL,
    StaffID INT NOT NULL,
    IncidentDate DATE NOT NULL,
    LodgementDate DATE NOT NULL,
    Status ENUM('pending','approved','rejected','settled') NOT NULL,
    Outcome VARCHAR(255),
    DiscountID INT,
    FOREIGN KEY (PolicyID) REFERENCES Policy(PolicyID),
    FOREIGN KEY (CoveredItemID) REFERENCES CoveredItem(CoveredItemID),
    FOREIGN KEY (StaffID) REFERENCES Staff(StaffID),
    FOREIGN KEY (DiscountID) REFERENCES Discount(DiscountID)
);
```

-- Customer_Claim associative table for many-to-many
```
CREATE TABLE Customer_Claim (
    CustomerID INT NOT NULL,
    ClaimID INT NOT NULL,
    PRIMARY KEY (CustomerID, ClaimID),
    FOREIGN KEY (CustomerID) REFERENCES Customer(CustomerID),
    FOREIGN KEY (ClaimID) REFERENCES Claim(ClaimID)
);
```

2. Insert Sample Data

```
use sit772;
```
-- Insert Customers (10 records)
```
INSERT INTO Customer (FirstName, LastName, Email, Phone, Address, Status) VALUES
('Alice', 'Smith', 'alice.smith@example.com', '0411111111', '123 Main St', 'active'),
('Bob', 'Brown', 'bob.brown@example.com', '0412222222', '234 Elm St', 'active'),
('Carol', 'White', 'carol.white@example.com', '0413333333', '345 Pine St', 'inactive'),
('David', 'Johnson', 'david.johnson@example.com', '0414444444', '456 Oak St', 'active'),
('Eve', 'Davis', 'eve.davis@example.com', '0415555555', '567 Maple St', 'active'),
('Frank', 'Miller', 'frank.miller@example.com', '0416666666', '678 Birch St', 'active'),
('Grace', 'Wilson', 'grace.wilson@example.com', '0417777777', '789 Cedar St', 'active'),
('Henry', 'Moore', 'henry.moore@example.com', '0418888888', '890 Spruce St', 'closed'),
('Ivy', 'Taylor', 'ivy.taylor@example.com', '0419999999', '901 Walnut St', 'active'),
('Jack', 'Anderson', 'jack.anderson@example.com', '0411010101', '1010 Chestnut St',
'inactive');
```

-- Insert Staff (10 records)
```
INSERT INTO Staff (FirstName, LastName, Position, Email, ActiveFlag) VALUES
('John', 'Doe', 'Claims Officer', 'john.doe@example.com', 1),
('Mary', 'Jones', 'Senior Assessor', 'mary.jones@example.com', 1),
('Jack', 'Taylor', 'Claims Manager', 'jack.taylor@example.com', 1),
('Linda', 'Brown', 'Claims Officer', 'linda.brown@example.com', 1),
('Tom', 'Wilson', 'Adjuster', 'tom.wilson@example.com', 1),
('Nina', 'Hall', 'Claims Clerk', 'nina.hall@example.com', 1),
('Oscar', 'King', 'Assessor', 'oscar.king@example.com', 1),
('Paul', 'Scott', 'Claims Supervisor', 'paul.scott@example.com', 1),
('Quincy', 'Lee', 'Claims Officer', 'quincy.lee@example.com', 1),
('Rachel', 'Green', 'Adjuster', 'rachel.green@example.com', 1);
```

-- Insert Discounts (10 records)
```
INSERT INTO Discount (DiscountType, Description, Percentage, StartDate, EndDate)
VALUES
```

('Loyalty', 'Loyalty Discount', 10.00, '2025-01-01', '2025-12-31'),
('Introductory', 'Intro Discount', 15.00, '2025-01-01', '2025-06-30'),
('Seasonal', 'Winter Discount', 7.50, '2025-06-01', '2025-08-31'),
('No Claim', 'No Claim Bonus', 12.00, '2025-01-01', '2025-12-31'),
('Referral', 'Referral Discount', 5.00, '2025-01-01', '2025-12-31'),
('Early Bird', 'Early purchase discount', 8.00, '2025-01-01', '2025-03-31'),
('Online Purchase', 'Online discount', 5.00, '2025-01-01', '2025-12-31'),
('Corporate', 'Corporate clients discount', 20.00, '2025-01-01', '2025-12-31'),
('Holiday', 'Holiday season discount', 10.00, '2025-12-01', '2026-01-10'),
('Special Offer', 'Special promotion', 25.00, '2025-05-01', '2025-05-31');

-- Insert Policies (10 records)
INSERT INTO Policy (CustomerID, PolicyType, CoverageDetails, Premium, ExcessAmount, Status, StartDate, ExpiryDate, DiscountID) VALUES
(1, 'Car', 'Comprehensive car insurance', 1200.00, 500.00, 'active', '2025-07-01', '2026-07-01', 1),
(2, 'Home', 'Standard home insurance', 950.00, 300.00, 'active', '2025-01-15', '2026-01-15', 2),
(3, 'Business', 'Small business plan', 1750.00, 1000.00, 'active', '2025-05-01', '2026-05-01', 3),
(4, 'Life', 'Life insurance standard', 800.00, 0.00, 'active', '2025-03-01', '2026-03-01', 4),
(5, 'Pet', 'Dog insurance', 350.00, 150.00, 'active', '2025-06-01', '2026-06-01', 5),
(6, 'Car', 'Third party insurance', 600.00, 400.00, 'expired', '2024-08-20', '2025-08-20', NULL),
(7, 'Business', 'Corporate liability', 2000.00, 1200.00, 'active', '2025-07-10', '2026-07-10', 8),
(8, 'Home', 'Premium home insurance', 2200.00, 800.00, 'active', '2025-09-01', '2026-09-01', 6),
(9, 'Travel', 'International travel', 400.00, 0.00, 'active', '2025-03-15', '2026-03-15', 7),
(10,'Car', 'Basic car insurance', 700.00, 450.00, 'active', '2025-01-01', '2026-01-01', 9);

-- Insert CoveredItems (10 records)
INSERT INTO CoveredItem (PolicyID, ItemType, RegistrationNumber, Address, Make, Model, Year, Description) VALUES
(1, 'Car', 'ABC123', NULL, 'Toyota', 'Corolla', 2020, 'Private vehicle'),
(2, 'Home', NULL, '123 Beach St', NULL, NULL, NULL, 'Primary residence'),
(3, 'Business', NULL, '456 Industrial Rd', NULL, NULL, NULL, 'Office space'),
(4, 'Life', NULL, NULL, NULL, NULL, NULL, 'Life insurance policy'),
(5, 'Pet', NULL, NULL, NULL, NULL, NULL, 'Dog named Rex'),
(6, 'Car', 'XYZ456', NULL, 'Honda', 'Civic', 2017, 'Old car'),
(7, 'Business', NULL, '789 Corporate Ave', NULL, NULL, NULL, 'Company liability'),
(8, 'Home', NULL, '234 Mountain Rd', NULL, NULL, NULL, 'Vacation home'),
(9, 'Travel', NULL, NULL, NULL, NULL, NULL, 'Travel policy'),
(10,'Car', 'DEF789', NULL, 'Ford', 'Focus', 2019, 'Second vehicle');

-- Insert Claims (10 records)
INSERT INTO Claim (PolicyID, CoveredItemID, StaffID, IncidentDate, LodgementDate, Status, Outcome, DiscountID) VALUES
(1, 1, 1, '2025-08-05', '2025-08-06', 'approved', 'Car repaired', 1),
(2, 2, 2, '2025-02-15', '2025-02-16', 'pending', NULL, 2),
(3, 3, 3, '2025-05-10', '2025-05-12', 'settled', 'Business interruption sided', 3),
(4, 4, 4, '2025-04-01', '2025-04-02', 'rejected', 'Policy expired', NULL),
(5, 5, 5, '2025-07-01', '2025-07-05', 'approved', 'Vet expenses reimbursed', 5),
(6, 6, 6, '2024-10-10', '2024-10-12', 'approved', 'Third party damage claim', NULL),
(7, 7, 7, '2025-08-20', '2025-08-22', 'pending', NULL, 8),
(8, 8, 8, '2025-09-15', '2025-09-16', 'settled', 'Home damage repaired', 6),
(9, 9, 9, '2025-11-01', '2025-11-02', 'approved', 'Travel expenses paid', 7),
(10,10,10,'2025-01-20', '2025-01-21', 'approved', 'Standard accident claim', 9);

-- Insert Customer_Claim (10 records)
INSERT INTO Customer_Claim (CustomerID, ClaimID) VALUES
(1, 1),
(2, 2),
(3, 3),
(4, 4),
(5, 5),
(6, 6),
(7, 7),
(8, 8),
(9, 9),
(10,10);

- Inspect sample data

*SELECT * FROM Customer;*

CustomerID	FirstName	LastName	Email	Phone	Address	Status
1	Alice	Smith	alice.smith@example.com	0411111111	123 Main St	active
2	Bob	Brown	bob.brown@example.com	0412222222	234 Elm St	active
3	Carol	White	carol.white@example.com	0413333333	345 Pine St	inactive
4	David	Johnson	david.johnson@example.com	0414444444	456 Oak St	active
5	Eve	Davis	eve.davis@example.com	0415555555	567 Maple St	active
6	Frank	Miller	frank.miller@example.com	0416666666	678 Birch St	active
7	Grace	Wilson	grace.wilson@example.com	0417777777	789 Cedar St	active
8	Henry	Moore	henry.moore@example.com	0418888888	890 Spruce St	closed
9	Ivy	Taylor	ivy.taylor@example.com	0419999999	901 Walnut St	active
10	Jack	Anderson	jack.anderson@example.com	0411010101	1010 Chestnut St	inactive
NULL	NULL	NULL	NULL	NULL	NULL	NULL

*SELECT * FROM Staff;*

StaffID	FirstName	LastName	Position	Email	ActiveFlag
1	John	Doe	Claims Officer	john.doe@example.com	1
2	Mary	Jones	Senior Assessor	mary.jones@example.com	1
3	Jack	Taylor	Claims Manager	jack.taylor@example.com	1
4	Linda	Brown	Claims Officer	linda.brown@example.com	1
5	Tom	Wilson	Adjuster	tom.wilson@example.com	1
6	Nina	Hall	Claims Clerk	nina.hall@example.com	1
7	Oscar	King	Assessor	oscar.king@example.com	1
8	Paul	Scott	Claims Supervisor	paul.scott@example.com	1
9	Quincy	Lee	Claims Officer	quincy.lee@example.com	1
10	Rachel	Green	Adjuster	rachel.green@example.com	1
NULL	NULL	NULL	NULL	NULL	NULL

*SELECT * FROM Discount;*

DiscountID	DiscountType	Description	Percentage	StartDate	EndDate
1	Loyalty	Loyalty Discount	10.00	2025-01-01	2025-12-31
2	Introductory	Intro Discount	15.00	2025-01-01	2025-06-30
3	Seasonal	Winter Discount	7.50	2025-06-01	2025-08-31
4	No Claim	No Claim Bonus	12.00	2025-01-01	2025-12-31
5	Referral	Referral Discount	5.00	2025-01-01	2025-12-31
6	Early Bird	Early purchase discount	8.00	2025-01-01	2025-03-31
7	Online Purchase	Online discount	5.00	2025-01-01	2025-12-31
8	Corporate	Corporate clients discount	20.00	2025-01-01	2025-12-31
9	Holiday	Holiday season discount	10.00	2025-12-01	2026-01-10
10	Special Offer	Special promotion	25.00	2025-05-01	2025-05-31
NULL	NULL	NULL	NULL	NULL	NULL

*SELECT * FROM Policy;*

PolicyID	CustomerID	PolicyType	CoverageDetails	Premium	ExcessAmount	Status	StartDate	ExpiryDate	Disc
1	1	Car	Comprehensive car insurance	1200.00	500.00	active	2025-07-01	2026-07-01	1
2	2	Home	Standard home insurance	950.00	300.00	active	2025-01-15	2026-01-15	2
3	3	Business	Small business plan	1750.00	1000.00	active	2025-05-01	2026-05-01	3
4	4	Life	Life insurance standard	800.00	0.00	active	2025-03-01	2026-03-01	4
5	5	Pet	Dog insurance	350.00	150.00	active	2025-06-01	2026-06-01	5
6	6	Car	Third party insurance	600.00	400.00	expired	2024-08-20	2025-08-20	NULL
7	7	Business	Corporate liability	2000.00	1200.00	active	2025-07-10	2026-07-10	8
8	8	Home	Premium home insurance	2200.00	800.00	active	2025-09-01	2026-09-01	6
9	9	Travel	International travel	400.00	0.00	active	2025-03-15	2026-03-15	7
10	10	Car	Basic car insurance	700.00	450.00	active	2025-01-01	2026-01-01	9
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

*SELECT * FROM CoveredItem;*

CoveredItemID	PolicyID	ItemType	RegistrationNumber	Address	Make	Model	Year	Description
1	1	Car	ABC123	NULL	Toyota	Corolla	2020	Private vehicle
2	2	Home	NULL	123 Beach St	NULL	NULL	NULL	Primary residence
3	3	Business	NULL	456 Industrial Rd	NULL	NULL	NULL	Office space
4	4	Life	NULL	NULL	NULL	NULL	NULL	Life insurance policy
5	5	Pet	NULL	NULL	NULL	NULL	NULL	Dog named Rex
6	6	Car	XYZ456	NULL	Honda	Civic	2017	Old car
7	7	Business	NULL	789 Corporate Ave	NULL	NULL	NULL	Company liability
8	8	Home	NULL	234 Mountain Rd	NULL	NULL	NULL	Vacation home
9	9	Travel	NULL	NULL	NULL	NULL	NULL	Travel policy
10	10	Car	DEF789	NULL	Ford	Focus	2019	Second vehicle
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

*SELECT * FROM Claim;*

ClaimID	PolicyID	CoveredItemID	StaffID	IncidentDate	LodgementDate	Status	Outcome	DiscountID
1	1	1	1	2025-08-05	2025-08-06	approved	Car repaired	1
2	2	2	2	2025-02-15	2025-02-16	pending	NULL	2
3	3	3	3	2025-05-10	2025-05-12	settled	Business interruption sided	3
4	4	4	4	2025-04-01	2025-04-02	rejected	Policy expired	NULL
5	5	5	5	2025-07-01	2025-07-05	approved	Vet expenses reimbursed	5
6	6	6	6	2024-10-10	2024-10-12	approved	Third party damage claim	NULL
7	7	7	7	2025-08-20	2025-08-22	pending	NULL	8
8	8	8	8	2025-09-15	2025-09-16	settled	Home damage repaired	6
9	9	9	9	2025-11-01	2025-11-02	approved	Travel expenses paid	7
10	10	10	10	2025-01-20	2025-01-21	approved	Standard accident claim	9
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

*SELECT * FROM Customer_Claim;*

CustomerID	ClaimID
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
NULL	NULL

3. Adding a New Column with a Default Value

Selected table: Policy. Details of the new column: Column Name: PaymentPlan, Data *Type:* VARCHAR(20), Default Value: 'Monthly'.

Code:

```
ALTER TABLE Policy
ADD COLUMN PaymentPlan VARCHAR(20) NOT NULL DEFAULT 'Monthly';
— Check the records after the addition
SELECT * FROM Staff;
```

Result:

PolicyID	CustomerID	PolicyType	PaymentPlan
1	1	Car	Monthly
2	2	Home	Monthly
3	3	Business	Monthly
4	4	Life	Monthly
5	5	Pet	Monthly
6	6	Car	Monthly
7	7	Business	Monthly
8	8	Home	Monthly
9	9	Travel	Monthly

4. Updating the Default Value for Certain Rows Based on a Condition

4.1 Information

Table: Policy
Condition: Update rows where Status = 'expired'
New value for PaymentPlan: *'Annual'*
This means to update only the policies with the status "expired" by changing their PaymentPlan field value to 'Annual,' while keeping all other rows unchanged.

4.2 SQL statement to update PaymentPlan for policies where status is 'expired'

Code:

```
USE SIT772;
SET SQL_SAFE_UPDATES = 0;
UPDATE Policy
SET PaymentPlan = 'Annual'
WHERE Status = 'expired' AND PolicyID IS NOT NULL;
```

4.3 SQL statement to verify update

Code:

```
SELECT PolicyID, Status, PaymentPlan
FROM Policy
WHERE Status = 'expired' OR PaymentPlan = 'Annual';
```

Result:

PolicyID	Status	PaymentPlan
6	expired	Annual
NULL	NULL	NULL

5. Required SQL Queries for Demonstration

A. Use of SELECT with INNER JOIN and ORDER BY

Compile a comprehensive list of all claims, including customer names and incident dates, and ensure they are sorted in descending order by incident date.

Code:

```
SELECT c.ClaimID, cu.FirstName, cu.LastName, c.IncidentDate, c.Status
FROM Claim c
INNER JOIN Customer_Claim cc ON c.ClaimID = cc.ClaimID
INNER JOIN Customer cu ON cc.CustomerID = cu.CustomerID
ORDER BY c.IncidentDate DESC;
```

Result:

ClaimID	FirstName	LastName	IncidentDate	Status
9	Ivy	Taylor	2025-11-01	approved
8	Henry	Moore	2025-09-15	settled
7	Grace	Wilson	2025-08-20	pending
1	Alice	Smith	2025-08-05	approved
5	Eve	Davis	2025-07-01	approved
3	Carol	White	2025-05-10	settled
4	David	Johnson	2025-04-01	rejected
2	Bob	Brown	2025-02-15	pending
10	Jack	Anderson	2025-01-20	approved
6	Frank	Miller	2024-10-10	approved

B, Use of SELECT with WHERE and IN

Retrieve all policies where the policy type is either 'Car' or 'Home'.

Code:

```
SELECT PolicyID, CustomerID, PolicyType, Status
FROM Policy
WHERE PolicyType IN ('Car', 'Home');
```

Result:

PolicyID	CustomerID	PolicyType	Status
1	1	Car	active
2	2	Home	active
6	6	Car	expired
8	8	Home	active
10	10	Car	active
NULL	NULL	NULL	NULL

c) Use of SELECT with DATE function

Identify all policies that have started within the last 30 days.
Code:
SELECT PolicyID, CustomerID, PolicyType, StartDate
FROM Policy
WHERE StartDate >= DATE_SUB(CURDATE(), INTERVAL 30 DAY);

PolicyID	CustomerID	PolicyType	StartDate
8	8	Home	2025-09-01
NULL	NULL	NULL	NULL

d) Create a VIEW using a SELECT with JOIN

Develop a view that displays comprehensive details of claims, ensuring it includes customer names and policy types.
Code:
CREATE VIEW ClaimDetails AS
SELECT c.ClaimID, cu.FirstName, cu.LastName, p.PolicyType, c.IncidentDate, c.Status, c.Outcome
FROM Claim c
INNER JOIN Customer_Claim cc ON c.ClaimID = cc.ClaimID
INNER JOIN Customer cu ON cc.CustomerID = cu.CustomerID
INNER JOIN Policy p ON c.PolicyID = p.PolicyID;
*SELECT * FROM ClaimDetails;*
Result:

ClaimID	FirstName	LastName	PolicyType	IncidentDate	Status	Outcome
1	Alice	Smith	Car	2025-08-05	approved	Car repaired
2	Bob	Brown	Home	2025-02-15	pending	NULL
3	Carol	White	Business	2025-05-10	settled	Business interruption sided
4	David	Johnson	Life	2025-04-01	rejected	Policy expired
5	Eve	Davis	Pet	2025-07-01	approved	Vet expenses reimbursed
6	Frank	Miller	Car	2024-10-10	approved	Third party damage claim
7	Grace	Wilson	Business	2025-08-20	pending	NULL
8	Henry	Moore	Home	2025-09-15	settled	Home damage repaired
9	Ivy	Taylor	Travel	2025-11-01	approved	Travel expenses paid
10	Jack	Anderson	Car	2025-01-20	approved	Standard accident claim