**Assignment-1**

**Create table with following specifications**

* log\_id: A primary key with SERIAL key to uniquely identify each log entry.
* machine\_id: The ID of the machine.
* production\_date: The date of production.
* production\_shift: The shift during which production took place (e.g., 'Morning', 'Evening').
* products\_produced: The number of products produced during the shift.
* defects: The number of defective products.
* runtime: The total runtime of the machine during the shift in hours.

Enter the following data

(1, '2024-06-01', 'Morning', 500, 5, 8.0), (1, '2024-06-01', 'Evening', 450, 3, 7.5), (2, '2024-06-01', 'Morning', 480, 2, 7.8), (2, '2024-06-01', 'Evening', 470, 4, 8.1), (3, '2024-06-01', 'Morning', 510, 6, 8.2), (3, '2024-06-01', 'Evening', 520, 1, 7.9), (1, '2024-06-02', 'Morning', 490, 3, 8.0), (1, '2024-06-02', 'Evening', 460, 2, 7.6), (2, '2024-06-02', 'Morning', 475, 1, 7.9), (2, '2024-06-02', 'Evening', 465, 5, 8.3), (3, '2024-06-02', 'Morning', 505, 4, 8.0), (3, '2024-06-02', 'Evening', 515, 3, 8.2);

**In Manufacturers monitor production data to ensure efficient operations and quality control, identify machines with the highest defect rates and their average runtimes.**

**Assignment-2**

**Create table with following specifications**

* grade\_id: A primary key with auto-increment to uniquely identify each grade entry.
* student\_id: The ID of the student.
* course\_id: The ID of the course.
* grade: The grade received by the student.
* grade\_date: The date when the grade was recorded.

Insert following values

(1, 101, 85.5, '2024-01-15'), (1, 102, 78.0, '2024-02-20'), (2, 101, 92.0, '2024-01-15'), (2, 103, 88.5, '2024-03-10'), (3, 102, 74.0, '2024-02-20'), (3, 103, 81.5, '2024-03-10'), (4, 101, 67.0, '2024-01-15'), (4, 104, 90.0, '2024-04-05'), (5, 102, 85.0, '2024-02-20'), (5, 104, 87.0, '2024-04-05');

**Educational institutions track student performance to provide targeted support and interventions.**

**identify students with an average grade below a passing threshold in their courses.**

**Assignment-3**

**Create table with following specifications**

**Creation:**

* customer\_id: A primary key with auto-increment to uniquely identify each customer.
* first\_name: The first name of the customer.
* last\_name: The last name of the customer.
* email: The email address of the customer.
* phone\_number: The phone number of the customer.
* address: The street address of the customer.
* city: The city where the customer lives.
* state: The state where the customer lives.
* zip\_code: The postal code of the customer's address.
* plan\_id: The ID of the customer's telecom plan.
* last\_call\_date: The date of the customer's last call.

Insert following values

('John', 'Doe', 'john.doe@example.com', '123-456-7890', '123 Elm St', 'Springfield', 'IL', '62701', 1, '2024-06-01'), ('Jane', 'Smith', 'jane.smith@example.com', '987-654-3210', '456 Oak St', 'Springfield', 'IL', '62701', 2, '2024-05-15'), ('Alice', 'Johnson', 'alice.johnson@example.com', '555-123-4567', '789 Pine St', 'Shelbyville', 'IL', '62565', 3, '2024-04-20'), ('Bob', 'Brown', 'bob.brown@example.com', '444-555-6666', '101 Maple St', 'Capital City', 'IL', '62702', 1, '2024-06-10'), ('Charlie', 'Davis', 'charlie.davis@example.com', '333-444-5555', '202 Cedar St', 'Springfield', 'IL', '62701', 2, '2024-03-30'), ('Diana', 'Evans', 'diana.evans@example.com', '222-333-4444', '303 Birch St', 'Shelbyville', 'IL', '62565', 3, '2024-06-20'), ('Ethan', 'Foster', 'ethan.foster@example.com', '111-222-3333', '404 Spruce St', 'Capital City', 'IL', '62702', 1, '2024-02-14'), ('Fiona', 'Garcia', 'fiona.garcia@example.com', '999-888-7777', '505 Ash St', 'Springfield', 'IL', '62701', 2, '2024-05-05'), ('George', 'Harris', 'george.harris@example.com', '888-777-6666', '606 Walnut St', 'Shelbyville', 'IL', '62565', 3, '2024-01-25'), ('Hannah', 'Irvine', 'hannah.irvine@example.com', '777-666-5555', '707 Hickory St', 'Capital City', 'IL', '62702', 1, '2024-06-22');

**Telecom companies analyze customer data to identify patterns that indicate potential churn.**

**categorizes customers based on their activity levels, indicating their risk of churn.**

 Table **Creation:**

* product\_id: A primary key with auto-increment to uniquely identify each product.
* product\_name: The name of the product.
* category: The category to which the product belongs.
* quantity: The quantity of the product in stock.
* price: The price of the product.
* supplier: The supplier of the product.
* last\_restock\_date: The date when the product was last restocked.

 **Inserting Data:**

('Laptop', 'Electronics', 50, 799.99, 'TechSupplier Inc.', '2024-06-01'), ('Smartphone', 'Electronics', 150, 499.99, 'MobileDistributors Ltd.', '2024-05-25'), ('Desk Chair', 'Furniture', 80, 89.99, 'OfficeSupplies Co.', '2024-05-15'), ('Notebook', 'Stationery', 200, 2.99, 'PaperGoods Inc.', '2024-06-10'), ('Water Bottle', 'Accessories', 120, 9.99, 'Lifestyle Products', '2024-06-05'), ('Headphones', 'Electronics', 70, 149.99, 'TechSupplier Inc.', '2024-06-08'), ('Desk Lamp', 'Furniture', 60, 29.99, 'OfficeSupplies Co.', '2024-05-20'), ('Backpack', 'Accessories', 90, 49.99, 'TravelGear Ltd.', '2024-06-12'), ('Pen', 'Stationery', 300, 1.49, 'PaperGoods Inc.', '2024-06-03'), ('Monitor', 'Electronics', 40, 199.99, 'TechSupplier Inc.', '2024-06-15');

**Retailers need to manage their inventory to ensure products are in stock and to avoid overstocking.identify products with low stock levels.**

**Assignment-4**

**Table Creation:**

* patient\_id: A primary key with auto-increment to uniquely identify each patient.
* first\_name: The first name of the patient.
* last\_name: The last name of the patient.
* date\_of\_birth: The date of birth of the patient.
* gender: The gender of the patient.
* phone\_number: The phone number of the patient.
* email: The email address of the patient.
* address: The street address of the patient.
* city: The city where the patient lives.
* state: The state where the patient lives.
* zip\_code: The postal code of the patient's address.
* medical\_history: A text field to store the medical history of the patient.
* last\_visit\_date: The date of the patient's last visit.

 **Inserting Data:**

('John', 'Doe', '1980-01-15', 'Male', '123-456-7890', 'john.doe@example.com', '123 Elm St', 'Springfield', 'IL', '62701', 'Hypertension', '2024-06-01'), ('Jane', 'Smith', '1990-02-20', 'Female', '987-654-3210', 'jane.smith@example.com', '456 Oak St', 'Springfield', 'IL', '62701', 'Diabetes', '2024-05-25'), ('Alice', 'Johnson', '1975-03-30', 'Female', '555-123-4567', 'alice.johnson@example.com', '789 Pine St', 'Shelbyville', 'IL', '62565', 'Asthma', '2024-06-10'), ('Bob', 'Brown', '1965-04-10', 'Male', '444-555-6666', 'bob.brown@example.com', '101 Maple St', 'Capital City', 'IL', '62702', 'High Cholesterol', '2024-05-15'), ('Charlie', 'Davis', '1985-05-20', 'Male', '333-444-5555', 'charlie.davis@example.com', '202 Cedar St', 'Springfield', 'IL', '62701', 'Allergies', '2024-06-05'), ('Diana', 'Evans', '2000-06-25', 'Female', '222-333-4444', 'diana.evans@example.com', '303 Birch St', 'Shelbyville', 'IL', '62565', 'Migraine', '2024-06-20'), ('Ethan', 'Foster', '1970-07-15', 'Male', '111-222-3333', 'ethan.foster@example.com', '404 Spruce St', 'Capital City', 'IL', '62702', 'Arthritis', '2024-06-12'), ('Fiona', 'Garcia', '1995-08-10', 'Female', '999-888-7777', 'fiona.garcia@example.com', '505 Ash St', 'Springfield', 'IL', '62701', 'Depression', '2024-05-30'), ('George', 'Harris', '1988-09-05', 'Male', '888-777-6666', 'george.harris@example.com', '606 Walnut St', 'Shelbyville', 'IL', '62565', 'Hypertension', '2024-04-25'), ('Hannah', 'Irvine', '1992-10-12', 'Female', '777-666-5555', 'hannah.irvine@example.com', '707 Hickory St', 'Capital City', 'IL', '62702', 'Diabetes', '2024-06-22');

Healthcare providers need to manage patient records efficiently for better healthcare delivery. Write query retrieves patient information for those who visited within a specific date range.

**Assignment-5**

**Financial institutions need to detect and prevent fraudulent transactions. Write query identifies transactions above a certain threshold within a specified date range for further investigation.**

**Table Creation:**

* transaction\_id: A primary key with auto-increment to uniquely identify each transaction.
* account\_id: The ID of the account associated with the transaction.
* transaction\_date: The date and time when the transaction occurred.
* transaction\_amount: The amount of money involved in the transaction.
* transaction\_type: The type of transaction (e.g., 'Credit', 'Debit').
* merchant: The merchant where the transaction occurred.
* location: The location of the merchant.
* status: The status of the transaction (e.g., 'Completed', 'Pending').

Inserting Data:

(1, '2024-06-01 10:00:00', 1000.00, 'Credit', 'Amazon', 'Online', 'Completed'), (1, '2024-06-01 12:30:00', 500.00, 'Debit', 'Walmart', 'Springfield', 'Completed'), (2, '2024-06-02 09:45:00', 15000.00, 'Credit', 'Apple Store', 'Chicago', 'Pending'), (2, '2024-06-02 11:00:00', 200.00, 'Debit', 'Starbucks', 'Chicago', 'Completed'), (3, '2024-06-03 14:15:00', 250.00, 'Debit', 'Target', 'Springfield', 'Completed'), (3, '2024-06-03 16:20:00', 30000.00, 'Credit', 'Tesla', 'San Francisco', 'Pending'), (4, '2024-06-04 08:30:00', 120.00, 'Debit', 'McDonalds', 'Springfield', 'Completed'), (4, '2024-06-04 10:50:00', 6000.00, 'Credit', 'Best Buy', 'Chicago', 'Pending'), (5, '2024-06-05 15:10:00', 70.00, 'Debit', 'CVS Pharmacy', 'Springfield', 'Completed'), (5, '2024-06-05 17:00:00', 22000.00, 'Credit', 'Louis Vuitton', 'New York', 'Pending');