Sirma

E:
M: +359 2 976 8310

A: 135 Tsarigradsko Shosse Blvd.

Workshop – Exercise

office@s

1. Database Setup

```
CREATE DATABASE CompanyDB;
GO
USE CompanyDB;
GO

CREATE TABLE Clients (
    client_id INT IDENTITY(1,1) PRIMARY KEY,
    name NVARCHAR(255) NOT NULL,
    contact_email NVARCHAR(255),
    phone NVARCHAR(50),
    address NVARCHAR(MAX),
    created_at DATETIME DEFAULT GETDATE()
);
GO

CREATE TABLE Suppliers (
    supplier_id INT IDENTITY(1,1) PRIMARY KEY,
    name NVARCHAR(255) NOT NULL,
    contact_email NVARCHAR(255),
    phone NVARCHAR(50),
    address NVARCHAR(MAX),
    created_at DATETIME DEFAULT GETDATE()
);
GO

CREATE TABLE Employees (
    employee_id INT IDENTITY(1,1) PRIMARY KEY,
    name NVARCHAR(255) NOT NULL,
    position NVARCHAR(100),
    salary DECIMAL(10,2),
    hire_date DATE,
    department NVARCHAR(100)
);
GO
```

Sirma
E:
M: +359 2 976 8310
A: 135 Tsarigradsko Shosse Blvd.

```
CREATE TABLE Invoices (
    invoice_id INT IDENTITY(1,1) PRIMARY KEY,
    client_id INT,
    issue_date DATE,
    due_date DATE,
    amount DECIMAL(12,2),
    tax_rate DECIMAL(5,2),
    vat DECIMAL(10,2),
    discount DECIMAL(10,2),
    currency NVARCHAR(10),
    status NVARCHAR(20) CHECK (status IN ('Pending', 'Paid', 'Overdue')),
    FOREIGN KEY (client_id) REFERENCES Clients(client_id) ON DELETE CASCADE
);
GO

CREATE TABLE Payments (
    payment_id INT IDENTITY(1,1) PRIMARY KEY,
    invoice_id INT,
    payment_date DATE,
    amount DECIMAL(12,2),
    payment_method NVARCHAR(20) CHECK (payment_method IN ('Bank Transfer', 'Credit Card',
'Cash')),
    bank_name NVARCHAR(255),
    transaction_id NVARCHAR(50),
    FOREIGN KEY (invoice_id) REFERENCES Invoices(invoice_id) ON DELETE CASCADE
);
GO

CREATE TABLE Transactions (
    transaction_id INT IDENTITY(1,1) PRIMARY KEY,
    supplier_id INT,
    employee_id INT,
    transaction_date DATE,
    amount DECIMAL(12,2),
    transaction_type NVARCHAR(10) CHECK (transaction_type IN ('Expense', 'Revenue')),
    category NVARCHAR(50),
    FOREIGN KEY (supplier_id) REFERENCES Suppliers(supplier_id) ON DELETE SET NULL,
    FOREIGN KEY (employee_id) REFERENCES Employees(employee_id) ON DELETE SET NULL
);

GO
```

2. Insert Data

```
INSERT INTO Clients (name, contact_email, phone, address) VALUES
('Client A', 'clientA@example.com', '123-456-7890', '123 Main St'),
('Client B', 'clientB@example.com', '987-654-3210', '456 Elm St'),
('Client C', 'clientC@example.com', '555-666-7777', '789 Oak St'),
('Client D', 'clientD@example.com', '111-222-3333', '234 Pine St'),
('Client E', 'clientE@example.com', '444-555-6666', '567 Cedar St'),
('Client F', 'clientF@example.com', '777-888-9999', '890 Birch St'),
('Client G', 'clientG@example.com', '222-333-4444', '123 Spruce St'),
('Client H', 'clientH@example.com', '555-666-7777', '456 Maple St'),
('Client I', 'clientI@example.com', '999-000-1111', '789 Walnut St'),
('Client J', 'clientJ@example.com', '321-654-9870', '101 Oakwood St');
GO

INSERT INTO Suppliers (name, contact_email, phone, address) VALUES
('Supplier A', 'supplierA@example.com', '123-456-7890', '123 Supply St'),
```

Sirma
E:
M: +359 2 976 8310
A: 135 Tsarigradsko Shosse Blvd.

```
('Supplier B', 'supplierB@example.com', '987-654-3210', '456 Distribution St'),
('Supplier C', 'supplierC@example.com', '555-666-7777', '789 Warehouse St'),
('Supplier D', 'supplierD@example.com', '111-222-3333', '234 Logistics St'),
('Supplier E', 'supplierE@example.com', '444-555-6666', '567 Depot St'),
('Supplier F', 'supplierF@example.com', '777-888-9999', '890 Transport St'),
('Supplier G', 'supplierG@example.com', '222-333-4444', '123 Trade St'),
('Supplier H', 'supplierH@example.com', '555-666-7777', '456 Vendor St'),
('Supplier I', 'supplierI@example.com', '999-000-1111', '789 Merchant St'),
('Supplier J', 'supplierJ@example.com', '321-654-9870', '101 Business St');
GO

INSERT INTO Employees (name, position, salary, hire_date, department) VALUES
('John Doe', 'Accountant', 55000, '2022-05-01', 'Finance'),
('Jane Smith', 'Senior Accountant', 75000, '2019-08-15', 'Finance'),
('Bob Johnson', 'HR Manager', 62000, '2020-10-10', 'HR'),
('Alice White', 'Clerk', 40000, '2021-03-05', 'Finance'),
('Gary Brown', 'Administrator', 50000, '2018-07-20', 'Admin'),
('Susan Black', 'Sales Manager', 65000, '2017-11-25', 'Sales'),
('Charlie Green', 'Procurement Officer', 60000, '2022-02-15', 'Procurement'),
('Nancy Blue', 'Operations Manager', 80000, '2016-12-01', 'Operations'),
('Michael Grey', 'Financial Analyst', 72000, '2019-06-10', 'Finance'),
('Emma Red', 'Bookkeeper', 45000, '2021-09-30', 'Finance');
GO

INSERT INTO Invoices (client_id, issue_date, due_date, amount, tax_rate, vat, discount,
currency, status) VALUES
(1, '2024-01-10', '2024-02-10', 1200.50, 10.00, 120.05, 50.00, 'USD', 'Paid'),
(2, '2024-01-15', '2024-02-15', 2500.75, 12.00, 300.09, 100.00, 'EUR', 'Pending'),
(3, '2024-02-01', '2024-03-01', 1800.00, 15.00, 270.00, 80.00, 'USD', 'Overdue'),
(4, '2024-02-10', '2024-03-10', 4500.00, 8.00, 360.00, 200.00, 'GBP', 'Paid'),
(5, '2024-03-05', '2024-04-05', 700.25, 10.00, 70.03, 30.00, 'USD', 'Pending'),
(6, '2024-03-10', '2024-04-10', 1900.00, 12.50, 237.50, 95.00, 'EUR', 'Overdue'),
(7, '2024-04-01', '2024-05-01', 3000.00, 10.00, 300.00, 150.00, 'USD', 'Paid'),
(8, '2024-04-10', '2024-05-10', 850.50, 7.00, 59.54, 25.00, 'GBP', 'Pending'),
(9, '2024-05-05', '2024-06-05', 5000.00, 15.00, 750.00, 250.00, 'EUR', 'Overdue'),
(10, '2024-05-12', '2024-06-12', 1200.00, 10.00, 120.00, 50.00, 'USD', 'Paid'),
(1, '2024-06-01', '2024-07-01', 2300.75, 8.00, 184.06, 85.00, 'EUR', 'Pending'),
(2, '2024-06-15', '2024-07-15', 1750.00, 12.00, 210.00, 95.00, 'GBP', 'Overdue'),
(3, '2024-07-01', '2024-08-01', 2900.00, 10.00, 290.00, 125.00, 'USD', 'Paid'),
(4, '2024-07-08', '2024-08-08', 950.00, 9.00, 85.50, 40.00, 'EUR', 'Pending'),
(5, '2024-08-01', '2024-09-01', 3200.50, 9.00, 288.05, 100.00, 'GBP', 'Overdue'),
(6, '2024-08-10', '2024-09-10', 1400.25, 10.00, 140.03, 60.00, 'USD', 'Paid'),
(7, '2024-09-05', '2024-10-05', 3600.00, 12.00, 432.00, 150.00, 'EUR', 'Pending'),
(8, '2024-09-12', '2024-10-12', 1800.00, 15.00, 270.00, 80.00, 'USD', 'Overdue'),
(9, '2024-10-01', '2024-11-01', 2500.50, 10.00, 250.05, 90.00, 'GBP', 'Paid'),
(10, '2024-10-15', '2024-11-15', 1100.00, 7.00, 77.00, 45.00, 'USD', 'Pending'),
(1, '2024-11-01', '2024-12-01', 4100.75, 12.00, 492.09, 170.00, 'EUR', 'Overdue'),
(2, '2024-11-10', '2024-12-10', 1750.00, 8.00, 140.00, 65.00, 'GBP', 'Paid'),
(3, '2024-12-01', '2025-01-01', 3000.00, 10.00, 300.00, 120.00, 'USD', 'Pending'),
(4, '2024-12-12', '2025-01-12', 850.50, 7.00, 59.54, 25.00, 'GBP', 'Overdue'),
(5, '2025-01-01', '2025-02-01', 2600.00, 15.00, 390.00, 100.00, 'EUR', 'Paid'),
(6, '2025-01-10', '2025-02-10', 1400.25, 10.00, 140.03, 60.00, 'USD', 'Pending'),
(7, '2025-02-05', '2025-03-05', 3300.00, 12.00, 396.00, 140.00, 'GBP', 'Overdue'),
(8, '2025-02-12', '2025-03-12', 1800.00, 15.00, 270.00, 80.00, 'USD', 'Paid'),
(9, '2025-03-01', '2025-04-01', 2800.50, 10.00, 280.05, 110.00, 'EUR', 'Pending'),
(10, '2025-03-15', '2025-04-15', 1000.00, 7.00, 70.00, 35.00, 'GBP', 'Overdue'),
(1, '2025-04-01', '2025-05-01', 3700.75, 9.00, 333.07, 125.00, 'USD', 'Paid'),
(2, '2025-04-10', '2025-05-10', 1950.00, 8.00, 156.00, 70.00, 'EUR', 'Pending'),
(3, '2025-05-01', '2025-06-01', 2400.50, 10.00, 240.05, 90.00, 'GBP', 'Overdue'),
(4, '2025-05-12', '2025-06-12', 1200.00, 12.00, 144.00, 60.00, 'USD', 'Paid'),
(5, '2025-06-01', '2025-07-01', 3500.75, 15.00, 525.09, 175.00, 'EUR', 'Pending'),
```

office@s

```
(6, '2025-06-15', '2025-07-15', 1750.00, 8.00, 140.00, 65.00, 'GBP', 'Overdue'),
(7, '2025-07-01', '2025-08-01', 2900.00, 10.00, 290.00, 125.00, 'USD', 'Paid'),
(8, '2025-07-08', '2025-08-08', 950.00, 9.00, 85.50, 40.00, 'EUR', 'Pending'),
(9, '2025-08-01', '2025-09-01', 3200.50, 9.00, 288.05, 100.00, 'GBP', 'Overdue'),
(10, '2025-08-10', '2025-09-10', 1400.25, 10.00, 140.03, 60.00, 'USD', 'Paid');


INSERT INTO Transactions (supplier_id, employee_id, transaction_date, amount,
transaction_type, category) VALUES
(1, 1, '2024-01-25', 500.00, 'Expense', 'Salary'),
(2, 2, '2024-02-01', 1500.00, 'Expense', 'Office Supplies'),
(3, 3, '2024-02-10', 800.00, 'Expense', 'Software Subscription'),
(4, 4, '2024-03-05', 2500.00, 'Expense', 'Equipment Purchase'),
(5, 5, '2024-03-15', 1000.00, 'Expense', 'Maintenance'),
(6, 6, '2024-04-01', 3200.00, 'Expense', 'Rent'),
(7, 7, '2024-04-10', 450.00, 'Expense', 'Internet Bill'),
(8, 8, '2024-05-05', 2750.00, 'Expense', 'Employee Bonuses'),
(9, 9, '2024-05-12', 1300.00, 'Expense', 'Freelancer Payment'),
(10, 10, '2024-06-01', 2100.00, 'Expense', 'Hardware Upgrade'),
(1, 1, '2024-06-10', 500.00, 'Expense', 'Salary'),
(2, 2, '2024-07-01', 1600.00, 'Expense', 'Office Supplies'),
(3, 3, '2024-07-10', 800.00, 'Expense', 'Software Subscription'),
(4, 4, '2024-08-01', 2500.00, 'Expense', 'Equipment Purchase'),
(5, 5, '2024-08-08', 1000.00, 'Expense', 'Maintenance'),
(6, 6, '2024-09-01', 3200.00, 'Expense', 'Rent'),
(7, 7, '2024-09-10', 450.00, 'Expense', 'Internet Bill'),
(8, 8, '2024-10-05', 2750.00, 'Expense', 'Employee Bonuses'),
(9, 9, '2024-10-12', 1300.00, 'Expense', 'Freelancer Payment'),
(10, 10, '2024-11-01', 2100.00, 'Expense', 'Hardware Upgrade');

INSERT INTO Payments (invoice_id, payment_date, amount, payment_method, bank_name,
transaction_id) VALUES
(1, '2024-02-05', 1200.50, 'Bank Transfer', 'Bank A', 1),
(2, '2024-02-12', 2500.75, 'Credit Card', 'Bank B', 2),
(3, '2024-03-05', 1800.00, 'Cash', 'Bank C', 3),
(4, '2024-03-15', 4500.00, 'Bank Transfer', 'Bank A', 4),
(5, '2024-04-05', 700.25, 'Credit Card', 'Bank B', 5),
(6, '2024-04-15', 1900.00, 'Bank Transfer', 'Bank A', 6),
(7, '2024-05-01', 3000.00, 'Cash', 'Bank C', 7),
(8, '2024-05-12', 850.50, 'Bank Transfer', 'Bank A', 8),
(9, '2024-06-01', 5000.00, 'Credit Card', 'Bank B', 9),
(10, '2024-06-10', 1200.00, 'Cash', 'Bank C', 10),
(11, '2024-07-01', 2300.75, 'Bank Transfer', 'Bank A', 11),
(12, '2024-07-10', 1750.00, 'Credit Card', 'Bank B', 12),
(13, '2024-08-01', 2900.00, 'Cash', 'Bank C',13),
(14, '2024-08-08', 950.00, 'Bank Transfer', 'Bank A', 14),
(15, '2024-09-01', 3200.50, 'Credit Card', 'Bank B', 15),
(16, '2024-09-10', 1400.25, 'Bank Transfer', 'Bank A', 16),
(17, '2024-10-05', 3600.00, 'Cash', 'Bank C', 17),
(18, '2024-10-12', 1800.00, 'Bank Transfer', 'Bank A', 18),
(19, '2024-11-01', 2500.50, 'Credit Card', 'Bank B', 19),
(20, '2024-11-10', 1100.00, 'Bank Transfer', 'Bank A', 20);
```


3. Basic Queries

Retrieve all clients' names and contact emails.

List all overdue invoices with the client's name.

Find all payments made by bank transfer.

Show the total revenue received from paid invoices.

Count the number of invoices per status (Pending, Paid, Overdue).

4. Advanced Queries

Retrieve all transactions for a specific supplier (e.g., supplier_id = 3).

List the top 5 highest-paid employees.

Find all employees hired in the last 3 years.

Calculate the total expenses for January 2024.

Find the highest and lowest invoice amounts.

5. Reports

Create a view showing invoices with their corresponding payments.

Create a report showing monthly revenue for the year 2024.

Find the total amount paid per client.

List all invoices along with their VAT amounts.

Find the total payments received per payment method.

Write a stored procedure to fetch all invoices for a given client ID.

Find the percentage of overdue invoices relative to total invoices.

Generate a report showing the top 3 clients who have paid the most.

(Optional) Create an index on the Payments table for faster lookups on invoice_id.