Task: Exploring SQL Server Backup Types

Part 1: Research Task

Objective: Understand the different types of backup available in SQL Server.

Instructions:

1. Search for and summarize the following backup types:

   o Full Backup

   o Differential Backup

   o Transaction Log Backup

   o Copy-Only Backup

   o File/Filegroup Backup

2. For each backup type, include:

   o When it is used

   o What it includes

   o Pros & cons

   o Real-world scenario (e.g., banking system, e-learning platform, ticketing system)

Deliverable:
Write your findings in a simple report (1–2 pages). Use diagrams if needed.

Part 2: Practice Tasks (using a test database like TrainingDB)

Step 1: Create Test Database

CREATE DATABASE TrainingDB;

GO

USE TrainingDB;

GO

CREATE TABLE Students (

```
    StudentID INT PRIMARY KEY,

    FullName NVARCHAR(100),

    EnrollmentDate DATE

);

INSERT INTO Students VALUES

(1, 'Sara Ali', '2023-09-01'),

(2, 'Mohammed Nasser', '2023-10-15');
```

Step 2: Perform Backup Operations

1. **Full Backup**

```
BACKUP DATABASE TrainingDB TO DISK = 'C:\Backups\TrainingDB_Full.bak';
```

2. **Insert New Record (simulate data change)**

```
INSERT INTO Students VALUES (3, 'Fatma Said', '2024-01-10');
```

3. **Differential Backup**

```
BACKUP DATABASE TrainingDB TO DISK = 'C:\Backups\TrainingDB_Diff.bak' WITH DIFFERENTIAL;
```

4. **Transaction Log Backup**

```
-- First make sure Recovery Model is FULL

ALTER DATABASE TrainingDB SET RECOVERY FULL;

-- Now backup the log

BACKUP LOG TrainingDB TO DISK = 'C:\Backups\TrainingDB_Log.trn';
```

5. **Copy-Only Backup**

```
BACKUP DATABASE TrainingDB TO DISK = 'C:\Backups\TrainingDB_CopyOnly.bak' WITH COPY_ONLY;
```

Part 3: Real-World Scenario Simulation

Scenario:
You are a database admin for a hospital system.
On Sunday you take a full backup. Each night, you take a differential backup. Every hour, you back up the transaction log.

Challenge Task:
Design a backup schedule for this hospital system using SQL scripts. Assume the database is called HospitalDB. Include:

- Backup frequency

- Type of backup for each day/time

- Folder naming and file versioning convention

Deliverable:
A .sql file or script plan + brief description of the strategy