1. Solution-DB-Basics-Data-Definition-and-Datatypes-Exercises

/\* 01CreateDatabase \*/

CREATE DATABASE Minions

/\* 02CreateTables \*/

CREATE TABLE Minions

(

Id INT NOT NULL PRIMARY KEY,

[Name] VARCHAR(50) NOT NULL,

--Age INT NOT NULL

Age INT

)

CREATE TABLE Towns

(

Id INT NOT NULL PRIMARY KEY,

[Name] VARCHAR(50) NOT NULL

)

/\* 03AlterMinionsTable \*/

--ALTER TABLE Minions

--ADD TownId INT NOT NULL FOREIGN KEY REFERENCES Towns(Id)

ALTER TABLE Minions

ADD TownId INT NOT NULL

ALTER TABLE Minions

ADD CONSTRAINT fk\_TownId FOREIGN KEY(TownId) REFERENCES Towns(Id)

/\* 04InsertRecordsInTables \*/

INSERT INTO Towns(Id, [Name])

VALUES

(1, 'Sofia'),

(2, 'Plovdiv'),

(3, 'Varna')

INSERT INTO Minions(Id, [Name], Age, TownId)

VALUES

(1, 'Kevin', 22, 1),

(2, 'Bob', 15, 3),

--(3, 'Steward', 0, 2)

(3, 'Steward', NULL, 2)

/\* 05TruncateTableMinions \*/

TRUNCATE TABLE Minions

/\* 06DropAllTables \*/

DROP TABLE Minions

DROP TABLE Towns

/\* 07CreateTablePeople \*/

CREATE TABLE People

(

Id INT NOT NULL UNIQUE IDENTITY,

[Name] NVARCHAR(200) NOT NULL,

Picture VARBINARY(MAX),

Height NUMERIC(6, 2),

[Weight] NUMERIC(6, 2),

Gender CHAR(1) CHECK([Gender] IN('m', 'f')) NOT NULL,

Birthdate DATE NOT NULL,

Biography NVARCHAR(MAX)

)

ALTER TABLE People

ADD PRIMARY KEY(Id)

ALTER TABLE PEOPLE

ADD CONSTRAINT ch\_PictureSize CHECK(DATALENGTH(Picture) <= 2 \* 1024 \* 1024)

INSERT INTO People([Name], Height, [Weight], Gender, Birthdate) VALUES

('Petur Petroff', 1.70, 68, 'm', '01-08-1979'),

('Georgy Potnich', 1.80, 98, 'm', '01-08-1990'),

('Maria Yankova', 1.60, 60, 'f', '01-08-1991'),

('Plamena Berova', 1.74, 69, 'f', '01-08-1987'),

('Heinrich Bergman', 1.78, 68, 'm', '01-08-1965')

/\* 08CreateTableUsers \*/

CREATE TABLE Users

(

Id BIGINT NOT NULL UNIQUE IDENTITY,

Username VARCHAR(30) NOT NULL UNIQUE,

[Password] VARCHAR(26) NOT NULL,

ProfilePicture VARBINARY(MAX),

LastLoginTime DATETIME2,

IsDeleted BIT NOT NULL DEFAULT(0)

)

ALTER TABLE Users

ADD CONSTRAINT pk\_Users PRIMARY KEY(Id)

ALTER TABLE Users

ADD CONSTRAINT ch\_ProfilePicture CHECK(DATALENGTH(ProfilePicture) <= 900 \* 1024)

/\* TEST ProfilePicture CONSTRAINT

DECLARE @C VARCHAR(MAX) = '|'

DECLARE @ProfilePicture VARBINARY(MAX) = CONVERT(VARBINARY(MAX), REPLICATE(@C, (921600))) --Must throw an exception

--DECLARE @ProfilePicture VARBINARY(MAX) = CONVERT(VARBINARY(MAX), REPLICATE(@C, (921599))) --Must past through size check

\*/

INSERT INTO Users(username, [Password]) VALUES

('tsendy000', '000000'),

('tsendy001', '000001'),

('tsendy010', '000002'),

('tsendy011', '000003'),

('tsendy100', '000004')

/\* 09ChangePrimaryKey \*/

ALTER TABLE Users

DROP CONSTRAINT pk\_Users

ALTER TABLE Users

ADD CONSTRAINT pk\_Users PRIMARY KEY(Id, Username)

/\* 10AddCheckConstraint \*/

ALTER TABLE Users

ADD CONSTRAINT ch\_Password CHECK(LEN([Password]) >= 5)

/\* 11SetDefaultValueOfField \*/

ALTER TABLE Users

ADD CONSTRAINT df\_Users DEFAULT GETDATE() FOR LastLoginTime

/\* 12SetUniqueField \*/

ALTER TABLE Users

DROP CONSTRAINT pk\_Users

ALTER TABLE Users

ADD CONSTRAINT pk\_Users PRIMARY KEY(Id)

ALTER TABLE Users

ADD CONSTRAINT uq\_Username UNIQUE(Username)

ALTER TABLE Users

ADD CONSTRAINT ch\_Username CHECK(LEN(Username) >= 3)

/\* 13MoviesDatabase \*/

CREATE DATABASE Movies

--It must be paste in Judge without this above

CREATE TABLE Directors

(

Id INT NOT NULL PRIMARY KEY,

DirectorName NVARCHAR(50) NOT NULL,

Notes NTEXT

)

INSERT INTO Directors(Id, DirectorName) VALUES

(1, 'Petur Penchev'),

(2, 'Ivan Petrov'),

(3, 'Igna Gesheva'),

(4, 'Vasil Romanov'),

(5, 'George Zimmerman')

CREATE TABLE Genres

(

Id INT NOT NULL PRIMARY KEY,

GenreName NVARCHAR(50) NOT NULL,

Notes NTEXT

)

INSERT INTO Genres(Id, GenreName) VALUES

(1, 'Action'),

(2, 'Comedy'),

(3, 'Science Fiction'),

(4, 'Fantasy'),

(5, 'Horror')

CREATE TABLE Categories

(

Id INT NOT NULL PRIMARY KEY,

CategoryName NVARCHAR(50) NOT NULL,

Notes NTEXT

)

INSERT INTO Categories(Id, CategoryName) VALUES

(1, 'Film'),

(2, 'Serial'),

(3, 'Documentary'),

(4, 'Reality'),

(5, 'Concert')

CREATE TABLE Movies

(

Id INT NOT NULL PRIMARY KEY,

Title NVARCHAR(255) NOT NULL,

DirectorId INT FOREIGN KEY REFERENCES Directors(Id),

CopyrightYear INT,

[Length] NVARCHAR(50),

GenreId INT FOREIGN KEY REFERENCES Genres(Id),

CategoryId INT FOREIGN KEY REFERENCES Categories(Id),

Rating INT,

Notes NTEXT

)

INSERT INTO Movies(Id, Title, DirectorId, CopyrightYear, GenreId, CategoryId) VALUES

(1, 'Dark Star VIII', 2, 2027, 3, 1),

(2, 'FantasyLand', 1, 2019, 4, 1),

(3, 'Cool Ice', 4, 2021, 1, 2),

(4, 'The Last Village', 3, 2031, 1, 3),

(5, 'Hangovers XI', 5, 2026, 2, 1)

/\* 14CarRentalDatabase \*/

CREATE DATABASE CarRental

--It must be paste in Judge without this above

CREATE TABLE Categories

(

Id INT NOT NULL PRIMARY KEY,

CategoryName NVARCHAR(50) NOT NULL,

DailyRate DECIMAL(10, 2),

WeeklyRate DECIMAL(10, 2),

MonthlyRate DECIMAL(10, 2),

WeekendRate DECIMAL(10, 2)

)

ALTER TABLE Categories

ADD CONSTRAINT tc\_AtLeastOneRate CHECK((DailyRate IS NOT NULL) OR (WeeklyRate IS NOT NULL) OR

(MonthlyRate IS NOT NULL) OR (WeekendRate IS NOT NULL))

INSERT INTO Categories(Id, CategoryName, DailyRate, WeeklyRate, MonthlyRate, WeekendRate) VALUES

(1, 'Saving', 15.50, 100, 400, 22.50),

(2, 'Normal', 20, 130, 520, 30),

(3, 'Luxury', 30, 200, 800, 50)

CREATE TABLE Cars

(

Id INT NOT NULL PRIMARY KEY,

PlateNumber VARCHAR(50) NOT NULL,

Manufacturer NVARCHAR(50) NOT NULL,

Model NVARCHAR(50) NOT NULL,

CarYear INT NOT NULL,

CategoryId INT NOT NULL FOREIGN KEY REFERENCES Categories(Id),

Doors TINYINT NOT NULL,

Picture VARBINARY(MAX),

Condition NVARCHAR(50),

Available BIT DEFAULT 1

)

INSERT INTO Cars(Id, PlateNumber, Manufacturer, Model, CarYear, CategoryId, Doors, Available) VALUES

(1, 'CC567839046AT', 'VW', 'Golf', 1998, 1, 2, 1),

(2, 'BA786534083VG', 'Ford', 'Escort', 1992, 3, 4, 1),

(3, 'AC437539573DS', 'Renault', 'Megane', 1996, 2, 4, 1)

CREATE TABLE Employees

(

Id INT NOT NULL PRIMARY KEY,

FirstName NVARCHAR(50) NOT NULL,

LastName NVARCHAR(50) NOT NULL,

Title NVARCHAR(50) NOT NULL,

Notes NTEXT

)

INSERT INTO Employees(Id, FirstName, LastName, Title) VALUES

(1, 'Ivan', 'Petrov', 'Mechanic'),

(2, 'Boyan', 'Vasev', 'Engineer'),

(3, 'Tanya', 'Borisova', 'Shop Assistent')

CREATE TABLE Customers

(

Id INT NOT NULL PRIMARY KEY,

DriverLicenceNumber VARCHAR(50) NOT NULL UNIQUE,

FullName NVARCHAR(50) NOT NULL,

[Address] NVARCHAR(255),

City NVARCHAR(50),

ZIPCode NVARCHAR(50),

Notes NTEXT

)

INSERT INTO Customers(Id, DriverLicenceNumber, FullName, City) VALUES

(1, '5867786100', 'Ivan Penchev', 'Sofia'),

(2, '1234566100', 'Gergana Miteva', 'Plovdiv'),

(3, '6789016100', 'Boyko Vinogradov', 'Varna')

CREATE TABLE RentalOrders

(

Id INT NOT NULL PRIMARY KEY,

EmployeeId INT NOT NULL FOREIGN KEY REFERENCES Employees(Id),

CustomerId INT NOT NULL FOREIGN KEY REFERENCES Customers(Id),

CarId INT NOT NULL FOREIGN KEY REFERENCES Cars(Id),

TankLevel NUMERIC(5, 2),

KilometrageStart INT,

KilometrageEnd INT,

TotalKilometrage INT,

StartDate DATE NOT NULL,

EndDate DATE NOT NULL,

TotalDays INT NOT NULL,

--TotalDays AS DATEDIFF(DAY, StartDate, EndDate)

RateApplied DECIMAL(10, 2),

TaxRate DECIMAL(10, 2),

OrderStatus NVARCHAR(50),

Notes NTEXT

)

ALTER TABLE RentalOrders

ADD CONSTRAINT ch\_TotalDays CHECK(DATEDIFF(DAY, StartDate, EndDate) = TotalDays)

INSERT INTO RentalOrders(Id, EmployeeId, CustomerId, CarId, StartDate, EndDate, TotalDays) VALUES

(1, 1, 2, 1, '01-01-2018', '01-02-2018', 1),

(2, 2, 3, 2, '01-01-2018', '01-03-2018', 2),

(3, 1, 1, 3, '01-01-2018', '01-04-2018', 3)

/\* 15HotelDatabase \*/

CREATE DATABASE Hotel

--It must be paste in Judge without this above

CREATE TABLE Employees

(

Id INT NOT NULL PRIMARY KEY,

FirstName NVARCHAR(50) NOT NULL,

LastName NVARCHAR(50) NOT NULL,

Title NVARCHAR(255) NOT NULL,

Notes NTEXT

)

INSERT INTO Employees(Id, FirstName, LastName, Title) VALUES

(1, 'Ivan', 'Penchev', 'Guard'),

(2, 'Tanya', 'Petrova', 'Waitress'),

(3, 'Gergo', 'Tomov', 'Barman')

CREATE TABLE Customers

(

AccountNumber INT NOT NULL PRIMARY KEY,

FirstName NVARCHAR(50) NOT NULL,

LastName NVARCHAR(50) NOT NULL,

PhoneNumber VARCHAR(50),

EmergencyName NVARCHAR(50) NOT NULL,

EmergencyNumber VARCHAR(50) NOT NULL,

Notes NTEXT

)

INSERT INTO Customers(AccountNumber, FirstName, LastName, EmergencyName, EmergencyNumber) VALUES

(1, 'Sarah', 'Riley', 'Danielle Howland', '112'),

(2, 'Adam', 'Winrow', 'Rob Fuller', '112'),

(3, 'Nicke', 'Eede', 'Andrew Arnison', '918')

CREATE TABLE RoomStatus

(

RoomStatus VARCHAR(50) NOT NULL PRIMARY KEY,

Notes NTEXT

)

INSERT INTO RoomStatus(RoomStatus) VALUES

('Free'),

('Reserved'),

('Occupied')

CREATE TABLE RoomTypes

(

RoomType VARCHAR(50) NOT NULL PRIMARY KEY,

Notes NTEXT

)

INSERT INTO RoomTypes(RoomType) VALUES

('Luxury'),

('Normal'),

('Poor')

CREATE TABLE BedTypes

(

BedType VARCHAR(50) NOT NULL PRIMARY KEY,

Notes NTEXT

)

INSERT INTO BedTypes(BedType) VALUES

('Single'),

('Double'),

('Huge')

CREATE TABLE Rooms

(

RoomNumber INT NOT NULL PRIMARY KEY,

RoomType VARCHAR(50) NOT NULL FOREIGN KEY REFERENCES RoomTypes(RoomType),

BedType VARCHAR(50) NOT NULL FOREIGN KEY REFERENCES BedTypes(BedType),

Rate INT NOT NULL,

RoomStatus VARCHAR(50) NOT NULL FOREIGN KEY REFERENCES RoomStatus(RoomStatus),

Notes NTEXT

)

INSERT INTO Rooms(RoomNumber, RoomType, BedType, Rate, RoomStatus) VALUES

(1, 'Luxury', 'Huge', 100, 'Free'),

(2, 'Normal', 'Double', 80, 'Reserved'),

(3, 'Poor', 'Single', 50, 'Occupied')

CREATE TABLE Payments

(

Id INT NOT NULL PRIMARY KEY,

EmployeeId INT NOT NULL FOREIGN KEY REFERENCES Employees(Id),

PaymentDate DATE NOT NULL,

AccountNumber INT NOT NULL FOREIGN KEY REFERENCES Customers(AccountNumber),

FirstDateOccupied DATE NOT NULL,

LastDateOccupied DATE NOT NULL,

TotalDays INT NOT NULL,

AmountCharged DECIMAL(15, 2) NOT NULL,

TaxRate DECIMAL(15, 2) NOT NULL,

TaxAmount DECIMAL(15, 2) NOT NULL,

PaymentTotal DECIMAL(15, 2) NOT NULL,

Notes NTEXT

)

ALTER TABLE Payments

ADD CONSTRAINT ch\_TotalDays CHECK(DATEDIFF(DAY, FirstDateOccupied, LastDateOccupied) = TotalDays)

ALTER TABLE Payments

ADD CONSTRAINT ch\_TaxAmount CHECK(TotalDays \* TaxRate = TaxAmount)

INSERT INTO Payments(Id, EmployeeId, PaymentDate, AccountNumber, FirstDateOccupied, LastDateOccupied, TotalDays,

AmountCharged, TaxRate, TaxAmount, PaymentTotal) VALUES

(1, 2, '08-07-2018', 1, '08-07-2018', '08-09-2018', 2, 475.99, 50, 100, 475.99),

(2, 3, '08-09-2018', 2, '08-10-2018', '08-11-2018', 1, 100, 38.68, 38.68, 100),

(3, 1, '08-01-2018', 3, '08-01-2018', '08-11-2018', 10, 1475.83, 10, 100, 1475.83)

CREATE TABLE Occupancies

(

Id INT NOT NULL PRIMARY KEY,

EmployeeId INT NOT NULL FOREIGN KEY REFERENCES Employees(Id),

DateOccupied DATE NOT NULL,

AccountNumber INT NOT NULL FOREIGN KEY REFERENCES Customers(AccountNumber),

RoomNumber INT NOT NULL FOREIGN KEY REFERENCES Rooms(RoomNumber),

RateAplied INT,

PhoneCharge VARCHAR(50) NOT NULL,

Notes NTEXT

)

INSERT INTO Occupancies(Id, EmployeeId, DateOccupied, AccountNumber, RoomNumber, PhoneCharge) VALUES

(1, 2, '08-07-2018', 1, 1, '0888 09 08 01'),

(2, 3, '08-10-2018', 2, 2, '0888 09 08 02'),

(3, 1, '08-01-2018', 3, 3, '0888 09 08 03')

/\* 16CreateSoftUniDatabase \*/

CREATE DATABASE SoftUni

CREATE TABLE Towns

(

Id INT NOT NULL PRIMARY KEY IDENTITY,

[Name] NVARCHAR(50) NOT NULL

)

CREATE TABLE Addresses

(

Id INT NOT NULL PRIMARY KEY IDENTITY,

AddressText NVARCHAR(255) NOT NULL,

TownId INT NOT NULL FOREIGN KEY REFERENCES Towns(Id)

)

CREATE TABLE Departments

(

Id INT NOT NULL PRIMARY KEY IDENTITY,

[Name] NVARCHAR(50) NOT NULL

)

CREATE TABLE Employees

(

Id INT NOT NULL PRIMARY KEY IDENTITY,

FirstName NVARCHAR(50) NOT NULL,

MiddleName NVARCHAR(50) NOT NULL,

LastName NVARCHAR(50) NOT NULL,

JobTitle NVARCHAR(255) NOT NULL,

DepartmentId INT NOT NULL FOREIGN KEY REFERENCES Departments(Id),

HireDate DATE,

Salary DECIMAL(15, 2) NOT NULL,

AddressId INT FOREIGN KEY REFERENCES Addresses(Id)

)

/\* 17BackupDatabase \*/

BACKUP DATABASE SoftUni TO DISK = 'C:\Program Files\Microsoft SQL Server\MSSQL14.SQLEXPRESS\MSSQL\Backup\softuni-backup.bak'

USE CarRental

DROP DATABASE SoftUni

RESTORE DATABASE SoftUni FROM DISK = 'C:\Program Files\Microsoft SQL Server\MSSQL14.SQLEXPRESS\MSSQL\Backup\softuni-backup.bak'

/\* 18BasicInsert \*/

INSERT INTO Towns([Name]) VALUES

('Sofia'),

('Plovdiv'),

('Varna'),

('Burgas')

INSERT INTO Departments([Name]) VALUES

('Engineering'),

('Sales'),

('Marketing'),

('Development'),

('Quality Assurance')

INSERT INTO Employees(FirstName, MiddleName, LastName, JobTitle, DepartmentId, HireDate, Salary) VALUES

('Ivan', 'Ivanov', 'Ivanov', '.NET Developer', 4, CONVERT(DATE, '01/02/2013', 103), 3500.00),

('Petar', 'Petrov', 'Petrov', 'Senior Engineer', 1, CONVERT(DATE, '02/03/2004', 103), 4000.00),

('Maria', 'Petrova', 'Ivanova', 'Intern', 5, CONVERT(DATE, '28/08/2016', 103), 525.25),

('Georgi', 'Teziev', 'Ivanov', 'CEO', 2, CONVERT(DATE, '09/12/2007', 103), 3000.00),

('Peter', 'Pan', 'Pan', 'Intern', 3, CONVERT(DATE, '28/08/2016', 103), 599.88)

/\* 19BasicSelectAllFields \*/

SELECT \* FROM Towns

SELECT \* FROM Departments

SELECT \* FROM Employees

/\* 20BasicSelectAllFieldsAndOrderThem \*/

SELECT \* FROM Towns

ORDER BY [Name]

SELECT \* FROM Departments

ORDER BY [Name] ASC

SELECT \* FROM Employees

ORDER BY Salary DESC

/\* 21BasicSelectSomeFields \*/

SELECT [Name] FROM Towns

ORDER BY [Name]

SELECT [Name] FROM Departments

ORDER BY [Name] ASC

SELECT FirstName, LastName, JobTitle, Salary FROM Employees

ORDER BY Salary DESC

/\* 22IncreaseEmployeesSalary \*/

UPDATE Employees

SET Salary \*= 1.1

SELECT Salary FROM Employees

/\* 23DecreaseTaxRate \*/

--ALTER TABLE Payments

--DROP CONSTRAINT ch\_TaxAmount

UPDATE Payments

SET TaxRate -= (TaxRate \* 0.03)

SELECT TaxRate FROM Payments

/\* 24DeleteAllRecords \*/

TRUNCATE TABLE Occupancies

--DELETE FROM Occupancies