

## CREATE TABLES :-

```
1 CREATE DATABASE ApartmentFinder;
2 GO
3
4 USE ApartmentFinder;
5 GO
6
7 CREATE TABLE [User] (
8     User_ID INTEGER NOT NULL IDENTITY(1,1) PRIMARY KEY,
9     First_Name VARCHAR(50) NOT NULL,
10    Last_Name VARCHAR(50) NOT NULL,
11    Phone_No BIGINT NOT NULL,
12    Email VARCHAR(100) NOT NULL,
13    Date_Of_Birth DATE NOT NULL,
14    -- User types : L (Lister), C (Customer)
15    User_Type CHAR(1) NOT NULL
16    -- CONSTRAINT User_Type_CHK CHECK (
17    --     User_Type IN ('L', 'C')
18    -- )
19 );
20
21 CREATE TABLE Lister (
22     Lister_ID INTEGER PRIMARY KEY,
23     -- Lister Type : B (Broker), O (Owner)
24     Lister_Type CHAR(1) NOT NULL,
25     -- CONSTRAINT Lister_Type_CHK CHECK (
26     --     Lister_Type IN ('B', 'O')
27     -- ),
28     Active_Properties INTEGER
```

### Messages

```
3:32:04 PM Started executing query at Line 1
           Commands completed successfully.
3:32:04 PM Started executing query at Line 3
           Commands completed successfully.
3:32:04 PM Started executing query at Line 6
           Commands completed successfully.
           Total execution time: 00:00:00.439
```

## TRIGGERS :-

```
1 USE ApartmentFinder;
2 GO
3
4 -- 1. Trigger that automatically updates the Active_Properties column in the Lister table whenever
5 -- a new property is inserted or deleted in the Property table by that Lister_ID.
6 CREATE TRIGGER UpdateActiveProperties
7 ON Property
8 AFTER INSERT, DELETE
9 AS
10 > BEGIN ---
30
31 END;
32
33 -- 2. Trigger to check Property Availability
34 CREATE TRIGGER Property_Availability_Check
35 ON Listing
36 FOR INSERT
37 AS
38 > BEGIN ---
59 END;
```

### Messages

```
3:32:29 PM Started executing query at Line 34
           Commands completed successfully.
           Total execution time: 00:00:00.011
```

## INSERT RECORDS :-

### Phone number check constraint

```
817 INSERT INTO [User] (First_Name, Last_Name, Phone_No, Email, Date_Of_Birth, User_Type)
818 VALUES
819 ('Casey', 'Kohl', 12345, 'kohl.c@example.com', '2000-01-01', 'C');
820
```

**Messages**

3:40:36 PM	Started executing query at Line 817 Msg 547, Level 16, State 0, Line 1 The INSERT statement conflicted with the CHECK constraint "CHK_PhoneNumberLength". The conflict occurred in database "ApartmentFinder", table "dbo.User", column 'Phone_No'. The statement has been terminated. Total execution time: 00:00:00.027
------------	---

### User Type constraint (can only have values : 'L' for Listers and 'C' for Customers)

```
817 INSERT INTO [User] (First_Name, Last_Name, Phone_No, Email, Date_Of_Birth, User_Type)
818 VALUES
819 ('Casey', 'Kohl', 1234567890, 'kohl.c@example.com', '2000-01-01', 'user');
820
```

**Messages**

3:46:53 PM	Started executing query at Line 817 Msg 2628, Level 16, State 1, Line 1 String or binary data would be truncated in table 'ApartmentFinder.dbo.User', column 'User_Type'. Truncated value: 'u'. The statement has been terminated. Total execution time: 00:00:00.021
------------	---

### Lister Type constraint (can only have values : 'B' for Brokers and 'O' for Owner)

```
817 INSERT INTO Lister (Lister_ID, Lister_Type, Active_Properties)
818 VALUES (42, 'Agent', 3)
```

**Messages**

3:55:33 PM	Started executing query at Line 817 Msg 2628, Level 16, State 1, Line 1 String or binary data would be truncated in table 'ApartmentFinder.dbo.Lister', column 'Lister_Type'. Truncated value: 'A'. The statement has been terminated. Total execution time: 00:00:00.036
------------	---

### Listing Type constraint (can only have values : 'R' for Rent and 'S' for Sell)

```
817 INSERT INTO Listing (Property_ID, Listing_Date, Listing_Status, Listing_Type)
818 VALUES (1, '2024-03-17', 'Active', 'On Sale');
819
```

**Messages**

4:00:19 PM	Started executing query at Line 816 Msg 2628, Level 16, State 1, Line 2 String or binary data would be truncated in table 'ApartmentFinder.dbo.Listing', column 'Listing_Type'. Truncated value: 'O'. The statement has been terminated. Total execution time: 00:00:00.010
------------	---

Rating constraint (can only have values between 1 and 5)

```
816 INSERT INTO Review (Lister_ID, Customer_ID, Property_ID, Rating, Comment)
817 VALUES (2, 1, 1, 10, 'Great experience renting this property.');
```

#### Messages

```
4:02:36 PM Started executing query at Line 815
Msg 547, Level 16, State 0, Line 2
The INSERT statement conflicted with the CHECK constraint "Rating_Check". The conflict occurred in database "ApartmentFinder", table "dbo.Review", column 'Rating'.
The statement has been terminated.
Total execution time: 00:00:00.027
```

## NON CLUSTERED INDEXING

```
4 -- Index on Lister table for Lister_Type
5 CREATE NONCLUSTERED INDEX IX_Lister_ListerType ON Lister(Lister_Type);
6 -- Query to select listers of a specific type
7 SELECT *
8 FROM Lister
9 WHERE Lister_Type = '0' AND Active_Properties > 2;
```

#### Results Messages

	Lister_ID	Lister_Type	Active_Properties
1	4	0	3
2	88	0	6
3	92	0	4
4	96	0	3
5	100	0	3
6	104	0	3
7	108	0	4

```
12 CREATE NONCLUSTERED INDEX IX_Customer_CustomerType ON Customer(Customer_Type);
13 -- Query to select customers of a specific type
14 SELECT *
15 FROM Customer
16 WHERE Customer_Type = 'Rent';
```

#### Results Messages

	Customer_ID	Customer_Type	Budget_Min	Budget_Max	Preferred_Location
1	1	Rent	1000	2000	Downtown
2	5	Rent	NULL	NULL	NULL
3	7	Rent	NULL	NULL	NULL
4	9	Rent	1500	2500	New York

```
27 CREATE NONCLUSTERED INDEX IX_Property_ListerID ON Property(Lister_ID);
28 -- Query to select properties listed by a specific lister
29 SELECT *
30 FROM Property
31 WHERE Lister_ID = 6;
32
```

Results Messages

	Property_ID	Lister_ID	Address_Line_1	Address_Line_2	City	State	Country	Zipcode
1	3	6	123 Main St	Apt 201	New York	NY	USA	10001
2	41	6	112 Estrella St	Unit 1201	New York	NY	USA	10002
3	42	6	456 Elm St	Unit 301	New York	NY	USA	10002
4	43	6	789 Oak St	Suite 401	New York	NY	USA	10003
5	44	6	101 Pine St	Floor 2	New York	NY	USA	10004
6	45	6	222 Maple St	Apartment 501	New York	NY	USA	10005

```
37 SELECT *
38 FROM Listing
39 WHERE Listing_Type = 'S' AND Listing_Status = 'Inactive';
40
```

Results Messages

	Listing_ID	Property_ID	Listing_Date	Listing_Status	Listing_Type
1	21	22	2024-09-17	Inactive	S
2	23	24	2024-11-19	Inactive	S
3	25	26	2024-07-17	Inactive	S
4	27	28	2024-09-17	Inactive	S

IEWS :-

```
31 select * from ActivePropertyDetails;
```

Results Messages

	P...	Address_Line_1	Addr...	City	State	Zipcode	I	E	Area...	Lister_ID	Liste...	Active...
1	1	123 Main St		New York	NY	10001	2	1	1000	2	B	1
2	2	456 Oak St	Apt 3B	Los Angeles	CA	90001	3	2	1500	4	O	3
3	3	123 Main St	Apt 201	New York	NY	10001	2	1	1000	6	B	6
4	4	789 Elm St	Unit 5C	San Francisco	CA	94103	4	3	2200	8	O	2
5	5	456 Pine St	Suite 1...	Los Angeles	CA	90002	3	2	1800	10	B	4
6	6	890 Maple Ave	Unit 2A	Chicago	IL	60611	2	1	1200	12	O	2
7	7	567 Oak St	Apt 15E	Miami	FL	33101	5	4	3000	14	B	3

```
60 -- Demonstration of view: Property_Amenities
61 select * from Property_Amenities
62
```

Results Messages

	Property_ID	Address_Line_1	Address_Line_2	City	State	Zipcode	Bedroom	Bathroom	Area_Size	Water	Ga
1	1	123 Main St		New York	NY	10001	2	1	1000	1	1
2	2	456 Oak St	Apt 3B	Los Angeles	CA	90001	3	2	1500	1	1
3	3	123 Main St	Apt 201	New York	NY	10001	2	1	1000	1	0
4	4	789 Elm St	Unit 5C	San Francisco	CA	94103	4	3	2200	1	1

```

91 select * from Customer_Reviews
92

```

Results		Messages					
LastName	Property_ID	Address_Line_1	City	State	Zipcode	Rating	Comment
	1	123 Main St	New York	NY	10001	5	Great experience renting this property.
	2	456 Oak St	Los Angeles	CA	90001	4	Enjoyed my stay, the location was convenient.
	3	123 Main St	New York	NY	10001	5	Beautiful apartment, exceeded expectations.
on	4	789 Elm St	San Francisco	CA	94103	4	Comfortable and clean, would rent again.
dez	5	456 Pine St	Los Angeles	CA	90002	5	Lovely property with great amenities.
n	6	890 Maple Ave	Chicago	IL	60611	5	Fantastic experience, highly recommend!

```

134 -- Demonstartion of view CustomerTransactionSummary
135 SELECT * from CustomerTransactionSummary

```

Results Messages

	Total_Customers	Customers_With_Rent_Transaction	Customers_With_Sell_Transaction	Inactive_Customers
1	59	16	18	25

```

119 -- demonstartion of view Properties_For_Sale
120 Select * from Properties_For_Sale

```

Results		Messages								
	Property_ID	Address_Line_1	Address_Line_2	City	State	Zipcode	Bedroom	Bathroom	Area_Size	Asking_Price
1	2	456 Oak St	Apt 3B	Los Angeles	CA	90001	3	2	1500	250000
2	4	789 Elm St	Unit 5C	San Francisco	CA	94103	4	3	2200	280000
3	6	890 Maple Ave	Unit 2A	Chicago	IL	60611	2	1	1200	320000
4	8	432 Birch St	Apt 304	Seattle	WA	98101	3	2	1600	300000
5	10	765 Walnut St	Apt 401	Houston	TX	77002	4	3	2400	350000
6	12	876 Maple St	Apt 102	Philadelphia	PA	19103	2	1	1100	270000

## STORED PROCEDURES :-

```

63 EXEC GetCustomerTransactions 43;
64

```

Results		Messages						
	Custom...	Transaction_...	Monthly_...	Transaction_Date	Transacti...	Agreement...	Lease_Sta...	Lease_End...
1	Renter	24	1550	2024-02-15 00:00:00...	Pending	2024-01-12	2024-02-15	2025-02-14
2	Renter	24	1550	2024-02-20 00:00:00...	Cancelled	2023-11-05	2023-12-01	2024-11-30

```

103 -- Demonstartion of stored procedure GetPropertyListings
104 EXEC GetPropertyListings 'Boston', 'MA', 'R', 1000, 3000;
105

```

Results Messages

	Property_ID	Listing_Date	Listing_Status	Listing_Type	Water	Gas	Electricity	Parking	Pets_Allowed
1	9	2024-02-17	Active	R	1	1	1	1	1
2	19	2023-05-17	Active	R	0	1	1	1	0

```

165 EXEC GetListerPropertiesWithDetails 6;
166

```

Results		Messages							
	PropertyID	Address	City	State	Zipcode	Bedrooms	Bathrooms	AverageRating	NumberOfReviews
1	3	123 Main St	New York	NY	10001	2	1	3.50	2
2	41	112 Estrella St	New York	NY	10002	3	2	NULL	0
3	42	456 Elm St	New York	NY	10002	2	1	NULL	0
4	43	789 Oak St	New York	NY	10003	3	2	NULL	0
5	44	101 Pine St	New York	NY	10004	1	1	NULL	0
6	45	222 Maple St	New York	NY	10005	2	1	NULL	0

```
185 EXEC GetListingsByDaysAvailable 100;
```

Results Messages

	Listing_ID	Property_ID	Listing_D...	Listing_S...	Listing_T...	Days_Avai...
1	1	1	2024-03-17	Active	R	21
2	2	2	2024-03-17	Active	S	21
3	3	3	2024-02-17	Active	R	50
4	6	6	2024-01-17	Active	S	81
5	7	7	2024-03-27	Active	R	11
6	9	9	2024-02-17	Active	R	50
7	12	12	2024-03-17	Active	S	21
8	40	41	2024-03-01	Active	R	37
9	41	42	2024-02-15	Active	R	52
10	42	43	2024-01-10	Active	R	88

## FUNCTIONS :-

```
32 SELECT * from GetListerPropertyStats(6);
```

Results Messages

	ListerID	TotalProper...	ActivePro...	InactiveP...	RentalPro...	SalePrope...	MaxBedroo...	MinBedroo...	MaxBathro...
1	6	6	5	1	6	0	3	1	2

```
75 SELECT * FROM dbo.GetTopRatedListers(12);
```

```
76
```

Results Messages

	Lister_ID	Full_Name	Average_Rating	Total_Active_Properties
1	22	Alexander Green	5.000000	1
2	4	Michael Brown	4.000000	2
3	12	James Jackson	4.000000	2
4	16	Michael Gonzalez	4.000000	1
5	8	William Anderson	4.000000	1
6	6	Daniel Taylor	3.500000	5

```
106 DECLARE @RentID INTEGER = 15; -- Provide the Rent ID
```

```
107 DECLARE @DurationInMonths INTEGER = 12; -- Duration in months
```

```
108 DECLARE @MoveInDate DATETIME = '2024-09-01'; -- Move in date
```

```
109
```

```
110 SELECT dbo.CalculateTotalRentCost(@RentID, @DurationInMonths, @MoveInDate) AS TotalCost;
```

```
111
```

Results Messages

	TotalCost
1	31700.00

```

140 ALTER TABLE Lister
141 ADD Activity_Status AS dbo.DetermineListerActivityStatus(Lister_ID);
142 GO
143

```

#### Messages

5:15:06 PM Started executing query at Line 140  
 Commands completed successfully.  
 Total execution time: 00:00:00.020

```

174 SELECT
175     DISTINCT p.Zipcode,
176     p.[City],
177     p.[State],
178     d.AvgRating,
179     d.NumReviews,
180     COUNT(*) AS NoOfProperties
181 FROM
182     Property p
183 CROSS APPLY
184     dbo.CalculateNeighborhoodScore(p.Zipcode) d
185 GROUP BY p.Zipcode, p.[City], p.[State], d.AvgRating, d.NumReviews;
186

```

#### Results Messages

	Zipcode	City	State	AvgRating	NumReviews	NoOfProperties
1	2108	Boston	MA	2.000000	3	2
2	10001	New York	NY	3.200000	5	3
3	19103	Philadelphia	PA	2.500000	2	2
4	30303	Atlanta	GA	2.000000	1	1
5	33101	Miami	FL	2.500000	2	2

## COLUMN ENCRYPTION :-

```

246 CREATE OR ALTER VIEW DecryptedPhoneView
247 AS
248 SELECT
249     User_ID,
250     First_Name,
251     Last_Name,
252     Email,
253     Date_Of_Birth,
254     CONVERT(BIGINT, DecryptByKey(Encrypted_Phone_No)) AS Phone_No,
255     User_Type
256 FROM [User];
257
258 select * from DecryptedPhoneView where user_id in (1,2,3,4)

```

#### Results Messages

	User_ID	First_Name	Last_Name	Email	Date_Of_Birth	Phone_No	User_Type
1	1	Gabriel	Parker	gabriel.parker@example.com	1984-09-30	1112223330	C
2	2	Natalie	Gonzalez	natalie.gonzalez@example.com	1997-12-12	5556663330	L
3	3	Henry	Martinez	henry.martinez@example.com	1986-03-25	7778883330	C
4	4	Ella	Cooper	ella.cooper@example.com	1990-07-08	2223339999	L

```
246 CREATE OR ALTER VIEW DecryptedPhoneView
247 AS
248 SELECT
249     User_ID,
250     First_Name,
251     Last_Name,
252     Email,
253     Date_Of_Birth,
254     CONVERT(BIGINT, DecryptByKey(Encrypted_Phone_No)) AS Phone_No,
255     User_Type
256 FROM (User);
257
258 select * from DecryptedPhoneView where user_id in (1,2,3,4)
```

Results

Messages

	User_ID	First_Name	Last_Name	Email	Date_Of_Birth	Phone_no	User_Type
1	1	Gabriel	Parker	gabriel.parker@example.com	1984-09-30	0x006A9EAB0AE3BC4A8253F91DC6F948370200000073E0875F5C...	C
2	2	Natalie	Gonzalez	natalie.gonzalez@example.com	1997-12-12	0x006A9EAB0AE3BC4A8253F91DC6F948370200000014C5ABC17F...	L
3	3	Henry	Martinez	henry.martinez@example.com	1986-03-25	0x006A9EAB0AE3BC4A8253F91DC6F9483702000000884BF3FB67...	C
4	4	Ella	Cooper	ella.cooper@example.com	1998-07-08	0x006A9EAB0AE3BC4A8253F91DC6F948370200000028A68265A7...	L