

2nd Semester 2022-23

CSF 212 (Database Systems)

Project (Home Assignment); Total marks:20

Focus: In this activity the focus will be on ER/EER Modeling, Relational schema design and refinement (Normalization), implementing database (creating tables with constraints and inserting initial data necessary) and writing SQL/PL-SQL code for data entry, updates, generating reports, manipulation and enforcing certain complex constraints or rules.

Domain description:

We assume a Property Rental Agency (PRA) scenario where the PRA facilitates mediating between Owners of a properties and the Tenants, across multiple cities in India. Both Owner and Tenants are treated as the users of the system. There is a supper user (only one) who is the DBA. Some users are just Managers. DBA can add/delete/modify other users. Managers can add/modify/delete a property. Add details about which property is rented to which tenant etc. Some users can play both owner and tenant roles. That is, they may give their property for rent and may seek another property from others for rent. A property can be a residential property (independent-house/flat) or a commercial property (shop or warehouse). Each property has an ID which is unique. Each property has an owner. A user has adharID, name, age, address(includes door#, Street, city, state and PIN code) and multiple phone numbers. All users will have login credentials. A user as an owner can register a property he wants to give for rent. Once a property is given to a tenant, we capture that information. That means, we capture details like what is property is rented to which tenant, rent per month, start_date, end_date, yearly hike in rent(in %), agency commission, and other info as necessary. A property may not have a tenant if it is not rented. We also maintain the history of renting for a property. Every property is entered in to the system with the details like propertyID, owner, available from which date, available till what date, rent pm, %ge of annual hike in rent, total area(not null), plinth area(not null), number of bed-rooms(if residential), number of floors, year

of construction (not null), locality, address, other facilities etc. A user when he uploads a property becomes owner. He can upload zero to many properties. A user when he takes a property for rent becomes tenant. He can be a tenant for zero to many properties.

Functionality Expected:

1. Adding user to the database by DBA with necessary privileges.
2. Allowing DBA and Manager to add/delete/update any property record.
3. Allowing owner to add/delete/update his property record only.
4. Allowing Admin and Manager to add property-rent details after property is rented by a tenant.
5. Generate a report on rent history of a property.
6. To check list available properties for rent with in a given city/locality/price range.
7. To check the status of a property based on property ID by all users.
8. A tenant can't insert/delete/modify any data in any table. He can just look for available properties for rent.

Note: students can assume other necessary constraints, and attributes if missing.

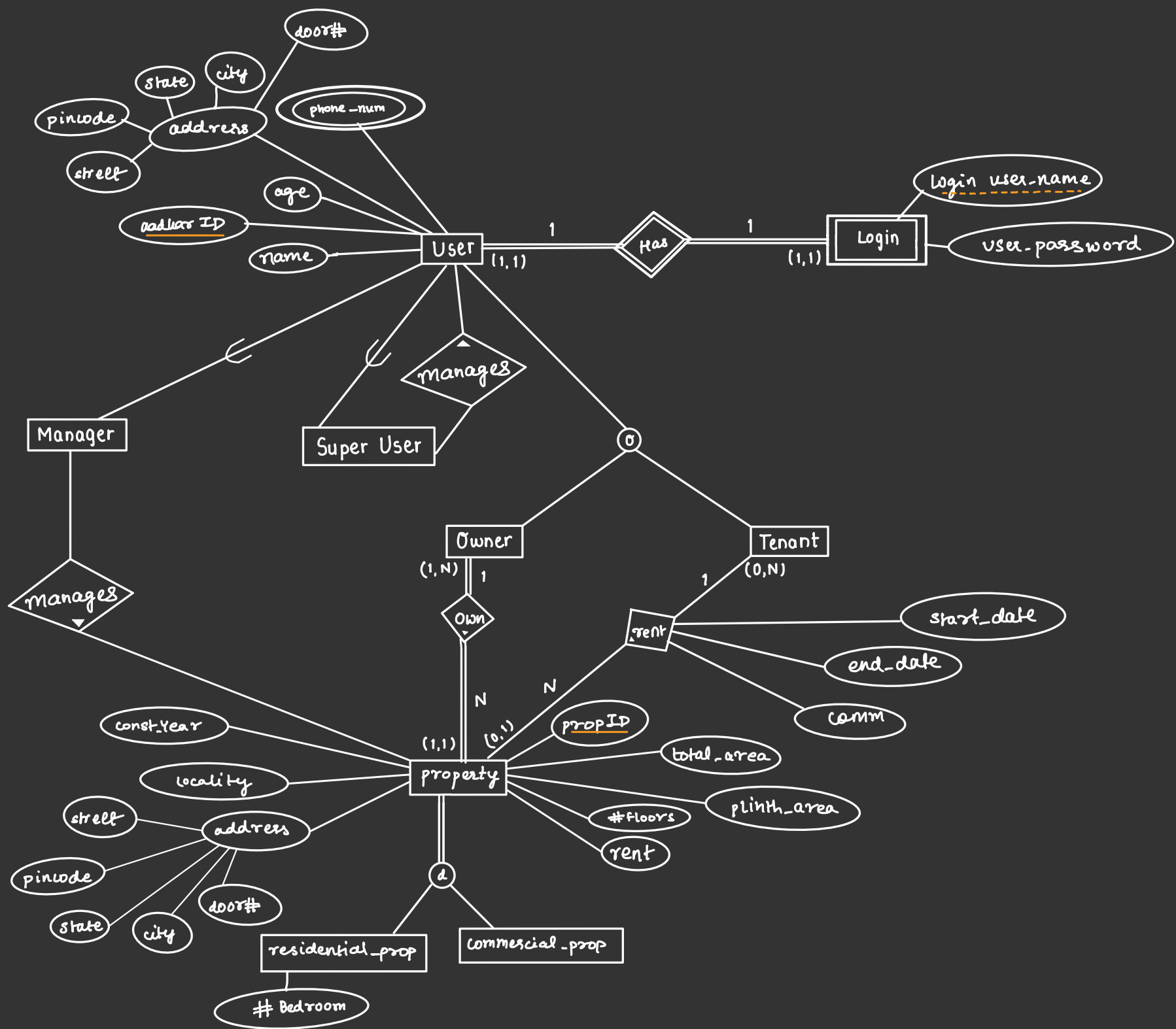
1. **Mid-semester evaluation:** Will be for 10 marks; timelines: between 20th and 26th March; Only ER/EER modeling and relational scheme design with constraints (shown on a sheet of paper or computer) will be evaluated. We will not look at the implementation. Viva will carry 4 marks. Clarity and cleanliness of your presentation on paper will carry some weightage please keep this in mind.
2. **End-semester Evaluation:** Will be for 10 marks; timelines: between 24th and 26th April; We look at implementation, data entry, report generation, enforcing the constraints,

SQL/PL-SQL code etc. Viva will carry 4 marks. Groups will be demonstrating all these on their Laptop.

3. **GUI is not mandatory.** The entire work (data, functionality like data entry, report generation etc.) can be demonstrated at command prompt. Hence GUI does not carry any weightage. Still you can use to make your application more elegant.
4. Any act of **plagiarism** will be taken to the Disciplinary Committee.

Note: *Any additions/changes/corrections to the specifications or requirements will be announced in the class and on CMS as required.*

Prof R Gururaj,
IC CSF212;
Dt: 25-Feb-2023.



Users

<u>AadhaarID</u>	Name (NOT NULL)	Age	Door#	Street	City	State	Pincode	O_Flag	T_Flag	M_Flag	SU_Flag
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User_Phone

<u>AID</u>	<u>Phone_No.</u>
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Login

<u>AID</u>	<u>User_Name</u>	User_Password (NOT NULL)
(UNIQUE)		

Property

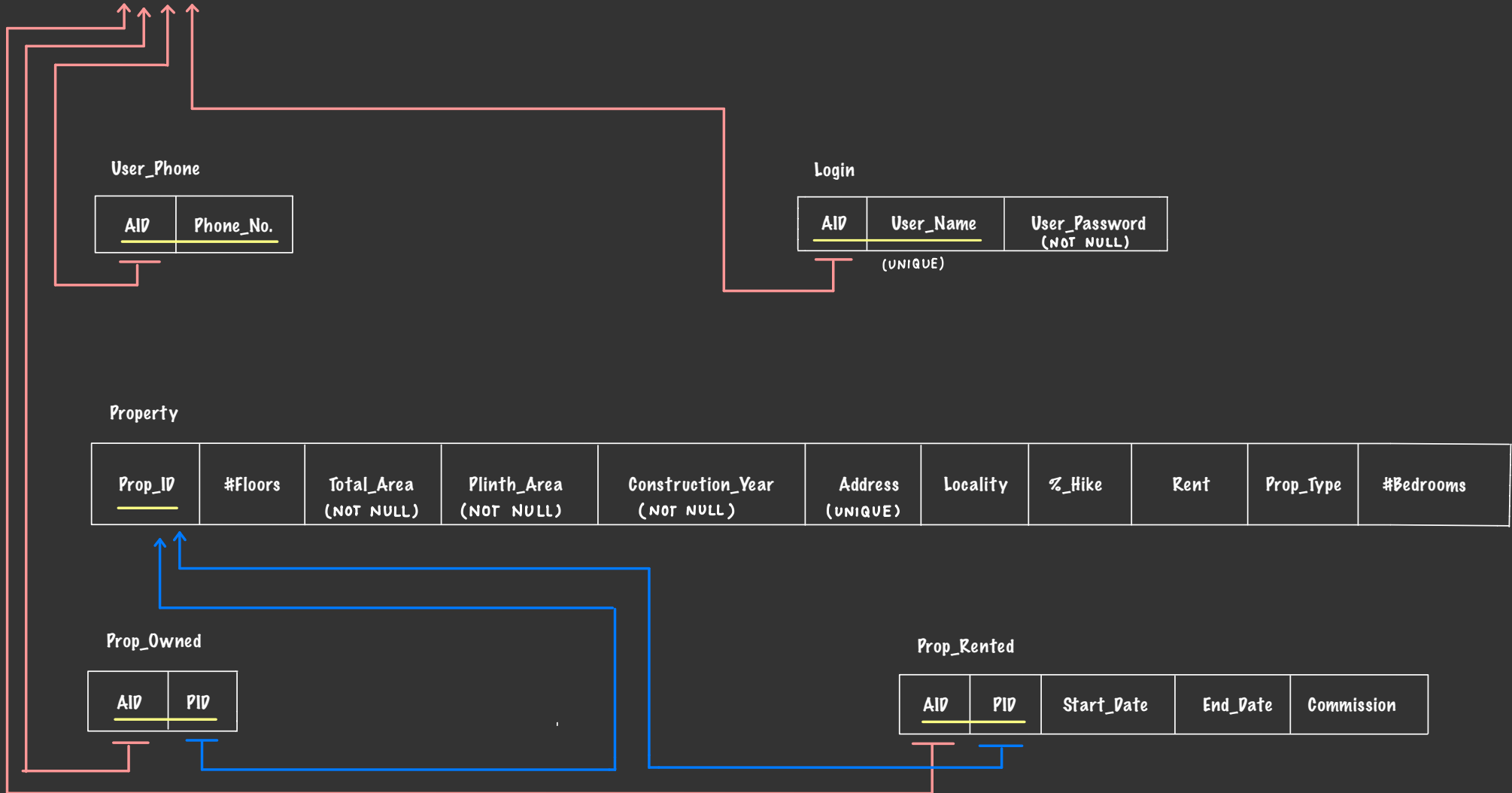
<u>Prop_ID</u>	#Floors	Total_Area (NOT NULL)	Plinth_Area (NOT NULL)	Construction_Year (NOT NULL)	Address (UNIQUE)	Locality	%_Hike	Rent	Prop_Type	#Bedrooms
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Prop_Owned

<u>AID</u>	<u>PID</u>
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Prop_Rented

<u>AID</u>	<u>PID</u>	Start_Date	End_Date	Commission
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darsh@darsh-IdeaPad-5-14ITL05: ~/Desktop

SQL> SELECT * FROM USERS;

AADHAAR_ID	NAME	AGE	DOOR_NO	STREET	CITY	STATE	PINCODE	O_FLAG	T_FLAG	M_FLAG	SU_FLAG
2.3469E+11	MANTHAN	24	190	Countryside Drive	Pheonix	AZ	72730	1	0	0	1
2.3479E+11	ACHYUT	26	204	Blue Hills Drive	Nashville	TX	37214	1	0	0	0
2.3489E+11	SARTHAK	29	200	Redwood Road	Nashville	TX	60401	1	0	0	0
2.3499E+11	MICHEAL	31	187	Elmwood Drive	Panama	FL	31407	1	0	0	0
2.3509E+11	RACHEAL	54	711	North 51st Avenue	Pheonix	AZ	85301	0	1	0	0
2.3519E+11	KHUSHI	24	154	Boca Lagoon Drive	Panama	FL	32408	0	1	0	0
2.3529E+11	PARTHVI	27	125	John Street	Medford	CA	95060	0	1	0	0
2.3539E+11	LUCIFER	38	105	Park Avenue	Panama	FL	32401	0	1	1	0
2.3549E+11	SHIRLEY	63	111	1st Street Northwest	Pheonix	AZ	20001	0	1	1	0
2.3559E+11	LAUREN	45	444	Hansen Avenue	Medford	CA	94536	0	1	1	0
2.3569E+11	MARTHA	57	176	Albacore Drive	Panama	FL	36117	1	1	0	0

AADHAAR_ID NAME AGE DOOR_NO STREET CITY STATE PINCODE O_FLAG T_FLAG M_FLAG SU_FLAG

2.3579E+11	JEREMY	43	152	55th Avenue	Medford	CA	94621	1	1	0	0
2.3589E+11	GABRIEL	49	788	Hillcrest Road	Medford	CA	36109	1	0	1	0
2.3599E+11	SOPHIA	42	424	Edgewood Street	Medford	CA	94538	1	1	1	0

14 rows selected.

SQL> SELECT * FROM USER_PHONE;

AID	PHONE_NO
2.3469E+11	9302759832
2.3479E+11	9342739830
2.3489E+11	9382719828
2.3499E+11	9422699826
2.3509E+11	9462679824
2.3519E+11	9502659822
2.3529E+11	9542639820
2.3539E+11	9582619818
2.3549E+11	9622599816
2.3559E+11	9662579814
2.3569E+11	9702559812

AID PHONE_NO

2.3579E+11	9742539810
2.3589E+11	9782519808
2.3599E+11	9822499806

14 rows selected.

SQL> SELECT * FROM LOGIN;

AID	USER_NAME	PASSWO
2.3469E+11	MANTHAN	MAN123
2.3479E+11	ACHYUT	ACH123
2.3489E+11	SARTHAK	SAR123
2.3499E+11	MICHEAL	MIC456
2.3509E+11	RACHEAL	RAC456
2.3519E+11	KHUSHI	KHU456
2.3529E+11	PARTHVI	PAR789
2.3539E+11	LUCIFER	LUC789
2.3549E+11	SHIRLEY	SHI789
2.3559E+11	LAUREN	LAU012
2.3569E+11	MARTHA	MAR012

AID USER_NAME PASSWO

2.3579E+11	JEREMY	JER012
2.3589E+11	GABRIEL	GAB345
2.3599E+11	SOPHIA	SOP345

14 rows selected.

SQL> SELECT * FROM PROPERTY;

PROPERTY_ID	TOTAL_FLOORS	TOTAL_AREA	PLINTH_AREA	CONST_YEAR	DOOR_NO	STREET	CITY	STATE	PINCODE	HIKE	RENT	PRO	TOTAL_BED
103895	1	1035	932	1980	190	Countryside Drive	Pheonix	AZ	72730	8	450	RES	2
104892	2	2070	1863	1987	204	Blue Hills Drive	Nashville	TX	37214	6	1080	RES	3
105889	1	1035	932	1999	200	Redwood Road	Nashville	TX	60401	8	450	RES	1
106886	1	1035	932	2001	187	Elmwood Drive	Panama	FL	31407	10	870	RES	1
107883	1	1035	932	1979	711	North 51st Avenue	Pheonix	AZ	85301	13	450	RES	2
108880	1	1035	932	2008	154	Boca Lagoon Drive	Panama	FL	32408	10	450	RES	2
109877	1	1035	932	2004	125	John Street	Medford	CA	95060	12	450	RES	1
110874	1	1035	932	2003	105	Park Avenue	Panama	FL	32401	7	870	RES	2
111871	2	2070	1863	2006	111	1st Street Northwest	Pheonix	AZ	20001	10	1080	RES	5
112868	1	1035	932	1990	444	Hansen Avenue	Medford	CA	94536	5	870	RES	3
113865	1	1035	932	1993	176	Albacore Drive	Panama	FL	36117	8	450	RES	4

PROPERTY_ID TOTAL_FLOORS TOTAL_AREA PLINTH_AREA CONST_YEAR DOOR_NO STREET CITY STATE PINCODE HIKE RENT PRO TOTAL_BED

114862	3	3105	2795	2010	152	55th Avenue	Medford	CA	94621	9	2700	RES	7
115859	2	2070	1863	2009	788	Hillcrest Road	Medford	CA	36109	10	1500	RES	4
116856	1	1035	932	2001	424	Edgewood Street	Medford	CA	94538	8	870	RES	3
117853	2	2070	1863	1992	364	Boultier Street	Nashville	TX	31419	5	1080	RES	3
118850	2	2070	1863	2006	215	West 66th Place	Nashville	TX	32404	6	1500	COM	0
119847	3	3105	2795	2019	481	Lilly Street	Pheonix	AZ	21144	8	2400	RES	8
120844	2	2070	1863	2009	691	Stenson Way	Panama	FL	72703	12	1500	RES	4
121841	2	2070	1863	1999	219	East 18th Avenue	Pheonix	AZ	31410	14	1080	RES	5
122838	5	5175	4658	2015	130	Old Route 103	Nashville	TX	50143	9	7000	COM	0

20 rows selected.

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darsh@darsh-IdeaPad-5-14ITL05: ~/Desktop
122838      5      5175      4658      2015      130 Old Route 103      Nashville      TX      50143      9      7000 C
OM      0

20 rows selected.

SQL> SELECT * FROM PROP_OWNED;

      AID      PID
-----
2.3469E+11    103895
2.3479E+11    104892
2.3479E+11    113865
2.3479E+11    114862
2.3489E+11    105889
2.3489E+11    116856
2.3489E+11    117853
2.3499E+11    106886
2.3499E+11    118850
2.3499E+11    119847
2.3569E+11    107883

      AID      PID
-----
2.3569E+11    108880
2.3579E+11    109877
2.3579E+11    110874
2.3579E+11    111871
2.3589E+11    115859
2.3589E+11    120844
2.3589E+11    121841
2.3599E+11    112868
2.3599E+11    122838

20 rows selected.

SQL> SELECT * FROM PROP_RENTED;
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darsh@darsh-IdeaPad-5-14ITL05: ~/Desktop

SQL> SELECT * FROM PROP_RENTED;

      AID      PID START_DA END_DATE      COMM
-----
2.3569E+11    122838 12-01-23 23-04-23      2
2.3539E+11    122838 06-07-22 12-01-23      2
2.3579E+11    121841 12-01-23 23-04-23      1
2.3549E+11    121841 06-07-22 12-01-23      1
2.3599E+11    120844 12-01-23 23-04-23      7
2.3559E+11    120844 06-07-22 12-01-23      7
2.3509E+11    119847 12-01-23 23-04-23      6
2.3519E+11    118850 12-01-23 23-04-23      8
2.3529E+11    117853 12-01-23 23-04-23      9
2.3599E+11    116856 23-04-23 02-10-23      4
2.3539E+11    116856 12-01-23 23-04-23      4

      AID      PID START_DA END_DATE      COMM
-----
2.3579E+11    114862 23-04-23 02-10-23      4
2.3549E+11    114862 12-01-23 23-04-23      4
2.3569E+11    113865 23-04-23 02-10-23      7
2.3559E+11    113865 12-01-23 23-04-23      7
2.3559E+11    112868 23-04-23 02-10-23      6
2.3569E+11    112868 06-07-22 12-01-23      5
2.3549E+11    111871 23-04-23 02-10-23      3
2.3579E+11    111871 06-07-22 12-01-23     10
2.3539E+11    110874 23-04-23 02-10-23      1
2.3599E+11    110874 06-07-22 12-01-23      1
2.3529E+11    109877 23-04-23 02-10-23      8

      AID      PID START_DA END_DATE      COMM
-----
2.3509E+11    109877 06-07-22 12-01-23      8
2.3519E+11    108880 23-04-23 02-10-23      6
2.3519E+11    108880 06-07-22 12-01-23      2
2.3509E+11    107883 23-04-23 02-10-23      2
2.3529E+11    107883 06-07-22 12-01-23      4
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Roles Permission

SU \Rightarrow Users, User_Phone, Login

M \Rightarrow Property, Prop-Owned, Prop-Rented (Full)

Users, User_Phone, Login (S,U)

O \Rightarrow Property, Prop-Owned, Prop-Rented (Full)

Users, User_Phone, Login (S,U)
(Full)

T \Rightarrow Property, Prop-Owned, Prop-Rented
(S,I) (S,I) (S,I,U,D)

Users, User_Phone, Login
(S,U) (S,I,U) (S,U)

