Nanyang Technological University
College of Computing and Data Science (CCDS)

Fifth Laboratory Session: Final demonstration

Lab TCCA - GROUP 4
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Course Name:
SC2207: Introduction to Databases

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A.	SQL DDL Commands

1.	Users (NRIC, password, name, phoneNo, email)

```
CREATE TABLE Users(
     NRIC CHAR(9) NOT NULL,
     password_ CHAR(64) NOT NULL,
     name_ VARCHAR(30) NOT NULL,
     phoneNo VARCHAR(10) NOT NULL,
     email VARCHAR(100) NOT NULL,
     Primary Key(NRIC),
     UNIQUE(phoneNo),
);
```

2.	Owners (NRIC, gender, age)

```
CREATE TABLE Owners(
     NRIC CHAR(9) NOT NULL,
     gender VARCHAR(20) CHECK (gender IN ('Male', 'Female')) NOT NULL,
     age INT NOT NULL,
     Primary Key (NRIC),
     FOREIGN KEY (NRIC) REFERENCES Users (NRIC)
     ON DELETE CASCADE ON UPDATE CASCADE
);
```

3.	Agents (NRIC, licenseNo, licenseValidDate, agencyName)

```
CREATE TABLE Agents(
     NRIC CHAR(9) NOT NULL,
     licenseNo CHAR(20) NOT NULL,
     licenseValidDate DATETIME NOT NULL,
     agencyName VARCHAR(30) NOT NULL,
     Primary Key(NRIC),
     UNIQUE(licenseNo),
     FOREIGN KEY (NRIC) REFERENCES Users (NRIC)
     ON DELETE CASCADE ON UPDATE CASCADE
);
```

4.	Customers (NRIC, intention)

```
CREATE TABLE Customers(
    NRIC CHAR(9) NOT NULL,
    intention VARCHAR(40) CHECK (intention IN ('To Purchase', 'To rent', 'Both'))
    NOT NULL,
    Primary Key (NRIC),
    FOREIGN KEY (NRIC) REFERENCES Users (NRIC)
    ON DELETE CASCADE ON UPDATE CASCADE
);
```

5.   Agencies (name, estYear, managerNRIC)

```
CREATE TABLE Agencies(
    name_ VARCHAR(30) NOT NULL,
    estYear INT NOT NULL,
    managerNRIC CHAR(9) NOT NULL,
    Primary Key (name_),
    UNIQUE (managerNRIC),
    FOREIGN KEY (managerNRIC) REFERENCES Agents (NRIC)
    ON DELETE CASCADE ON UPDATE CASCADE
);
```

6.   Properties (unitNo, street, postCode, furnishStatus, area, type, NRICNo)

```
CREATE TABLE Properties(
    unitNo VARCHAR(20) NOT NULL,
    street VARCHAR(100) NOT NULL,
    postCode INT NOT NULL,
    furnishStatus BIT NOT NULL,
    area FLOAT NOT NULL,
    type_ VARCHAR(40) CHECK (type_ IN ('Apartment', 'Condominium', 'landed')) NOT
    NULL,
    NRICNo CHAR(9) NOT NULL,
    PRIMARY KEY (unitNo, street, postcode),
    FOREIGN KEY (NRICNo) REFERENCES Owners (NRIC)
    ON DELETE CASCADE ON UPDATE CASCADE
);
```

7.   Listings (adsID, createDate, unitNo, street, postCode, agentNRIC) Decomposed

a. R1(adsID, createDate, unitNo, street, postCode)

```
CREATE TABLE R1 (
    adsID INT NOT NULL,
    createDate DATETIME NOT NULL,
    unitNo VARCHAR(20) NOT NULL,
    street VARCHAR(100) NOT NULL,
    postCode INT NOT NULL,
    PRIMARY KEY (adsID),
    FOREIGN KEY (unitNo, street, postCode) REFERENCES Properties (unitNo,
    street, postCode)
    ON DELETE CASCADE ON UPDATE CASCADE
);
```

b. R2(unitNo, street, postCode, agentNRIC)

```
CREATE TABLE R2 (
    unitNo VARCHAR(20) NOT NULL,
    Street VARCHAR(100) NOT NULL,
    postCode INT NOT NULL,
    agentNRIC CHAR(9) NOT NULL,
    PRIMARY KEY (unitNo, street, postCode),
    FOREIGN KEY (unitNo, street, postCode) REFERENCES Properties (unitNo, street,
    postCode)
    ON DELETE CASCADE ON UPDATE CASCADE,
    FOREIGN KEY (agentNRIC) REFERENCES Agents (NRIC)
    ON DELETE NO ACTION ON UPDATE NO ACTION
);

GO
    CREATE VIEW Listings AS
    SELECT R1.adsID, R1.createDate, R1.unitNo, R1.street, R1.postCode,
    R2.agentNRIC
    FROM R1 JOIN R2
    ON R1.unitNo = R2.unitNo AND R1.street = R2.street AND R1.postCode =
    R2.postCode;
GO
```

8.   SaleList (adsId, price, tenure, yearBuilt)

```
CREATE TABLE SaleList(
    adsId INT NOT NULL,
    price INT NOT NULL,
    tenure INT NOT NULL,
    yearBuilt INT NOT NULL,
    Primary Key(adsId),
    FOREIGN KEY (adsId) REFERENCES R1 (adsId)
    ON DELETE CASCADE ON UPDATE CASCADE
);
```

9.   RentList (adsId, aircon, pub)

```
CREATE TABLE RentList(
    adsId INT NOT NULL,
    aircon BIT,
    pub BIT,
    Primary Key(adsId),
    FOREIGN KEY (adsId) REFERENCES R1 (adsId)
    ON DELETE CASCADE ON UPDATE CASCADE
);
```

10.   ShortTerm (adsId, dailyRate)

```
CREATE TABLE ShortTerm(
    adsId INT NOT NULL,
    dailyRate INT NOT NULL,
    Primary Key(adsId),
    FOREIGN KEY (adsId) REFERENCES RentList(adsId)
    ON DELETE CASCADE ON UPDATE CASCADE
);
```

11.   LongTerm (adsId, canVisit, minStay, monthlyRate)

```
CREATE TABLE LongTerm(
    adsId INT NOT NULL,
    canVisit BIT NOT NULL,
    minStay INT NOT NULL,
    monthlyRate INT NOT NULL,
```

```
     Primary Key(adsId),
     FOREIGN KEY (adsId) REFERENCES RentList(adsId)
     ON DELETE CASCADE ON UPDATE CASCADE
);
```

12.   Appointment (dateTime, NRIC, adsID, status)

```
CREATE TABLE Appointment(
     dateTime_ DATETIME NOT NULL,
     NRIC CHAR(9) NOT NULL,
     adsID INT NOT NULL,
     status_ VARCHAR(20) CHECK (status_ IN ('Confirmed', 'Rejected', 'Completed',
     'Canceled')) NOT NULL,
     Primary Key(dateTime_, NRIC, adsID),
     FOREIGN KEY (NRIC) REFERENCES Users (NRIC),
     FOREIGN KEY (adsID) REFERENCES R1 (adsID)
);
```

13.   PastChanges(NRIC, adsID, appointmentDateTime, changeID, dateTime, actionBy, prvStatus)

```
CREATE TABLE PastChanges
     NRIC CHAR(9) NOT NULL,
     adsID INT NOT NULL,
     dateTime_ DATETIME NOT NULL,
     changeID INT NOT NULL,
     PCdateTime_ DATETIME NOT NULL,
     actionBy VARCHAR(20) CHECK (actionBy IN ('AGENT','CUSTOMER'))NOT NULL,
     prvStatus VARCHAR(20) CHECK (prvStatus IN ('Confirmed', 'Rejected',
     'Completed', 'Canceled'))NOT NULL,
     Primary Key(changeID),
     Unique(NRIC, adsID,dateTime_, PCdateTime_),
     FOREIGN KEY (dateTime_, NRIC, adsID) REFERENCES Appointment (dateTime_, NRIC,
     adsID)
     ON DELETE CASCADE ON UPDATE CASCADE,
);
```

14.   Engagement (NRIC, adsID, engID, status)

```sql
CREATE TABLE Engagement(
      NRIC CHAR(9) NOT NULL,
      adsID INT NOT NULL,
      engID INT NOT NULL,
      status VARCHAR(20) CHECK (status IN ('New', 'Viewed', 'In discussion',
      'Purchased')) NOT NULL,
      PRIMARY KEY(NRIC, adsID),
      UNIQUE(engID),
      FOREIGN KEY (NRIC) REFERENCES Customers (NRIC),
      FOREIGN KEY (adsID) REFERENCES R1 (adsID)
);
```

15.   ViewRecs (NRIC, adsID, engID, dateTime)

```sql
CREATE TABLE ViewRecs(
      NRIC CHAR(9) NOT NULL,
      adsID INT NOT NULL,
      engID INT NOT NULL,
      dateTime_ DATETIME NOT NULL,
      Primary Key(engID, dateTime_),
      Unique(NRIC, adsID, dateTime_),
      FOREIGN KEY (engID) REFERENCES Engagement (engID)
       ON DELETE CASCADE ON UPDATE CASCADE,
      FOREIGN KEY (NRIC) REFERENCES Customers (NRIC),
      FOREIGN KEY (adsID) REFERENCES R1(adsID)
);
```

16.   ChatRecs (NRIC, adsID, engID, chatID, dateTime, content, direction)
    a. R3(chatID, dateTime, content, direction)

```sql
CREATE TABLE R3(
      chatID INT NOT NULL,
      dateTime_ DATETIME NOT NULL,
      content VARCHAR(200) NOT NULL,
      direction BIT NOT NULL,
      Primary Key(chatID),
);
```

    b. R4(engID, NRIC, adsID)

```
CREATE TABLE R4(
      engID INT NOT NULL,
      NRIC  CHAR(9) NOT NULL,
      adsID INT NOT NULL,
      Primary Key(engID),
      FOREIGN KEY (engID) REFERENCES Engagement (engID)
      ON DELETE CASCADE ON UPDATE CASCADE,
      FOREIGN KEY(adsID) REFERENCES R1(adsID),
      FOREIGN KEY(NRIC) REFERENCES Customers(NRIC)
);
```

    c.   R5(engID, chatID)

```
CREATE TABLE R5(
      engID INT NOT NULL,
      chatID INT NOT NULL,
      Primary Key(engID, chatID),
      FOREIGN KEY (engID) REFERENCES Engagement (engID)
       ON DELETE CASCADE ON UPDATE CASCADE,
);

GO
      CREATE VIEW ChatRecs ASSELECT R3.*, R4.NRIC, R4.adsID, R4.engID
      FROM R3 JOIN R5 ON R3.chatID = R5.chatID
      JOIN R4 ON R5.engID = R4.engID;
GO
```

17.   Review (NRIC, adsID, engID, direction, rating, comment, dateTime)

```
CREATE TABLE Review(
      NRIC CHAR(9) NOT NULL,
      adsID INT NOT NULL,
      engID INT NOT NULL,
      direction BIT NOT NULL,
      rating INT,
      comment VARCHAR(200),
      dateTime DATETIME NOT NULL,
      Primary key(engID, direction),
```

```
        Unique(NRIC, adsID, direction),
        FOREIGN KEY (engID) REFERENCES Engagement (engID)
        ON DELETE CASCADE ON UPDATE CASCADE,
);
```

B.   SQL Queries

1.   List the properties for sale in Ang Mo Kio that have 20 years or less remaining on their tenure.

SQL Query:
```sql
SELECT DISTINCT P.unitNo, P.street, P.postCode, P.furnishStatus,P.area, P.type_,
P.NRICNo, S.tenure, S.price, S.yearBuilt
FROM Properties AS P
        JOIN Listings AS L ON P.unitNo = L.unitNo AND P.street = L.street AND
P.postCode = L.postCode
        JOIN SaleList AS S ON S.adsId = L.adsId
WHERE
        P.street LIKE '%ANG MO KIO%' AND
        S.tenure<=20
```
Output:

unitNo	street	postCode	furnishStatus	area	type_	NRICNo	tenure	price	yearBuilt
1	A-100	Ang Mo Kio	517,901	0	632	Apartment	S7436901D	18	456,271	1,953
2	A-100	Ang Mo Kio	689,962	1	936	Condominium	S9876543B	15	214,874	1,991

2.   Generate a statistic showing number of listings categorized by property type and furnished status between year 1 Jan 2022 to 31 Dec 2023.

SQL Query:
```sql
SELECT P.type_, P.furnishStatus, COUNT(*) AS cnt
FROM Properties AS P
        JOIN Listings AS L ON P.unitNo=L.unitNo AND P.street=L.street AND
P.postCode=L.postCode
WHERE
        L.createDate BETWEEN '2022-01-01' AND '2023-12-31'
GROUP BY P.type_, P.furnishStatus
```
Output:

type_	furnishStatus	cnt
1 Apartment	0	10
2 Condominium	0	12
3 Landed	0	6
4 Apartment	1	7
5 Condominium	1	9
6 Landed	1	9

3.   Show the agency's name, manager's name, year, and the total sales amount for each agency by year. The total sales amount should reflect the cumulative property sales prices completed by respective agents. Arrange the list chronologically from the earliest year to the most recent and sort by sales amount in descending order within each year.

SQL Query:
```
SELECT A.name_ AS agencyName, U.name_ AS managerName, T.year, T.saleAmount
FROM Agencies AS A
    JOIN Users AS U ON A.managerNRIC=U.NRIC
    JOIN (
    SELECT SUM(S.price) AS saleAmount, AG.agencyName, YEAR(L.createDate) AS
year
    FROM Agents AS AG
        JOIN Listings AS L ON AG.NRIC = L.agentNRIC
        JOIN SaleList AS S ON L.adsId = S.adsID
    WHERE EXISTS ( -- find purchased
        SELECT * FROM Engagement E
        WHERE L.adsID = E.adsID AND E.status = 'Purchased'
        )
    GROUP BY AG.agencyName, YEAR(L.createDate)
    ) AS T ON A.name_ = T.agencyName-- table of total purchase
ORDER BY T.year, T.saleAmount DESC
```
Output:

agencyName	managerName	year	saleAmount
1 Agency X	William Davis	2,021	892,295
2 Agency Z	David Kim	2,022	1,730,932
3 Agency X	William Davis	2,022	1,425,211
4 Agency Y	Michael Lee	2,022	601,487
5 Agency Y	Michael Lee	2,023	1,742,697
6 Agency X	William Davis	2,023	1,691,683
7 Agency Z	David Kim	2,023	1,077,846

4.   List all customer's name, email and their engagement information where they have initiated a chat with an agent, completed appointment, but have not completed the deal for rental listing. We would like to send them a follow-up message.

SQL Query:
```sql
SELECT DISTINCT U.name_, U.email, E.status
FROM Customers C
    JOIN Users U ON U.NRIC=C.NRIC
    JOIN Engagement E ON E.NRIC=C.NRIC
    JOIN RentList L ON L.adsID=E.adsId
    JOIN Appointment A ON A.adsID=L.adsId
WHERE
    EXISTS ( -- Have initiated a chat
        SELECT * FROM ChatRecs Ch
        WHERE Ch.engID = E.engID
    ) AND
    A.status_ = 'Completed' AND -- completed appointment
    E.status = 'In discussion' -- have not completed the deal
```

Output:

name_	email	status
1	Alice Wong	alice.wong@example.com	In discussion
2	Charles Hernandez	charles.hernandez.8@example.com	In discussion
3	David Lee	david.lee@example.com	In discussion
4	Emily Chen	emily.chen@example.com	In discussion
5	Emily Garcia	emily.garcia.7@example.com	In discussion
6	Frank Tan	frank.tan@example.com	In discussion
7	Michael Chen	michael.chen.3@example.com	In discussion

5.   Identify the top three most engaging agents with a valid license for each year from 2020 to 2023. An engaging agent is defined as one who has completed the highest number of appointments, with each appointment having at least two chat messages. Completed appointments without chat messages should not be counted. For each agent, display their name, license validity, and affiliation.

SQL Query:
```sql
WITH T AS(
    SELECT U.name_, AG.NRIC, AG.licenseValidDate, AG.agencyName, YR.year, COUNT(*)
AS appCount
    FROM (
            SELECT DISTINCT YEAR(AP.dateTime_) AS year FROM Appointment AS AP
            WHERE YEAR(AP.dateTime_) BETWEEN 2020 AND 2023
        ) AS YR -- list of years
        JOIN Agents AS AG ON YR.year <= YEAR(AG.licenseValidDate)
```

```sql
            JOIN Users AS U ON U.NRIC = AG.NRIC
            JOIN Listings AS L ON L.agentNRIC = AG.NRIC
            JOIN Appointment AS AP ON AP.adsID = L.adsID
            JOIN Engagement AS E ON E.adsID = L.adsID AND E.NRIC = AP.NRIC
        WHERE
            YEAR(AP.dateTime_) = YR.year AND -- in each year
            AP.status_ = 'Completed' AND -- completed appointment
            (SELECT COUNT(*) FROM ChatRecs AS CR WHERE CR.engID=E.engID) >= 2 -- at
least two chat
        GROUP BY U.name_, AG.NRIC, AG.licenseValidDate, AG.agencyName, YR.year
) -- for each agent in each year, get the number of completed engaged appointment
SELECT *
FROM T
WHERE (
      SELECT COUNT(*) FROM T AS TT
      WHERE T.NRIC<>TT.NRIC AND T.year = TT.year AND   T.appCount < TT.appCount
      ) < 3 -- compare agaimst peer, appCount must be in top 3
ORDER BY T.year, T.appCount DESC
```

Output:

	name_	NRIC	licenseValidDate	agencyName	year	appCount
1	Emily Gregory	S10111213	2022-07-16 00:00:00.000	Agency X	2,020	2
2	Michael Lee	S3456789C	2026-04-30 00:00:00.000	Agency Y	2,020	1
3	Ashley Brown	S5678901E	2027-08-09 00:00:00.000	Agency Z	2,020	1
4	William Davis	S2345678F	2025-06-08 00:00:00.000	Agency X	2,021	2
5	Michael Lee	S3456789C	2026-04-30 00:00:00.000	Agency Y	2,021	1
6	Ashley Brown	S5678901E	2027-08-09 00:00:00.000	Agency Z	2,021	1
7	David Kim	S9012345D	2025-03-28 00:00:00.000	Agency Z	2,021	1
8	William Davis	S2345678F	2025-06-08 00:00:00.000	Agency X	2,022	1
9	David Wong	S2345678Z	2028-06-25 00:00:00.000	Agency Y	2,022	1
10	Ashley Brown	S5678901E	2027-08-09 00:00:00.000	Agency Z	2,022	1
11	Ashley Brown	S5678901E	2027-08-09 00:00:00.000	Agency Z	2,023	2
12	David Kim	S9012345D	2025-03-28 00:00:00.000	Agency Z	2,023	1
13	William Davis	S2345678F	2025-06-08 00:00:00.000	Agency X	2,023	1

The query yields 4 records for year 2021 since the engaged appointment count is tied for the third and fourth rank.

6.   Create a trigger to calculate the total views for all properties and update its engagement status accordingly.

SQL Query:
```sql
CREATE TRIGGER myTrigger
ON ViewRecs
AFTER INSERT AS
BEGIN
      -- Update the view count in Properties for each new row in ViewRecs
      UPDATE P
```

```sql
        SET P.viewCnt = P.viewCnt + 1
        FROM Properties P
        JOIN Listings L ON P.unitNo = L.unitNo
                  AND P.street = L.street
                  AND P.postCode = L.postCode
        JOIN Engagement E ON L.adsID = E.adsID
        JOIN inserted i ON E.engID = i.engID;
        -- Update engagement status if it is 'New' for each inserted row
        UPDATE E
        SET E.status = 'Viewed'
        FROM Engagement E
        JOIN inserted i ON E.engID = i.engID
        WHERE E.status = 'New';
END;
```

Test and output 1:
```sql
INSERT INTO ViewRecs VALUES ('S0123456I', 1, 2, '2024-10-10')
```
The result shows that there are two updated values, implying that the trigger updated something else aside from the given INSERT command into ViewRecs. The value of viewCnt of the corresponding entry in Properties increases from 0 to 1. The status in Engagement is not updated since it is already 'In discussion'. The updated row is highlighted in the screenshot.

Test and output 2:
```sql
INSERT INTO ViewRecs VALUES ('S0123456I', 2, 5, '2024-10-10')
```
The result shows that there are three updated values, implying that the trigger updated something else aside from the given INSERT command into ViewRecs. The value of viewCnt of the corresponding entry in Properties increases from 0 to 1. The status in Engagement is updated from 'New' to 'Viewed'. The updated rows are highlighted in the screenshot.

7. List alll owner's names and contact number's that have more than:
- 2 properties for rent or
- 3 properties for sale

SQL Query:
```sql
WITH T AS (
```

```sql
        SELECT U.name_, U.phoneNo, L.adsID, S.tenure, R.aircon
        FROM Users as U
            JOIN Owners as O ON U.NRIC = O.NRIC
            JOIN Properties as P ON U.NRIC = P.NRICNo
            JOIN Listings as L ON L.unitNo = P.unitNo AND L.street = P.street
AND L.postCode = P.postCode
            FULL OUTER JOIN SaleList AS S ON S.adsId = L.adsID
            FULL OUTER JOIN RentList AS R ON R.adsId = L.adsID
            -- full outer join since S and R are mutually exclusive
)
SELECT T.name_, T.phoneNo, COUNT(T.tenure) AS saleCnt, COUNT(T.aircon) AS
rentCnt
FROM T
GROUP BY T.name_, T.phoneNo
HAVING COUNT(T.tenure)>3 OR COUNT(T.aircon)>2
```

Output:

O	name_	phoneNo	saleCnt	rentCnt
1	Sarah Lee	65432198	10	7
2	Jane Smith	87654321	5	6
3	Stanley Bron	890483	13	12
4	John Doe	91234567	6	10

C.   Full Table Printout

   1.   Users (NRIC, password, name, phoneNo, email)

NRIC	password_	name_	phoneNo	email
S0123456I	C171F8075B4CE...	Jessica Robinson	34567890	jessica.robinso...
S0123456N	D58008DFBC5B...	Grace Lim	54321987	grace.lim@exa...
S0134323N	D58008DFBC5B...	Grace Zhang	5897423307	grace.zhang@e...
S10111213	46D3DE4B1A82...	Emily Gregory	9876543210	emily.gregory.4...
S1234567A	78CBE661F59ED...	John Doe	91234567	john.doe.1@ex...
S2335345F	245B22DCE9380...	Alice Wong	987398379	alice.wong@ex...
S2345678F	78CBE661F59ED...	William Davis	89012345	william.davis.6...
S2345678Z	D850799E45B70...	David Wong	54321678	david.wong.2@...
S3456789C	6DA4413A14CB...	Michael Lee	12345678	michael.lee.3@...
S4510890H	626BF684C8D12...	David Lee	123434535	david.lee@exa...
S4567890H	78CBE661F59ED...	Charles Hernan...	10987654	charles.hernan...
S5678901A	D0F583FA13E84...	Michael Chen	78901234	michael.chen.3...
S5678901E	711025934A3C...	Ashley Brown	23456789	ashley.brown.5...
S678402J	490D3EF91CA0...	Emily Chen	79013432	emily.chen@ex...
S7436901D	0BA7452B305D...	Stanley Bron	890483	stanbron@exa...
S7890123B	36FAB509F0AF4...	Jane Smith	87654321	jane.smith.2@e...
S8901234G	592932B728165...	Emily Garcia	56789012	emily.garcia.7...
S8934323L	11A079EDF76E6...	Frank Tan	234523423	frank.tan@exa...
S9012345D	94C5503CBD3F...	David Kim	98765432	david.kim.4@e...
S9876543B	D4BC96E4B923...	Sarah Lee	65432198	sarah.lee.1@ex...
NULL	NULL	NULL	NULL	NULL

2. Owners (NRIC, gender, age)

NRIC	gender	age
S1234567A	Male	34
S7436901D	Male	42
S7890123B	Female	38
S9876543B	Female	29

3. Agents (NRIC, licenseNo, licenseValidDate, agencyName)

NRIC	licenseNo	licenseValidDate	agencyName
S10111213	A3456789X	2022-07-16 00:0...	Agency X
S2345678F	A4373054K	2025-06-08 00:0...	Agency X
S2345678Z	A7890123X	2028-06-25 00:0...	Agency Y
S3456789C	A1232343X	2026-04-30 00:0...	Agency Y
S5678901E	A7934456K	2027-08-09 00:0...	Agency Z
S9012345D	A5409289K	2025-03-28 00:0...	Agency Z
NULL	NULL	NULL	NULL

4. Customers (NRIC, intention)

NRIC	intention
S0123456I	Both
S0123456N	Both
S0134323N	Both
S2335345F	To Rent
S2345678F	To Rent
S4510890H	Both
S4567890H	To Rent
S5678901A	To rent
S678402J	To Purchase
S8901234G	To Purchase
S8934323L	To Rent
NULL	NULL

5. Agencies (name, estYear, managerNRIC)

name_	estYear	managerNRIC
Agency X	1982	S2345678F
Agency Y	2002	S3456789C
Agency Z	2000	S9012345D
NULL	NULL	NULL

6. Properties (unitNo, street, postCode, furnishStatus, area, type, NRICNo)

unitNo	street	postCode	furnishStatus	area	type_	NRICNo	viewCnt
A-100	Ang Mo Kio	517901	False	632	Apartment	S7436901D	1
A-100	Ang Mo Kio	689962	True	936	Condominium	S9876543B	1
A-14	Ang Mo Kio	320437	False	630	Apartment	S1234567A	0
A-14	Avocado Drive	706811	False	621	Condominium	S9876543B	0
A-16	Alpine Drive	643862	True	901	Condominium	S9876543B	0
A-16	Oranges Drive	450007	True	724	Condominium	S1234567A	0
A-17	Cherries Drive	390951	True	972	Landed	S7890123B	0
A-17	Cherries Drive	695441	False	715	Condominium	S7436901D	0
A-20	Annona Drive	692472	True	790	Condominium	S7436901D	0
A-23	Amla Drive	569382	True	605	Landed	S7890123B	0
A-24	Strawberries Dri...	581459	False	738	Condominium	S7436901D	0
A-29	Apples Drive	734167	True	684	Condominium	S7436901D	0
A-29	Avocado Drive	586076	False	858	Apartment	S9876543B	0
A-30	Melon Drive	730998	True	810	Apartment	S9876543B	0
A-31	Melon Drive	556745	True	819	Condominium	S1234567A	0
A-35	Alpine Drive	552620	False	611	Apartment	S1234567A	0
A-35	Alpine Drive	775814	False	658	Condominium	S7436901D	0
A-35	Avocado Drive	154659	True	661	Apartment	S7436901D	0
A-35	Mango Drive	105496	True	695	Landed	S1234567A	0
A-36	Apples Drive	223555	True	896	Landed	S7890123B	0
A-36	Cherries Drive	398052	True	972	Condominium	S7890123B	0
A-38	Oranges Drive	420753	False	721	Condominium	S7436901D	0
A-38	Pears Drive	293271	False	664	Landed	S1234567A	0
A-39	Ambarella Drive	334787	False	807	Condominium	S7890123B	1
A-41	Alpine Drive	168054	True	632	Condominium	S9876543B	0
A-46	Annatto Drive	482141	False	968	Apartment	S9876543B	0
A-46	Apricots Drive	400630	False	863	Apartment	S7436901D	0
A-47	Akebi Drive	585399	False	918	Apartment	S7436901D	0
A-51	Ambarella Drive	746475	False	666	Condominium	S1234567A	0
A-52	Melon Drive	134114	True	784	Apartment	S1234567A	0
A-55	Alpine Drive	463331	True	716	Landed	S7890123B	0
A-56	Akebi Drive	587128	True	950	Apartment	S7436901D	0
A-57	Annatto Drive	742719	False	804	Landed	S7436901D	0

unitNo	street	postCode	furnishStatus	area	type_	NRICNo	viewCnt
A-59	Amla Drive	380518	True	1000	Apartment	S7890123B	0
A-59	Apples Drive	404724	True	818	Apartment	S9876543B	0
A-59	Mango Drive	533857	False	945	Landed	S7436901D	0
A-59	Melon Drive	246107	False	793	Apartment	S7436901D	0
A-62	Oranges Drive	680990	True	916	Apartment	S1234567A	0
A-64	Melon Drive	623917	False	787	Apartment	S9876543B	0
A-67	Annatto Drive	734499	False	665	Apartment	S9876543B	0
A-67	Mango Drive	672850	False	873	Apartment	S7436901D	0
A-72	Annatto Drive	657259	True	796	Landed	S7890123B	0
A-79	Strawberries Dri...	304301	False	606	Apartment	S9876543B	0
A-80	Apples Drive	313412	False	840	Landed	S1234567A	0
A-82	Alpine Drive	258054	True	922	Condominium	S1234567A	0
A-83	Ambarella Drive	407570	False	684	Condominium	S9876543B	0
A-83	Apricots Drive	510744	False	788	Condominium	S7890123B	0
A-83	Avocado Drive	129123	True	605	Apartment	S9876543B	0
A-85	Amla Drive	636118	False	658	Condominium	S7436901D	0
A-87	Oranges Drive	702816	True	718	Landed	S1234567A	0
A-88	Melon Drive	702574	True	938	Landed	S7436901D	0
A-92	Avocado Drive	316741	False	844	Landed	S9876543B	0
A-93	Annona Drive	561600	True	726	Apartment	S7436901D	0
A-95	Melon Drive	133069	False	722	Apartment	S7436901D	0
A-95	Oranges Drive	132457	True	654	Apartment	S7890123B	0
A-96	Ambarella Drive	761782	False	636	Condominium	S1234567A	0
A-96	Annona Drive	134972	False	939	Apartment	S1234567A	0
A-96	Oranges Drive	211651	False	662	Condominium	S1234567A	0
A-96	Oranges Drive	350015	True	960	Landed	S7436901D	0
A-97	Alpine Drive	146243	False	810	Apartment	S7436901D	0
A-97	Melon Drive	679998	False	846	Condominium	S7436901D	0
A-99	Annatto Drive	253637	False	635	Landed	S7436901D	0
B-202	Pine Street	234567	False	1200	Condominium	S9876543B	0
C-303	Elm Road	345678	True	950	Apartment	S7890123B	0
D-404	Oak Drive	456789	False	1500	Landed	S7436901D	0
E-505	Birch Lane	567890	False	650	Condominium	S1234567A	0
G-707	Cedar Boulevard	789012	True	1400	Condominium	S9876543B	0
G-909	Birds Nest Street	568440	True	1200	Apartment	S7436901D	0
H-808	Cedar Boulevard	787493	False	1400	Apartment	S9876543B	0
* NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

7. Listings (adsID, createDate, unitNo, street, postCode, agentNRIC) Decomposed
   a. R1(adsID, createDate, unitNo, street, postCode)

adsID	createDate	unitNo	street	postCode
1	2022-12-09 00:0...	A-100	Ang Mo Kio	689962
2	2021-02-11 00:0...	A-100	Ang Mo Kio	517901
3	2021-10-01 00:0...	A-14	Ang Mo Kio	320437
4	2023-11-04 00:0...	A-14	Avocado Drive	706811
5	2022-02-03 00:0...	A-16	Alpine Drive	643862
6	2022-02-09 00:0...	A-16	Oranges Drive	450007
7	2022-07-09 00:0...	A-17	Cherries Drive	390951
8	2022-12-01 00:0...	A-17	Cherries Drive	695441
9	2021-11-08 00:0...	A-20	Annona Drive	692472
10	2023-04-10 00:0...	A-23	Amla Drive	569382
11	2021-02-11 00:0...	A-24	Strawberries Dri...	581459
12	2022-08-08 00:0...	A-29	Apples Drive	734167
13	2021-06-08 00:0...	A-29	Avocado Drive	586076
14	2021-05-04 00:0...	A-30	Melon Drive	730998
15	2023-07-05 00:0...	A-31	Melon Drive	556745
16	2023-01-08 00:0...	A-35	Alpine Drive	552620
17	2022-12-10 00:0...	A-35	Alpine Drive	775814
18	2022-04-11 00:0...	A-35	Avocado Drive	154659
19	2023-01-11 00:0...	A-35	Mango Drive	105496
20	2023-07-05 00:0...	A-36	Apples Drive	223555
21	2023-05-10 00:0...	A-36	Cherries Drive	398052
22	2021-12-01 00:0...	A-38	Oranges Drive	420753
23	2022-03-12 00:0...	A-38	Pears Drive	293271
24	2022-08-01 00:0...	A-39	Ambarella Drive	334787
25	2022-02-09 00:0...	A-41	Alpine Drive	168054
26	2021-10-04 00:0...	A-46	Annatto Drive	482141
27	2023-01-08 00:0...	A-46	Apricots Drive	400630
28	2021-03-10 00:0...	A-47	Akebi Drive	585399
29	2023-02-08 00:0...	A-51	Ambarella Drive	746475
30	2023-10-10 00:0...	A-52	Melon Drive	134114
31	2022-08-11 00:0...	A-55	Alpine Drive	463331
32	2022-12-04 00:0...	A-56	Akebi Drive	587128
33	2023-03-06 00:0...	A-57	Annatto Drive	742719

adsID	createDate	unitNo	street	postCode
34	2023-05-01 00:0...	A-59	Amla Drive	380518
35	2021-06-12 00:0...	A-59	Apples Drive	404724
36	2021-12-04 00:0...	A-59	Mango Drive	533857
37	2022-05-03 00:0...	A-59	Melon Drive	246107
38	2023-09-08 00:0...	A-62	Oranges Drive	680990
39	2022-04-09 00:0...	A-64	Melon Drive	623917
40	2022-07-06 00:0...	A-67	Annatto Drive	734499
41	2022-04-03 00:0...	A-67	Mango Drive	672850
42	2023-07-02 00:0...	A-72	Annatto Drive	657259
43	2023-01-01 00:0...	A-79	Strawberries Dri...	304301
44	2023-10-05 00:0...	A-80	Apples Drive	313412
45	2022-12-01 00:0...	A-82	Alpine Drive	258054
46	2022-05-11 00:0...	A-83	Ambarella Drive	407570
47	2022-10-01 00:0...	A-83	Apricots Drive	510744
48	2023-05-01 00:0...	A-83	Avocado Drive	129123
49	2022-02-02 00:0...	A-85	Amla Drive	636118
50	2022-08-05 00:0...	A-87	Oranges Drive	702816
51	2023-12-06 00:0...	A-88	Melon Drive	702574
52	2022-03-05 00:0...	A-92	Avocado Drive	316741
53	2021-10-05 00:0...	A-93	Annona Drive	561600
54	2022-01-07 00:0...	A-95	Melon Drive	133069
55	2021-12-04 00:0...	A-95	Oranges Drive	132457
56	2021-02-10 00:0...	A-96	Ambarella Drive	761782
57	2021-12-04 00:0...	A-96	Annona Drive	134972
58	2022-07-08 00:0...	A-96	Oranges Drive	211651
59	2022-08-09 00:0...	A-96	Oranges Drive	350015
60	2023-03-11 00:0...	A-97	Alpine Drive	146243
61	2022-08-10 00:0...	A-97	Melon Drive	679998
62	2023-04-11 00:0...	A-99	Annatto Drive	253637
63	2022-06-02 00:0...	B-202	Pine Street	234567
64	2021-12-01 00:0...	C-303	Elm Road	345678
65	2023-01-09 00:0...	D-404	Oak Drive	456789
66	2022-08-12 00:0...	E-505	Birch Lane	567890
67	2022-12-06 00:0...	G-707	Cedar Boulevard	789012
68	2022-12-01 00:0...	G-909	Birds Nest Street	568440
69	2022-07-10 00:0...	H-808	Cedar Boulevard	787493
NULL	NULL	NULL	NULL	NULL

b. R2(unitNo, street, postCode, agentNRIC)

unitNo	street	postCode	agentNRIC
A-100	Ang Mo Kio	517901	S5678901E
A-100	Ang Mo Kio	689962	S5678901E
A-14	Ang Mo Kio	320437	S9012345D
A-14	Avocado Drive	706811	S2345678F
A-16	Alpine Drive	643862	S9012345D
A-16	Oranges Drive	450007	S3456789C
A-17	Cherries Drive	390951	S9012345D
A-17	Cherries Drive	695441	S2345678F
A-20	Annona Drive	692472	S10111213
A-23	Amla Drive	569382	S2345678Z
A-24	Strawberries Dri...	581459	S3456789C
A-29	Apples Drive	734167	S2345678F
A-29	Avocado Drive	586076	S9012345D
A-30	Melon Drive	730998	S5678901E
A-31	Melon Drive	556745	S5678901E
A-35	Alpine Drive	552620	S5678901E
A-35	Alpine Drive	775814	S3456789C
A-35	Avocado Drive	154659	S5678901E
A-35	Mango Drive	105496	S10111213
A-36	Apples Drive	223555	S2345678F
A-36	Cherries Drive	398052	S3456789C
A-38	Oranges Drive	420753	S2345678Z
A-38	Pears Drive	293271	S2345678Z
A-39	Ambarella Drive	334787	S5678901E
A-41	Alpine Drive	168054	S5678901E
A-46	Annatto Drive	482141	S3456789C
A-46	Apricots Drive	400630	S3456789C
A-47	Akebi Drive	585399	S5678901E
A-51	Ambarella Drive	746475	S2345678F
A-52	Melon Drive	134114	S9012345D
A-55	Alpine Drive	463331	S10111213
A-56	Akebi Drive	587128	S9012345D
A-57	Annatto Drive	742719	S2345678F
A-59	Amla Drive	380518	S10111213
A-59	Apples Drive	404724	S2345678F
A-59	Mango Drive	533857	S10111213
A-59	Melon Drive	246107	S2345678F
A-62	Oranges Drive	680990	S2345678F
A-64	Melon Drive	623917	S9012345D
A-67	Annatto Drive	734499	S3456789C
A-67	Mango Drive	672850	S3456789C
A-72	Annatto Drive	657259	S2345678Z
A-79	Strawberries Dri...	304301	S3456789C
A-80	Apples Drive	313412	S3456789C
A-82	Alpine Drive	258054	S2345678Z
A-83	Ambarella Drive	407570	S10111213
A-83	Apricots Drive	510744	S10111213
A-83	Avocado Drive	129123	S9012345D
A-85	Amla Drive	636118	S9012345D
A-87	Oranges Drive	702816	S9012345D
A-88	Melon Drive	702574	S2345678F
A-92	Avocado Drive	316741	S2345678F
A-93	Annona Drive	561600	S2345678Z
A-95	Melon Drive	133069	S2345678F
A-95	Oranges Drive	132457	S2345678Z
A-96	Ambarella Drive	761782	S3456789C
A-96	Annona Drive	134972	S9012345D
A-96	Oranges Drive	211651	S10111213
A-96	Oranges Drive	350015	S10111213
A-97	Alpine Drive	146243	S3456789C
A-97	Melon Drive	679998	S9012345D
A-99	Annatto Drive	253637	S9012345D
B-202	Pine Street	234567	S9012345D
C-303	Elm Road	345678	S5678901E
D-404	Oak Drive	456789	S9012345D
E-505	Birch Lane	567890	S2345678Z
G-707	Cedar Boulevard	789012	S9012345D
G-909	Birds Nest Street	568440	S10111213
H-808	Cedar Boulevard	787493	S2345678F
NULL	NULL	NULL	NULL

8. SaleList (adsId, price, tenure, yearBuilt)

adsId	price	tenure	yearBuilt
1	214874	15	1991
2	456271	18	1953
3	297552	22	1963
4	916164	30	1990
5	405060	30	1958
6	412638	30	2008
9	178961	30	1966
10	191190	99	1972
11	103436	99	1999
14	785064	30	1978
16	448264	60	1957
18	563616	99	1959
20	599095	60	2000
27	649710	30	2022
29	108258	99	1964
31	513969	30	1963
32	733909	30	2022
33	984330	30	1956
34	571371	30	2014
35	713334	30	1951
37	963664	30	2009
39	890004	99	1961
40	188849	60	2022
43	483341	30	2003
48	810045	30	1975
50	435868	60	2001
53	106503	99	1979
54	593811	30	2009
55	994793	30	1985
58	532053	60	2017
60	418456	30	2000
62	319933	30	2002
65	757913	30	2007
69	317431	99	2006
NULL	NULL	NULL	NULL

9. RentList (adsId, aircon, pub)

adsId	aircon	pub
7	True	False
8	False	False
12	True	False
13	False	False
15	True	True
17	True	True
19	True	False
21	False	False
22	True	True
23	True	False
24	False	True
25	False	False
26	True	False
28	False	True
30	True	True
36	False	False
38	False	False
41	True	True
42	True	True
44	False	True
45	False	True
46	True	False
47	False	True
49	False	True
51	True	False
52	True	True
56	False	False
57	False	False
59	True	False
61	True	False
63	True	True
64	False	True
66	True	False

adsId	aircon	pub
61	True	False
63	True	True
64	False	True
66	True	False
67	False	False
68	True	False
NULL	NULL	NULL

10. ShortTerm (adsId, dailyRate)

adsId	dailyRate
15	130
17	145
22	150
24	100
28	130
30	125
41	120
42	125
44	110
45	105
47	135
49	140
52	120
63	110
64	115
NULL	NULL

11. LongTerm (adsId, canVisit, minStay, monthlyRate)

adsId	canVisit	minStay	monthlyRate
7	True	12	1400
8	False	12	900
12	False	7	1800
13	True	3	700
19	True	9	1800
21	False	3	2400
23	False	9	2400
25	True	8	2000
26	True	9	2500
36	False	10	1800
38	False	3	3000
46	False	12	600
51	True	6	2100
56	False	5	1500
57	False	6	900
59	True	12	1000
61	True	6	1400
66	True	8	1300
67	True	6	1100
68	False	8	1200
NULL	NULL	NULL	NULL

12. Appointment (dateTime, NRIC, adsID, status)

dateTime_	NRIC	adsID	status_
01-02 20:16:53.00	S678402J	14	Confirmed
2020-01-03 22:5...	S0123456N	55	Completed
2020-01-10 14:5...	S4510890H	38	Canceled
2020-02-04 10:2...	S4510890H	28	Completed
2020-02-05 15:3...	S8934323L	47	Rejected
2020-02-10 14:2...	S4510890H	66	Completed
2020-02-11 14:3...	S2345678F	10	Completed
2020-03-02 12:4...	S5678901A	7	Completed
2020-03-03 13:2...	S2335345F	57	Canceled
2020-03-07 18:2...	S0123456I	16	Confirmed
2020-03-11 15:2...	S5678901A	22	Completed
2020-03-12 13:1...	S678402J	37	Confirmed
2020-04-03 13:4...	S678402J	21	Completed
2020-04-05 12:1...	S0134323N	1	Confirmed
2020-04-08 12:2...	S4510890H	3	Confirmed
2020-04-11 13:4...	S4510890H	15	Completed
2020-05-05 12:3...	S2335345F	4	Confirmed
2020-05-08 10:1...	S8934323L	3	Canceled
2020-05-12 19:1...	S5678901A	47	Completed
2020-06-04 15:2...	S0123456N	10	Confirmed
2020-06-08 17:3...	S2335345F	17	Completed
2020-07-01 11:5...	S8934323L	63	Canceled
2020-07-03 13:5...	S0123456N	56	Confirmed
2020-07-05 18:1...	S0123456N	68	Completed
2020-07-11 20:5...	S4567890H	30	Rejected
2020-08-02 11:3...	S5678901A	45	Completed
2020-08-08 14:4...	S678402J	26	Confirmed
2020-09-01 13:3...	S2345678F	32	Canceled
2020-09-07 12:1...	S0134323N	50	Rejected
2020-09-11 13:1...	S4510890H	36	Completed
2020-09-12 17:3...	S2335345F	1	Canceled
2020-10-04 12:2...	S2335345F	59	Confirmed
2020-10-10 10:1...	S0123456N	22	Rejected

dateTime_	NRIC	adsID	status_
2020-11-01 15:1...	S8901234G	34	Canceled
2020-11-04 11:4...	S5678901A	9	Completed
2020-11-12 12:5...	S0123456N	49	Rejected
2020-12-06 11:5...	S0134323N	25	Canceled
2020-12-10 18:5...	S0134323N	62	Confirmed
2021-01-02 21:3...	S4567890H	8	Completed
2021-01-04 16:1...	S678402J	62	Confirmed
2021-02-01 10:4...	S5678901A	37	Rejected
2021-02-05 11:4...	S0134323N	42	Completed
2021-02-06 20:5...	S8901234G	40	Completed
2021-02-10 19:2...	S0134323N	29	Canceled
2021-02-11 15:4...	S5678901A	46	Confirmed
2021-03-02 13:5...	S5678901A	48	Rejected
2021-03-04 13:3...	S8934323L	25	Canceled
2021-03-08 21:3...	S2335345F	46	Confirmed
2021-03-11 19:4...	S8934323L	18	Rejected
2021-03-12 21:4...	S0123456N	9	Rejected
2021-04-03 20:3...	S5678901A	65	Canceled
2021-04-05 12:1...	S5678901A	32	Confirmed
2021-04-09 14:4...	S5678901A	31	Completed
2021-04-11 22:4...	S0134323N	56	Rejected
2021-05-07 14:3...	S2335345F	15	Completed
2021-05-08 15:2...	S0134323N	28	Canceled
2021-06-02 17:1...	S4510890H	32	Completed
2021-06-05 15:2...	S2345678F	11	Rejected
2021-06-08 18:5...	S2335345F	31	Canceled
2021-07-01 14:1...	S8934323L	17	Completed
2021-07-04 20:4...	S678402J	29	Confirmed
2021-07-05 22:5...	S0123456N	31	Confirmed
2021-07-12 17:2...	S0123456N	38	Completed
2021-08-03 15:3...	S678402J	27	Canceled
2021-08-09 15:3...	S0134323N	61	Completed
2021-09-04 19:5...	S4567890H	58	Confirmed

dateTime_	NRIC	adsID	status_
2021-09-07 14:1...	S0123456N	15	Canceled
2021-09-11 13:2...	S0134323N	11	Canceled
2021-10-02 19:1...	S678402J	2	Rejected
2021-10-06 10:1...	S4510890H	29	Completed
2021-10-10 20:1...	S0123456I	40	Rejected
2021-11-01 16:3...	S8901234G	44	Rejected
2021-11-05 20:3...	S0123456N	67	Rejected
2021-11-12 22:5...	S4510890H	57	Confirmed
2021-12-06 14:1...	S0123456N	44	Rejected
2021-12-11 17:2...	S2335345F	19	Confirmed
2022-01-03 19:2...	S8934323L	12	Completed
2022-01-07 18:2...	S8934323L	39	Rejected
2022-02-02 21:3...	S0134323N	35	Confirmed
2022-02-05 12:2...	S4510890H	56	Confirmed
2022-02-09 14:3...	S5678901A	41	Rejected
2022-02-10 21:4...	S4510890H	67	Rejected
2022-02-12 13:3...	S0123456I	22	Canceled
2022-03-02 16:1...	S0134323N	19	Canceled
2022-03-05 12:3...	S5678901A	61	Canceled
2022-03-10 17:4...	S4567890H	5	Canceled
2022-03-12 11:1...	S5678901A	6	Canceled
2022-04-01 18:1...	S4510890H	33	Rejected
2022-04-04 12:1...	S0134323N	36	Canceled
2022-04-05 17:5...	S2345678F	45	Completed
2022-04-09 16:2...	S678402J	52	Completed
2022-04-12 20:2...	S0123456I	7	Completed
2022-05-07 18:1...	S678402J	41	Rejected
2022-05-11 18:2...	S4510890H	18	Confirmed
2022-06-03 18:5...	S4567890H	54	Rejected
2022-06-06 11:5...	S0123456I	43	Canceled
2022-06-09 19:3...	S4510890H	41	Completed
2022-07-01 21:3...	S678402J	69	Canceled
2022-07-05 12:1...	S4510890H	40	Canceled

dateTime_	NRIC	adsID	status_
2022-07-07 15:5...	S8901234G	43	Canceled
2022-07-12 22:4...	S8901234G	17	Completed
2022-08-04 20:2...	S678402J	16	Confirmed
2022-08-09 19:5...	S0123456N	62	Confirmed
2022-09-05 16:1...	S4510890H	46	Canceled
2022-09-08 17:1...	S678402J	59	Rejected
2022-09-11 17:1...	S5678901A	35	Rejected
2022-10-03 10:5...	S8901234G	25	Rejected
2022-10-06 16:4...	S8934323L	4	Canceled
2022-10-10 21:1...	S4510890H	20	Canceled
2022-11-01 20:5...	S4567890H	42	Completed
2022-11-08 10:4...	S0123456I	2	Completed
2022-12-01 12:4...	S2335345F	33	Completed
2022-12-08 18:2...	S678402J	35	Rejected
2022-12-12 11:4...	S4510890H	11	Completed
2023-01-03 20:3...	S2345678F	21	Canceled
2023-01-08 18:2...	S4510890H	13	Confirmed
2023-02-03 18:5...	S4567890H	13	Canceled
2023-02-05 15:1...	S0123456I	24	Completed
2023-02-09 19:3...	S2345678F	49	Completed
2023-02-10 22:3...	S678402J	19	Completed
2023-03-01 16:4...	S678402J	24	Completed
2023-03-02 16:5...	S0123456N	64	Confirmed
2023-03-07 16:1...	S2345678F	66	Rejected
2023-03-10 20:3...	S0123456N	51	Canceled
2023-03-12 12:2...	S8901234G	59	Canceled
2023-04-01 21:1...	S2345678F	52	Confirmed
2023-04-04 17:1...	S4567890H	43	Rejected
2023-04-07 11:4...	S0123456I	36	Canceled
2023-04-11 12:2...	S8934323L	49	Canceled
2023-05-01 20:1...	S4567890H	6	Canceled
2023-05-07 22:1...	S0134323N	63	Rejected
2023-05-11 21:3...	S0123456I	1	Completed

dateTime_	NRIC	adsID	status_
2023-06-04 10:3...	S5678901A	8	Confirmed
2023-06-06 18:4...	S678402J	57	Completed
2023-06-10 14:1...	S5678901A	24	Canceled
2023-07-02 21:4...	S0134323N	30	Canceled
2023-07-05 14:5...	S0123456N	58	Canceled
2023-07-08 16:4...	S0123456I	20	Completed
2023-08-01 18:4...	S2335345F	3	Rejected
2023-08-04 20:3...	S4510890H	42	Confirmed
2023-09-01 10:4...	S0123456N	63	Completed
2023-09-06 13:2...	S8901234G	20	Completed
2023-09-09 19:4...	S0123456I	35	Canceled
2023-09-11 17:1...	S2335345F	21	Canceled
2023-10-03 22:1...	S0123456N	4	Rejected
2023-10-07 11:4...	S8901234G	19	Rejected
2023-10-11 17:1...	S0123456N	12	Rejected
2023-11-02 10:2...	S4510890H	11	Confirmed
2023-11-08 13:2...	S4510890H	27	Canceled
2023-12-04 19:4...	S4567890H	51	Canceled
2023-12-09 14:3...	S4510890H	65	Completed
2023-12-12 19:3...	S4510890H	23	Canceled
2024-03-10 21:5...	S5678901A	60	Canceled
2024-04-01 22:5...	S0134323N	8	Rejected
2024-04-07 11:5...	S8901234G	7	Confirmed
2024-05-04 20:2...	S4510890H	68	Completed
2024-05-12 13:2...	S678402J	47	Canceled
2024-06-06 20:4...	S0123456I	5	Completed
2024-07-02 22:3...	S8901234G	39	Completed
2024-07-10 13:2...	S2335345F	6	Rejected
2024-08-06 19:5...	S8901234G	55	Canceled
2024-09-06 21:3...	S0123456N	14	Completed
2024-09-12 12:3...	S8934323L	26	Canceled
2024-10-08 19:5...	S8901234G	64	Canceled
2024-10-11 18:3...	S8901234G	18	Canceled

2024-11-02 11:5...	S4567890H	16	Canceled
2024-11-11 20:4...	S8934323L	5	Canceled
2024-12-05 18:4...	S4567890H	30	Rejected
2024-12-10 12:2...	S2345678F	29	Rejected
2024-12-12 22:2...	S2335345F	28	Rejected
2024-12-12 22:5...	S5678901A	50	Canceled
NULL	*NULL*	*NULL*	*NULL*

13. PastChanges(NRIC, adsID, appointmentDateTime, changeID, dateTime, actionBy, prvStatus)

NRIC	adsID	dateTime_	changeID	PCdateTime_	actionBy	prvStatus
S4567890H	8	2021-01-02 21:3...	1	2024-07-08 16:3...	CUSTOMER	Canceled
S8934323L	12	2022-01-03 19:2...	2	2024-04-08 20:2...	AGENT	Completed
S2345678F	21	2023-01-03 20:3...	3	2024-11-08 11:1...	AGENT	Completed
S8934323L	39	2022-01-07 18:2...	4	2024-08-04 11:3...	AGENT	Canceled
S4510890H	13	2023-01-08 18:2...	5	2024-03-04 15:3...	CUSTOMER	Rejected
S4510890H	13	2023-01-08 18:2...	6	2024-06-02 13:4...	AGENT	Completed
S4510890H	38	2020-01-10 14:5...	7	2024-09-08 22:2...	CUSTOMER	Confirmed
S4510890H	38	2020-01-10 14:5...	8	2024-04-12 17:5...	CUSTOMER	Rejected
S4567890H	13	2023-02-03 18:5...	9	2024-10-11 14:5...	CUSTOMER	Completed
S4510890H	28	2020-02-04 10:2...	10	2024-03-03 12:5...	CUSTOMER	Confirmed
S0134323N	42	2021-02-05 11:4...	11	2024-11-10 14:2...	CUSTOMER	Canceled
S4510890H	56	2022-02-05 12:2...	12	2024-01-08 22:5...	AGENT	Confirmed
S4510890H	56	2022-02-05 12:2...	13	2024-10-04 14:5...	AGENT	Canceled
S8934323L	47	2020-02-05 15:3...	14	2024-07-07 13:5...	CUSTOMER	Rejected
S8934323L	47	2020-02-05 15:3...	15	2024-09-09 18:3...	CUSTOMER	Confirmed
S8901234G	40	2021-02-06 20:5...	16	2024-01-06 14:1...	AGENT	Completed
S5678901A	41	2022-02-09 14:3...	17	2024-02-05 17:1...	AGENT	Canceled
S4510890H	66	2020-02-10 14:2...	18	2024-06-01 19:1...	AGENT	Rejected
S4510890H	66	2020-02-10 14:2...	19	2024-06-09 20:2...	CUSTOMER	Completed
S678402J	19	2023-02-10 22:3...	20	2024-04-03 15:1...	AGENT	Confirmed
S2345678F	10	2020-02-11 14:3...	21	2024-01-05 19:4...	AGENT	Rejected
S5678901A	46	2021-02-11 15:4...	22	2024-12-11 19:2...	CUSTOMER	Completed
S0123456I	22	2022-02-12 13:3...	23	2024-01-05 20:4...	CUSTOMER	Completed
S0123456I	22	2022-02-12 13:3...	24	2024-07-02 22:3...	AGENT	Confirmed
S5678901A	7	2020-03-02 12:4...	25	2024-08-09 22:5...	AGENT	Rejected
S5678901A	7	2020-03-02 12:4...	26	2024-04-07 12:1...	AGENT	Rejected
S5678901A	48	2021-03-02 13:5...	27	2024-06-12 10:4...	CUSTOMER	Completed
S0134323N	19	2022-03-02 16:1...	28	2024-01-11 13:3...	CUSTOMER	Rejected
S0123456N	64	2023-03-02 16:5...	29	2024-08-01 11:2...	AGENT	Confirmed
S2335345F	57	2020-03-03 13:2...	30	2024-02-05 15:4...	CUSTOMER	Rejected
S2345678F	66	2023-03-07 16:1...	31	2024-07-11 21:4...	AGENT	Rejected
S2345678F	66	2023-03-07 16:1...	32	2024-12-08 19:4...	CUSTOMER	Confirmed
S2335345F	46	2021-03-08 21:3...	33	2024-10-12 12:5...	AGENT	Confirmed

NRIC	adsID	dateTime_	changeID	PCdateTime_	actionBy	prvStatus
S5678901A	22	2020-03-11 15:2...	34	2024-09-02 20:5...	AGENT	Completed
S5678901A	22	2020-03-11 15:2...	35	2024-05-08 10:5...	AGENT	Confirmed
S8934323L	18	2021-03-11 19:4...	36	2024-06-04 14:5...	CUSTOMER	Canceled
S8934323L	18	2021-03-11 19:4...	37	2024-01-08 21:5...	CUSTOMER	Completed
S678402J	37	2020-03-12 13:1...	38	2024-09-03 15:2...	CUSTOMER	Completed
S678402J	37	2020-03-12 13:1...	39	2024-03-03 13:5...	CUSTOMER	Rejected
S0123456N	9	2021-03-12 21:4...	40	2024-10-10 21:5...	CUSTOMER	Canceled
S0123456N	9	2021-03-12 21:4...	41	2024-01-01 15:5...	AGENT	Completed
S4510890H	33	2022-04-01 18:1...	42	2024-11-01 13:5...	AGENT	Canceled
S4510890H	33	2022-04-01 18:1...	43	2024-03-04 12:2...	CUSTOMER	Canceled
S2345678F	52	2023-04-01 21:1...	44	2024-04-08 16:1...	CUSTOMER	Confirmed
S0134323N	8	2024-04-01 22:5...	45	2024-06-07 15:5...	CUSTOMER	Canceled
S678402J	21	2020-04-03 13:4...	46	2024-12-05 14:4...	AGENT	Rejected
S678402J	21	2020-04-03 13:4...	47	2024-03-11 14:2...	CUSTOMER	Completed
S0134323N	36	2022-04-04 12:1...	48	2024-07-09 11:1...	CUSTOMER	Rejected
S4567890H	43	2023-04-04 17:1...	49	2024-12-07 16:1...	AGENT	Completed
S4567890H	43	2023-04-04 17:1...	50	2024-09-03 21:4...	AGENT	Completed
S5678901A	32	2021-04-05 12:1...	51	2024-04-03 14:2...	AGENT	Rejected
S2345678F	45	2022-04-05 17:5...	52	2024-12-10 15:1...	CUSTOMER	Rejected
S0123456I	36	2023-04-07 11:4...	53	2024-02-07 14:2...	AGENT	Canceled
S4510890H	3	2020-04-08 12:2...	54	2024-04-02 10:4...	AGENT	Completed
S4510890H	3	2020-04-08 12:2...	55	2024-09-10 20:4...	CUSTOMER	Confirmed
S5678901A	31	2021-04-09 14:4...	56	2024-05-12 11:4...	CUSTOMER	Completed
S5678901A	31	2021-04-09 14:4...	57	2024-09-12 18:3...	AGENT	Rejected
S678402J	52	2022-04-09 16:2...	58	2024-05-07 13:1...	AGENT	Confirmed
S8934323L	49	2023-04-11 12:2...	59	2024-09-09 20:5...	CUSTOMER	Confirmed
S8934323L	49	2023-04-11 12:2...	60	2024-03-06 21:5...	CUSTOMER	Canceled
S0134323N	56	2021-04-11 22:4...	61	2024-03-05 11:3...	AGENT	Canceled
S0123456I	7	2022-04-12 20:2...	62	2024-09-08 14:4...	AGENT	Confirmed
S4567890H	6	2023-05-01 20:1...	63	2024-12-06 22:1...	CUSTOMER	Confirmed
S4510890H	68	2024-05-04 20:2...	64	2024-05-09 19:2...	CUSTOMER	Completed
S4510890H	68	2024-05-04 20:2...	65	2024-06-03 12:5...	CUSTOMER	Completed
S2335345F	4	2020-05-05 12:3...	66	2024-09-08 14:5...	AGENT	Confirmed

NRIC	adsID	dateTime_	changeID	PCdateTime_	actionBy	prvStatus
S2335345F	15	2021-05-07 14:3...	67	2024-09-01 10:4...	AGENT	Completed
S0134323N	63	2023-05-07 22:1...	68	2024-06-02 10:1...	AGENT	Canceled
S8934323L	3	2020-05-08 10:1...	69	2024-09-10 22:2...	AGENT	Rejected
S0134323N	28	2021-05-08 15:2...	70	2024-11-09 10:5...	AGENT	Completed
S0134323N	28	2021-05-08 15:2...	71	2024-04-11 21:2...	CUSTOMER	Completed
S4510890H	18	2022-05-11 18:2...	72	2024-02-05 19:5...	AGENT	Canceled
S678402J	47	2024-05-12 13:2...	73	2024-12-06 19:4...	AGENT	Confirmed
S678402J	47	2024-05-12 13:2...	74	2024-12-07 10:1...	CUSTOMER	Rejected
S5678901A	47	2020-05-12 19:1...	75	2024-02-08 19:4...	CUSTOMER	Confirmed
S4510890H	32	2021-06-02 17:1...	76	2024-08-09 14:4...	AGENT	Rejected
S0123456N	10	2020-06-04 15:2...	77	2024-08-07 22:3...	CUSTOMER	Rejected
S2345678F	11	2021-06-05 15:2...	78	2024-01-06 21:4...	CUSTOMER	Canceled
S2345678F	11	2021-06-05 15:2...	79	2024-07-02 10:5...	CUSTOMER	Rejected
S0123456I	43	2022-06-06 11:5...	80	2024-04-10 15:3...	CUSTOMER	Canceled
S0123456I	43	2022-06-06 11:5...	81	2024-12-07 17:5...	AGENT	Rejected
S0123456I	5	2024-06-06 20:4...	82	2024-10-10 12:3...	AGENT	Confirmed
S0123456I	5	2024-06-06 20:4...	83	2024-02-03 20:1...	AGENT	Confirmed
S2335345F	17	2020-06-08 17:3...	84	2024-04-10 16:5...	CUSTOMER	Canceled
S2335345F	17	2020-06-08 17:3...	85	2024-07-11 18:2...	AGENT	Rejected
S2335345F	31	2021-06-08 18:5...	86	2024-10-02 18:5...	AGENT	Confirmed
S2335345F	31	2021-06-08 18:5...	87	2024-09-11 13:2...	CUSTOMER	Confirmed
S5678901A	24	2023-06-10 14:1...	88	2024-09-12 14:5...	AGENT	Canceled
S5678901A	24	2023-06-10 14:1...	89	2024-01-06 14:4...	AGENT	Completed
S8934323L	63	2020-07-01 11:5...	90	2024-11-07 12:4...	AGENT	Completed
S8934323L	17	2021-07-01 14:1...	91	2024-06-04 10:3...	AGENT	Completed
S8934323L	17	2021-07-01 14:1...	92	2024-04-10 20:5...	CUSTOMER	Completed
S0134323N	30	2023-07-02 21:4...	93	2024-02-09 16:1...	CUSTOMER	Completed
S8901234G	39	2024-07-02 22:3...	94	2024-06-01 18:3...	CUSTOMER	Completed
S4510890H	40	2022-07-05 12:1...	95	2024-01-01 12:3...	CUSTOMER	Canceled
S0123456N	58	2023-07-05 14:5...	96	2024-10-02 12:5...	AGENT	Confirmed
S0123456N	68	2020-07-05 18:1...	97	2024-12-01 18:2...	AGENT	Confirmed
S0123456N	31	2021-07-05 22:5...	98	2024-07-09 12:4...	AGENT	Confirmed
S8901234G	43	2022-07-07 15:5...	99	2024-05-02 12:1...	CUSTOMER	Confirmed

NRIC	adsID	dateTime_	changeID	PCdateTime_	actionBy	prvStatus
S8901234G	43	2022-07-07 15:5...	100	2024-01-07 20:1...	CUSTOMER	Canceled
S0123456I	20	2023-07-08 16:4...	101	2024-05-10 11:2...	AGENT	Rejected
S0123456I	20	2023-07-08 16:4...	102	2024-04-04 18:3...	CUSTOMER	Canceled
S2335345F	6	2024-07-10 13:2...	103	2024-03-10 21:3...	CUSTOMER	Completed
S2335345F	6	2024-07-10 13:2...	104	2024-12-02 22:3...	AGENT	Confirmed
S2335345F	3	2023-08-01 18:4...	105	2024-05-06 20:2...	AGENT	Confirmed
S2335345F	3	2023-08-01 18:4...	106	2024-11-05 18:4...	AGENT	Rejected
S8901234G	55	2024-08-06 19:5...	107	2024-01-05 17:4...	CUSTOMER	Completed
S8901234G	55	2024-08-06 19:5...	108	2024-11-01 12:5...	CUSTOMER	Completed
S678402J	26	2020-08-08 14:4...	109	2024-01-12 15:4...	CUSTOMER	Completed
S0134323N	61	2021-08-09 15:3...	110	2024-03-04 19:3...	AGENT	Confirmed
S0134323N	61	2021-08-09 15:3...	111	2024-02-05 12:1...	AGENT	Confirmed
S0123456N	62	2022-08-09 19:5...	112	2024-11-09 12:2...	CUSTOMER	Canceled
S2345678F	32	2020-09-01 13:3...	113	2024-05-03 13:1...	CUSTOMER	Canceled
S4567890H	58	2021-09-04 19:5...	114	2024-07-10 21:4...	AGENT	Completed
S8901234G	20	2023-09-06 13:2...	115	2024-04-06 17:4...	AGENT	Confirmed
S0123456N	14	2024-09-06 21:3...	116	2024-05-10 19:3...	AGENT	Canceled
S0134323N	50	2020-09-07 12:1...	117	2024-01-07 11:2...	CUSTOMER	Rejected
S0123456N	15	2021-09-07 14:1...	118	2024-11-06 19:1...	AGENT	Canceled
S0123456N	15	2021-09-07 14:1...	119	2024-11-10 19:3...	CUSTOMER	Canceled
S678402J	59	2022-09-08 17:1...	120	2024-01-12 14:4...	AGENT	Canceled
S0123456I	35	2023-09-09 19:4...	121	2024-08-10 11:1...	CUSTOMER	Rejected
S0123456I	35	2023-09-09 19:4...	122	2024-05-06 20:3...	CUSTOMER	Completed
S5678901A	35	2022-09-11 17:1...	123	2024-03-02 22:5...	AGENT	Completed
S8934323L	26	2024-09-12 12:3...	124	2024-05-03 12:1...	CUSTOMER	Rejected
S8934323L	26	2024-09-12 12:3...	125	2024-07-01 16:3...	CUSTOMER	Completed
S2335345F	1	2020-09-12 17:3...	126	2024-11-11 19:4...	CUSTOMER	Rejected
S678402J	2	2021-10-02 19:1...	127	2024-05-05 18:2...	AGENT	Rejected
S8901234G	25	2022-10-03 10:5...	128	2024-09-05 21:3...	AGENT	Rejected
S2335345F	59	2020-10-04 12:2...	129	2024-03-07 14:2...	AGENT	Confirmed
S4510890H	29	2021-10-06 10:1...	130	2024-01-03 22:1...	AGENT	Confirmed
S8934323L	4	2022-10-06 16:4...	131	2024-10-04 21:5...	AGENT	Completed
S8901234G	19	2023-10-07 11:4...	132	2024-03-08 15:3...	AGENT	Completed

NRIC	adsID		engID		status		
S8901234G	64	2024-10-08 19:5...	133	2024-10-04 22:4...	CUSTOMER	Completed
S0123456N	22	2020-10-10 10:1...	134	2024-01-04 20:1...	CUSTOMER	Canceled
S0123456I	40	2021-10-10 20:1...	135	2024-10-05 14:2...	CUSTOMER	Completed
S8901234G	18	2024-10-11 18:3...	136	2024-07-01 11:2...	AGENT	Confirmed
S8901234G	34	2020-11-01 15:1...	137	2024-08-07 12:1...	CUSTOMER	Completed
S8901234G	34	2020-11-01 15:1...	138	2024-12-08 21:3...	CUSTOMER	Canceled
S0123456I	2	2022-11-08 10:4...	139	2024-05-04 11:5...	AGENT	Completed
S0123456I	2	2022-11-08 10:4...	140	2024-04-02 10:5...	CUSTOMER	Canceled
S8934323L	5	2024-11-11 20:4...	141	2024-12-02 22:3...	CUSTOMER	Canceled
S8934323L	5	2024-11-11 20:4...	142	2024-03-09 16:5...	AGENT	Completed
S4510890H	57	2021-11-12 22:5...	143	2024-01-05 15:2...	CUSTOMER	Completed
S4510890H	57	2021-11-12 22:5...	144	2024-06-08 14:1...	AGENT	Completed
S4567890H	51	2023-12-04 19:4...	145	2024-06-03 22:4...	CUSTOMER	Completed
S4567890H	30	2024-12-05 18:4...	146	2024-12-01 12:5...	CUSTOMER	Rejected
S4567890H	30	2024-12-05 18:4...	147	2024-05-11 16:4...	AGENT	Confirmed
S678402J	35	2022-12-08 18:2...	148	2024-12-04 10:2...	AGENT	Confirmed
S678402J	35	2022-12-08 18:2...	149	2024-03-07 10:1...	AGENT	Canceled
S2345678F	29	2024-12-10 12:2...	150	2024-08-01 20:1...	AGENT	Confirmed
S2345678F	29	2024-12-10 12:2...	151	2024-05-06 15:4...	AGENT	Completed
S0134323N	62	2020-12-10 18:5...	152	2024-01-01 12:2...	CUSTOMER	Completed
S2335345F	19	2021-12-11 17:2...	153	2024-04-12 14:5...	AGENT	Confirmed
S4510890H	11	2022-12-12 11:4...	154	2024-02-01 13:3...	CUSTOMER	Confirmed
S4510890H	11	2022-12-12 11:4...	155	2024-12-07 14:4...	AGENT	Canceled
NULL	NULL	NULL	NULL	NULL	NULL	NULL

14. Engagement (NRIC, adsID, engID, status)

NRIC	adsID	enqID	status
S0123456I	1	2	In discussion
S0123456I	2	5	Viewed
S0123456I	5	14	In discussion
S0123456I	7	21	New
S0123456I	16	46	New
S0123456I	20	58	Purchased
S0123456I	22	64	In discussion
S0123456I	24	70	Viewed
S0123456I	35	103	Purchased
S0123456I	36	106	Viewed
S0123456I	40	120	New
S0123456I	43	129	New
S0123456I	53	157	Viewed
S0123456I	61	181	New
S0123456N	4	10	Viewed
S0123456N	9	25	Purchased
S0123456N	10	30	Purchased
S0123456N	12	34	Purchased
S0123456N	13	37	In discussion
S0123456N	14	40	Viewed
S0123456N	15	45	New
S0123456N	22	66	Viewed
S0123456N	27	80	Purchased
S0123456N	31	91	New
S0123456N	34	100	New
S0123456N	38	113	Viewed
S0123456N	39	115	Viewed
S0123456N	44	131	Viewed
S0123456N	49	145	Viewed
S0123456N	50	148	Viewed
S0123456N	51	153	Viewed
S0123456N	52	156	Viewed
S0123456N	55	163	New
S0123456N	56	166	In discussion
S0123456N	58	173	New
S0123456N	60	179	In discussion
S0123456N	62	184	New
S0123456N	63	187	New
S0123456N	64	190	In discussion
S0123456N	67	201	Viewed
S0123456N	68	202	New
S0134323N	1	3	New
S0134323N	8	23	New
S0134323N	11	32	In discussion
S0134323N	19	57	Purchased
S0134323N	26	76	Viewed
S0134323N	28	83	Viewed
S0134323N	29	87	In discussion
S0134323N	30	90	Purchased
S0134323N	35	104	New
S0134323N	36	108	Purchased
S0134323N	42	125	Viewed
S0134323N	50	149	Purchased
S0134323N	54	162	New
S0134323N	56	167	In discussion
S0134323N	60	180	New
S0134323N	61	182	Viewed
S0134323N	62	186	In discussion
S0134323N	63	188	Purchased
S0134323N	65	195	Viewed
S0134323N	67	200	In discussion
S0134323N	69	207	New
S2335345F	1	1	New
S2335345F	3	9	In discussion
S2335345F	4	12	Viewed
S2335345F	6	16	Purchased

NRIC	adsID	enqID	status
S2335345F	10	28	New
S2335345F	15	43	Viewed
S2335345F	17	50	Viewed
S2335345F	21	62	New
S2335345F	23	69	Viewed
S2335345F	28	84	Viewed
S2335345F	30	89	Viewed
S2335345F	31	92	Purchased
S2335345F	33	98	New
S2335345F	46	138	In discussion
S2335345F	57	170	In discussion
S2335345F	59	177	Purchased
S2335345F	66	198	Viewed
S2345678F	10	29	In discussion
S2345678F	11	33	New
S2345678F	21	63	New
S2345678F	25	73	In discussion
S2345678F	32	96	In discussion
S2345678F	38	114	New
S2345678F	45	135	New
S2345678F	48	144	In discussion
S2345678F	49	147	In discussion
S2345678F	52	154	New
S2345678F	55	165	Viewed
S2345678F	65	194	New
S2345678F	66	197	In discussion
S2345678F	69	205	Purchased
S4510890H	3	8	New
S4510890H	11	31	New
S4510890H	13	38	In discussion
S4510890H	15	44	Viewed
S4510890H	18	54	New
S4510890H	20	59	In discussion

NRIC	adsID	enqID	status
S4510890H	23	67	Viewed
S4510890H	27	79	Viewed
S4510890H	28	82	Purchased
S4510890H	29	86	Purchased
S4510890H	32	95	New
S4510890H	33	97	Purchased
S4510890H	36	107	Viewed
S4510890H	38	112	Viewed
S4510890H	40	119	New
S4510890H	41	122	In discussion
S4510890H	42	124	In discussion
S4510890H	46	137	Purchased
S4510890H	54	160	Viewed
S4510890H	56	168	New
S4510890H	57	171	In discussion
S4510890H	64	191	In discussion
S4510890H	66	196	Purchased
S4510890H	67	199	New
S4510890H	68	204	Viewed
S4567890H	5	13	Purchased
S4567890H	6	17	New
S4567890H	8	22	Viewed
S4567890H	9	27	In discussion
S4567890H	13	39	Purchased
S4567890H	16	48	Viewed
S4567890H	30	88	Viewed
S4567890H	34	101	In discussion
S4567890H	42	126	In discussion
S4567890H	43	127	Viewed
S4567890H	51	151	Viewed
S4567890H	54	161	Purchased
S4567890H	58	172	New
S5678901A	2	6	New

NRIC	adsID	engID	status
S5678901A	6	18	In discussion
S5678901A	7	19	Viewed
S5678901A	8	24	Viewed
S5678901A	9	26	In discussion
S5678901A	22	65	Viewed
S5678901A	23	68	Viewed
S5678901A	24	72	In discussion
S5678901A	31	93	In discussion
S5678901A	32	94	In discussion
S5678901A	35	105	Viewed
S5678901A	37	111	New
S5678901A	41	121	In discussion
S5678901A	45	133	Viewed
S5678901A	46	136	New
S5678901A	47	140	New
S5678901A	48	143	New
S5678901A	50	150	Viewed
S5678901A	53	158	Viewed
S5678901A	60	178	Purchased
S5678901A	61	183	In discussion
S5678901A	65	193	Purchased
S678402J	2	4	In discussion
S678402J	12	35	In discussion
S678402J	14	42	In discussion
S678402J	16	47	In discussion
S678402J	19	56	Viewed
S678402J	21	61	In discussion
S678402J	24	71	In discussion
S678402J	26	78	Purchased
S678402J	27	81	Viewed
S678402J	29	85	Viewed
S678402J	37	109	In discussion
S678402J	41	123	In discussion

NRIC	adsID	engID	status
S678402J	47	139	In discussion
S678402J	52	155	New
S678402J	53	159	In discussion
S678402J	57	169	Purchased
S678402J	59	175	In discussion
S678402J	62	185	Purchased
S678402J	69	206	New
S8901234G	7	20	Purchased
S8901234G	14	41	Viewed
S8901234G	17	51	In discussion
S8901234G	18	53	In discussion
S8901234G	19	55	New
S8901234G	20	60	Viewed
S8901234G	25	74	Purchased
S8901234G	33	99	New
S8901234G	34	102	Viewed
S8901234G	39	116	Purchased
S8901234G	40	118	Purchased
S8901234G	43	128	Purchased
S8901234G	44	130	Viewed
S8901234G	55	164	Viewed
S8901234G	58	174	In discussion
S8901234G	59	176	Viewed
S8901234G	64	192	Viewed
S8901234G	68	203	In discussion
S8934323L	3	7	Viewed
S8934323L	4	11	In discussion
S8934323L	5	15	New
S8934323L	12	36	Viewed
S8934323L	17	49	Purchased
S8934323L	18	52	In discussion
S8934323L	25	75	In discussion
S8934323L	26	77	New

S8934323L	37	110	Viewed
S8934323L	39	117	Viewed
NULL	NULL	NULL	NULL

15. ViewRecs (NRIC, adsID, engID, dateTime)

NRIC	adsID	enqID	dateTime_
S0123456I	1	2	2024-01-09 21:4...
S0123456I	1	2	2024-06-07 10:5...
S0123456I	1	2	2024-09-07 20:1...
S0123456I	1	2	2024-10-10 00:0...
S0123456I	2	5	2024-05-09 22:3...
S0123456I	2	5	2024-05-11 22:3...
S0123456I	2	5	2024-10-10 00:0...
S0123456I	5	14	2024-01-05 18:3...
S0123456I	5	14	2024-05-12 15:4...
S0123456I	5	14	2024-06-06 21:5...
S0123456I	7	21	2024-02-02 19:1...
S0123456I	16	46	2024-07-08 16:5...
S0123456I	16	46	2024-09-03 21:1...
S0123456I	16	46	2024-12-01 16:3...
S0123456I	20	58	2024-01-03 22:2...
S0123456I	20	58	2024-02-07 15:3...
S0123456I	20	58	2024-05-07 11:5...
S0123456I	20	58	2024-07-07 17:2...
S0123456I	22	64	2024-05-05 20:2...
S0123456I	22	64	2024-09-03 14:3...
S0123456I	22	64	2024-10-12 18:3...
S0123456I	24	70	2024-08-03 16:3...
S0123456I	24	70	2024-10-10 00:0...
S0123456I	35	103	2024-04-06 19:1...
S0123456I	35	103	2024-09-10 10:5...
S0123456I	35	103	2024-11-03 10:3...
S0123456I	35	103	2024-12-11 20:4...
S0123456I	36	106	2024-06-01 20:2...
S0123456I	40	120	2024-09-04 11:1...
S0123456I	40	120	2024-10-04 12:5...
S0123456I	40	120	2024-10-08 19:5...
S0123456I	43	129	2024-03-10 20:2...
S0123456I	43	129	2024-11-11 21:1...

NRIC	adsID	enqID	dateTime_
S0123456I	53	157	2024-09-04 12:1...
S0123456I	61	181	2024-10-11 16:4...
S0123456N	4	10	2024-11-11 18:3...
S0123456N	9	25	2024-12-02 13:4...
S0123456N	10	30	2024-06-10 18:1...
S0123456N	10	30	2024-09-11 19:3...
S0123456N	10	30	2024-11-07 13:3...
S0123456N	12	34	2024-09-06 18:5...
S0123456N	13	37	2024-05-01 11:4...
S0123456N	13	37	2024-08-06 18:2...
S0123456N	13	37	2024-10-06 12:5...
S0123456N	13	37	2024-11-11 16:4...
S0123456N	14	40	2024-05-12 12:1...
S0123456N	14	40	2024-07-01 13:1...
S0123456N	15	45	2024-09-04 17:5...
S0123456N	22	66	2024-04-03 15:3...
S0123456N	22	66	2024-10-04 17:3...
S0123456N	27	80	2024-07-01 18:1...
S0123456N	31	91	2024-01-11 10:2...
S0123456N	31	91	2024-09-03 13:2...
S0123456N	34	100	2024-04-06 11:1...
S0123456N	34	100	2024-08-10 10:4...
S0123456N	34	100	2024-10-04 18:5...
S0123456N	34	100	2024-11-11 15:3...
S0123456N	38	113	2024-01-11 18:1...
S0123456N	39	115	2024-02-04 15:2...
S0123456N	44	131	2024-01-02 11:5...
S0123456N	44	131	2024-02-09 12:3...
S0123456N	44	131	2024-03-02 13:5...
S0123456N	44	131	2024-06-01 16:4...
S0123456N	49	145	2024-06-06 15:3...
S0123456N	50	148	2024-04-04 20:5...
S0123456N	50	148	2024-09-04 20:2...

NRIC	adsID	enqID	dateTime_
S0123456N	51	153	2024-02-01 15:2...
S0123456N	51	153	2024-04-08 16:3...
S0123456N	51	153	2024-12-04 13:5...
S0123456N	52	156	2024-06-09 20:4...
S0123456N	52	156	2024-10-07 14:2...
S0123456N	52	156	2024-10-11 17:5...
S0123456N	55	163	2024-06-11 18:3...
S0123456N	55	163	2024-06-11 19:1...
S0123456N	56	166	2024-05-02 10:1...
S0123456N	56	166	2024-11-03 16:5...
S0123456N	58	173	2024-02-09 12:5...
S0123456N	58	173	2024-06-04 19:5...
S0123456N	58	173	2024-06-07 22:4...
S0123456N	60	179	2024-02-06 13:5...
S0123456N	60	179	2024-03-08 19:2...
S0123456N	60	179	2024-04-03 22:4...
S0123456N	60	179	2024-07-02 10:1...
S0123456N	62	184	2024-08-08 18:1...
S0123456N	62	184	2024-12-07 19:1...
S0123456N	63	187	2024-09-07 18:2...
S0123456N	63	187	2024-09-09 10:5...
S0123456N	63	187	2024-09-09 20:5...
S0123456N	63	187	2024-12-03 15:2...
S0123456N	64	190	2024-10-01 16:3...
S0123456N	67	201	2024-03-02 15:4...
S0123456N	67	201	2024-12-03 18:4...
S0123456N	68	202	2024-01-04 22:4...
S0123456N	68	202	2024-02-12 14:5...
S0123456N	68	202	2024-03-11 12:5...
S0123456N	68	202	2024-12-01 20:3...
S0134323N	1	3	2024-10-09 21:1...
S0134323N	8	23	2024-04-06 21:5...
S0134323N	8	23	2024-07-11 15:2...

NRIC	adsID	enqID	dateTime_
S0134323N	11	32	2024-01-10 15:1...
S0134323N	11	32	2024-03-12 15:5...
S0134323N	11	32	2024-06-02 22:5...
S0134323N	19	57	2024-03-08 11:5...
S0134323N	19	57	2024-05-07 20:3...
S0134323N	19	57	2024-07-09 10:3...
S0134323N	26	76	2024-03-09 19:2...
S0134323N	26	76	2024-07-04 19:1...
S0134323N	26	76	2024-08-07 11:2...
S0134323N	26	76	2024-09-04 12:2...
S0134323N	28	83	2024-11-09 14:4...
S0134323N	28	83	2024-11-09 19:3...
S0134323N	29	87	2024-05-09 22:5...
S0134323N	29	87	2024-11-11 15:1...
S0134323N	29	87	2024-12-09 17:1...
S0134323N	30	90	2024-01-10 11:2...
S0134323N	35	104	2024-01-08 10:5...
S0134323N	35	104	2024-09-12 20:2...
S0134323N	36	108	2024-02-11 12:4...
S0134323N	36	108	2024-09-12 21:4...
S0134323N	42	125	2024-01-01 18:1...
S0134323N	42	125	2024-04-07 21:2...
S0134323N	42	125	2024-07-10 18:3...
S0134323N	42	125	2024-07-12 22:1...
S0134323N	50	149	2024-01-08 17:2...
S0134323N	50	149	2024-08-04 17:1...
S0134323N	50	149	2024-09-07 10:4...
S0134323N	54	162	2024-06-05 21:5...
S0134323N	54	162	2024-09-08 10:3...
S0134323N	56	167	2024-06-08 15:4...
S0134323N	56	167	2024-09-03 19:4...
S0134323N	56	167	2024-10-11 21:5...
S0134323N	60	180	2024-07-05 21:2...

S0134323N	60	180	2024-07-09 21:1...
S0134323N	60	180	2024-11-12 13:1...
S0134323N	61	182	2024-11-02 13:2...
S0134323N	62	186	2024-05-09 14:2...
S0134323N	63	188	2024-02-04 21:3...
S0134323N	65	195	2024-05-12 18:1...
S0134323N	65	195	2024-10-07 21:5...
S0134323N	65	195	2024-11-03 15:3...
S0134323N	65	195	2024-11-12 18:3...
S0134323N	67	200	2024-04-01 16:1...
S0134323N	67	200	2024-04-02 19:4...
S0134323N	67	200	2024-11-06 15:1...
S0134323N	69	207	2024-03-06 13:3...
S0134323N	69	207	2024-11-10 16:1...
S2335345F	1	1	2024-03-07 20:3...
S2335345F	1	1	2024-09-06 17:5...
S2335345F	1	1	2024-10-02 14:3...
S2335345F	1	1	2024-11-11 14:5...
S2335345F	3	9	2024-02-05 21:5...
S2335345F	3	9	2024-10-03 21:1...
S2335345F	4	12	2024-02-05 11:2...
S2335345F	4	12	2024-08-02 17:5...
S2335345F	4	12	2024-11-05 20:4...
S2335345F	4	12	2024-11-12 17:4...
S2335345F	6	16	2024-05-05 11:1...
S2335345F	6	16	2024-11-07 13:3...
S2335345F	10	28	2024-03-08 13:1...
S2335345F	10	28	2024-11-04 13:4...
S2335345F	10	28	2024-12-05 13:3...
S2335345F	15	43	2024-03-12 11:5...
S2335345F	15	43	2024-12-09 11:1...
S2335345F	17	50	2024-10-02 22:1...

NRIC	adsID	engID	dateTime_
S2335345F	21	62	2024-05-04 18:2...
S2335345F	23	69	2024-11-01 20:1...
S2335345F	23	69	2024-11-12 20:5...
S2335345F	28	84	2024-05-11 13:4...
S2335345F	28	84	2024-10-09 20:3...
S2335345F	28	84	2024-11-02 11:5...
S2335345F	30	89	2024-05-01 14:5...
S2335345F	30	89	2024-11-09 19:4...
S2335345F	30	89	2024-11-11 11:5...
S2335345F	31	92	2024-02-01 19:5...
S2335345F	31	92	2024-05-02 10:5...
S2335345F	31	92	2024-06-07 14:2...
S2335345F	31	92	2024-10-12 11:3...
S2335345F	33	98	2024-05-03 14:5...
S2335345F	33	98	2024-12-01 14:4...
S2335345F	33	98	2024-12-12 18:3...
S2335345F	46	138	2024-04-07 20:4...
S2335345F	46	138	2024-11-08 12:4...
S2335345F	57	170	2024-02-02 21:5...
S2335345F	57	170	2024-02-06 11:1...
S2335345F	57	170	2024-03-04 10:1...
S2335345F	57	170	2024-09-03 20:4...
S2335345F	59	177	2024-03-12 14:3...
S2335345F	59	177	2024-07-08 15:3...
S2335345F	59	177	2024-08-02 18:1...
S2335345F	66	198	2024-09-09 14:2...
S2345678F	10	29	2024-10-05 11:2...
S2345678F	11	33	2024-03-09 17:3...
S2345678F	11	33	2024-11-05 17:3...
S2345678F	21	63	2024-04-10 22:4...
S2345678F	21	63	2024-07-02 12:5...
S2345678F	21	63	2024-09-06 22:1...
S2345678F	21	63	2024-10-05 13:1...

16. ChatRecs (NRIC, adsID, engID, chatID, dateTime, content, direction)
    a. R3(chatID, dateTime, content, direction)

chatID	dateTime_	content	direction
1	2024-11-03 21:2...	too normal	False
2	2024-02-02 19:1...	not special	True
3	2024-09-09 15:5...	quick	False
4	2024-03-12 22:4...	quick	False
5	2024-11-04 19:3...	quick	True
6	2024-05-05 21:1...	not special	False
7	2024-02-07 22:5...	quick	True
8	2024-01-11 13:4...	not special	False
9	2024-07-09 19:3...	too normal	True
10	2024-05-12 17:5...	expensive	True
11	2024-04-01 12:4...	expensive	False
12	2024-02-08 22:1...	quick	False
13	2024-11-12 21:2...	slow	False
14	2024-12-10 13:2...	too normal	False
15	2024-07-07 16:4...	expensive	False
16	2024-05-02 19:5...	bad	True
17	2024-01-04 17:1...	quick	True
18	2024-01-09 20:2...	not special	True
19	2024-02-03 12:4...	too normal	True
20	2024-03-12 15:1...	bad	False
21	2024-10-07 18:5...	too normal	True
22	2024-08-02 21:4...	not special	False
23	2024-02-04 19:4...	slow	False
24	2024-02-12 11:3...	bad	True
25	2024-02-04 19:5...	quick	False
26	2024-02-10 14:1...	not special	False
27	2024-04-05 10:2...	good	True
28	2024-03-08 10:4...	good	False
29	2024-05-07 19:5...	slow	True
30	2024-10-08 15:2...	too normal	True
31	2024-08-01 12:5...	not special	False
32	2024-09-02 10:5...	good	True
33	2024-05-06 13:2...	not special	True

chatID	dateTime_	content	direction
34	2024-07-07 22:4...	not special	False
35	2024-10-01 10:4...	expensive	True
36	2024-02-09 17:5...	not special	True
37	2024-02-04 11:5...	bad	False
38	2024-01-09 14:5...	quick	False
39	2024-07-06 19:4...	slow	True
40	2024-05-08 22:4...	good	False
41	2024-09-02 20:5...	good	True
42	2024-12-01 20:5...	not special	False
43	2024-11-09 17:2...	slow	True
44	2024-02-12 18:1...	bad	True
45	2024-12-06 19:2...	slow	False
46	2024-12-05 21:1...	not special	True
47	2024-01-01 17:5...	slow	False
48	2024-04-05 10:3...	too normal	True
49	2024-12-11 18:4...	bad	False
50	2024-02-12 19:1...	good	False
51	2024-02-08 16:1...	expensive	True
52	2024-06-10 17:4...	quick	False
53	2024-03-02 14:5...	not special	True
54	2024-09-11 12:3...	not special	True
55	2024-07-05 10:5...	too normal	True
56	2024-11-03 13:3...	not special	True
57	2024-03-10 14:1...	slow	True
58	2024-05-03 22:2...	slow	False
59	2024-08-06 17:3...	not special	True
60	2024-01-01 16:4...	not special	True
61	2024-01-08 21:2...	slow	True
62	2024-10-05 21:3...	quick	False
63	2024-05-04 11:5...	slow	False
64	2024-07-06 17:4...	not special	True
65	2024-06-01 11:2...	too normal	False
66	2024-11-09 10:2...	not special	True

	S2345678F	25	73	2024-10-11 10:3...
	S2345678F	32	96	2024-04-02 20:2...
	S2345678F	32	96	2024-09-08 19:1...
*	NULL	NULL	NULL	NULL

chatID	dateTime_	content	direction
67	2024-02-09 11:4...	quick	False
68	2024-12-07 12:3...	good	False
69	2024-06-10 21:4...	good	True
70	2024-02-03 13:1...	quick	True
71	2024-05-06 14:2...	not special	False
72	2024-06-06 18:1...	quick	False
73	2024-09-09 17:2...	too normal	False
74	2024-08-10 13:5...	expensive	False
75	2024-07-12 22:2...	too normal	True
76	2024-04-10 13:5...	expensive	True
77	2024-11-04 21:4...	quick	True
78	2024-01-10 18:4...	not special	True
79	2024-05-03 20:3...	expensive	False
80	2024-08-12 20:1...	good	False
81	2024-01-08 13:1...	not special	False
82	2024-05-04 17:4...	good	True
83	2024-05-03 16:1...	expensive	True
84	2024-12-07 18:4...	expensive	True
85	2024-04-08 20:2...	quick	False
86	2024-01-11 16:1...	slow	False
87	2024-01-06 12:2...	slow	False
88	2024-05-02 13:5...	expensive	False
89	2024-12-12 14:1...	too normal	False
90	2024-04-05 12:2...	bad	True
91	2024-10-08 20:5...	quick	False
92	2024-10-08 10:5...	good	True
93	2024-10-05 20:1...	slow	False
94	2024-01-11 20:5...	bad	True
95	2024-10-12 12:5...	not special	True
96	2024-02-12 17:1...	slow	False
97	2024-03-10 22:2...	expensive	False
98	2024-12-06 15:3...	slow	True
99	2024-10-10 10:4...	slow	False

chatID	dateTime_	content	direction
100	2024-04-08 16:4...	not special	True
101	2024-05-07 20:2...	too normal	True
102	2024-09-04 14:1...	too normal	True
103	2024-11-04 11:3...	too normal	True
104	2024-11-05 15:2...	good	False
105	2024-12-11 12:4...	good	False
106	2024-01-02 11:4...	bad	False
107	2024-04-03 16:3...	bad	True
108	2024-12-11 22:2...	quick	False
109	2024-05-06 20:3...	slow	False
110	2024-02-05 12:5...	too normal	False
111	2024-05-04 10:3...	good	False
112	2024-04-05 12:5...	expensive	False
113	2024-03-01 17:3...	good	True
114	2024-12-09 16:3...	slow	True
115	2024-07-07 19:1...	too normal	False
116	2024-10-04 18:2...	bad	True
117	2024-12-06 14:1...	bad	True
118	2024-03-02 10:1...	quick	False
119	2024-01-05 21:2...	slow	True
120	2024-10-07 19:3...	good	False
121	2024-01-10 14:1...	too normal	False
122	2024-11-02 14:3...	expensive	True
123	2024-04-06 20:3...	not special	False
124	2024-04-03 11:5...	too normal	True
125	2024-12-06 20:4...	good	True
126	2024-09-06 12:3...	quick	False
127	2024-10-09 18:2...	bad	True
128	2024-10-02 11:1...	bad	False
129	2024-09-02 21:4...	slow	False
130	2024-10-02 19:5...	slow	False
131	2024-09-06 21:2...	not special	True
132	2024-06-04 11:4...	too normal	False

chatID	dateTime_	content	direction
133	2024-10-05 10:1...	not special	True
134	2024-01-02 13:2...	too normal	False
135	2024-06-02 19:3...	quick	True
136	2024-03-02 11:3...	too normal	True
137	2024-05-10 11:3...	good	False
138	2024-05-07 13:2...	too normal	True
139	2024-05-04 21:2...	good	True
140	2024-05-01 12:1...	too normal	True
141	2024-06-06 12:5...	not special	False
142	2024-12-03 17:5...	good	False
143	2024-02-06 10:1...	too normal	False
144	2024-07-10 11:3...	expensive	True
145	2024-06-02 12:2...	good	False
146	2024-09-12 14:4...	bad	True
147	2024-09-11 21:3...	bad	True
148	2024-12-02 15:2...	quick	False
149	2024-03-03 10:3...	expensive	False
150	2024-01-05 14:5...	slow	True
151	2024-02-06 11:4...	good	False
152	2024-06-04 20:2...	not special	True
153	2024-10-04 20:5...	expensive	False
154	2024-10-09 16:2...	slow	True
155	2024-08-06 11:4...	slow	True
156	2024-01-03 20:4...	not special	False
157	2024-06-12 11:1...	quick	True
158	2024-04-09 13:3...	bad	True
159	2024-10-04 19:4...	slow	True
160	2024-01-10 14:5...	expensive	True
161	2024-02-07 16:4...	quick	False
162	2024-09-05 18:3...	bad	False
163	2024-05-05 22:4...	slow	False
164	2024-08-09 22:2...	good	True
165	2024-01-10 19:3...	too normal	False

chatID	dateTime_	content	direction
166	2024-05-07 13:3...	slow	True
167	2024-10-09 12:4...	too normal	False
168	2024-11-03 20:2...	too normal	False
169	2024-06-10 10:4...	slow	True
170	2024-03-08 10:4...	slow	True
171	2024-08-06 10:3...	slow	True
172	2024-10-11 22:1...	slow	False
173	2024-08-03 13:3...	quick	True
174	2024-02-11 15:4...	bad	False
175	2024-07-10 10:5...	good	True
176	2024-09-07 12:2...	bad	True
177	2024-08-03 10:2...	slow	False
178	2024-10-06 14:1...	expensive	True
179	2024-01-07 20:3...	quick	False
180	2024-12-06 18:2...	bad	True
181	2024-06-10 10:4...	quick	True
182	2024-10-04 13:1...	expensive	False
183	2024-03-08 12:4...	good	True
184	2024-02-05 11:5...	good	True
185	2024-07-07 18:5...	bad	True
186	2024-12-10 12:4...	bad	False
187	2024-06-08 21:3...	expensive	False
188	2024-10-06 18:2...	not special	True
189	2024-08-01 20:4...	slow	True
190	2024-12-07 21:4...	bad	True
191	2024-03-10 12:1...	expensive	False
192	2024-08-05 13:1...	expensive	False
193	2024-10-08 13:4...	slow	True
194	2024-03-02 20:1...	too normal	True
195	2024-02-11 22:3...	expensive	True
196	2024-02-07 21:4...	expensive	False
197	2024-06-05 14:3...	bad	False
198	2024-01-12 16:5...	slow	True

198	2024-01-12 16:5...	slow	True
199	2024-05-03 10:1...	quick	False
200	2024-01-05 21:4...	quick	False
NULL	*NULL*	*NULL*	*NULL*

b. R4(engID, NRIC, adsID)

enqID	NRIC	adsID
1	S2335345F	1
2	S0123456I	1
3	S0134323N	1
4	S678402J	2
5	S0123456I	2
6	S5678901A	2
7	S8934323L	3
8	S4510890H	3
9	S2335345F	3
10	S0123456N	4
11	S8934323L	4
12	S2335345F	4
13	S4567890H	5
14	S0123456I	5
15	S8934323L	5
16	S2335345F	6
17	S4567890H	6
18	S5678901A	6
19	S5678901A	7
20	S8901234G	7
21	S0123456I	7
22	S4567890H	8
23	S0134323N	8
24	S5678901A	8
25	S0123456N	9
26	S5678901A	9
27	S4567890H	9
28	S2335345F	10
29	S2345678F	10
30	S0123456N	10
31	S4510890H	11
32	S0134323N	11
33	S2345678F	11

enqID	NRIC	adsID
34	S0123456N	12
35	S678402J	12
36	S8934323L	12
37	S0123456N	13
38	S4510890H	13
39	S4567890H	13
40	S0123456N	14
41	S8901234G	14
42	S678402J	14
43	S2335345F	15
44	S4510890H	15
45	S0123456N	15
46	S0123456I	16
47	S678402J	16
48	S4567890H	16
49	S8934323L	17
50	S2335345F	17
51	S8901234G	17
52	S8934323L	18
53	S8901234G	18
54	S4510890H	18
55	S8901234G	19
56	S678402J	19
57	S0134323N	19
58	S0123456I	20
59	S4510890H	20
60	S8901234G	20
61	S678402J	21
62	S2335345F	21
63	S2345678F	21
64	S0123456I	22
65	S5678901A	22
66	S0123456N	22

enqID	NRIC	adsID
67	S4510890H	23
68	S5678901A	23
69	S2335345F	23
70	S0123456I	24
71	S678402J	24
72	S5678901A	24
73	S2345678F	25
74	S8901234G	25
75	S8934323L	25
76	S0134323N	26
77	S8934323L	26
78	S678402J	26
79	S4510890H	27
80	S0123456N	27
81	S678402J	27
82	S4510890H	28
83	S0134323N	28
84	S2335345F	28
85	S678402J	29
86	S4510890H	29
87	S0134323N	29
88	S4567890H	30
89	S2335345F	30
90	S0134323N	30
91	S0123456N	31
92	S2335345F	31
93	S5678901A	31
94	S5678901A	32
95	S4510890H	32
96	S2345678F	32
97	S4510890H	33
98	S2335345F	33
99	S8901234G	33

enqID	NRIC	adsID
100	S0123456N	34
101	S4567890H	34
102	S8901234G	34
103	S0123456I	35
104	S0134323N	35
105	S5678901A	35
106	S0123456I	36
107	S4510890H	36
108	S0134323N	36
109	S678402J	37
110	S8934323L	37
111	S5678901A	37
112	S4510890H	38
113	S0123456N	38
114	S2345678F	38
115	S0123456N	39
116	S8901234G	39
117	S8934323L	39
118	S8901234G	40
119	S4510890H	40
120	S0123456I	40
121	S5678901A	41
122	S4510890H	41
123	S678402J	41
124	S4510890H	42
125	S0134323N	42
126	S4567890H	42
127	S4567890H	43
128	S8901234G	43
129	S0123456I	43
130	S8901234G	44
131	S0123456N	44
132	S8934323L	44

engID	NRIC	adsID
133	S5678901A	45
134	S8934323L	45
135	S2345678F	45
136	S5678901A	46
137	S4510890H	46
138	S2335345F	46
139	S678402J	47
140	S5678901A	47
141	S8934323L	47
142	S8934323L	48
143	S5678901A	48
144	S2345678F	48
145	S0123456N	49
146	S8934323L	49
147	S2345678F	49
148	S0123456N	50
149	S0134323N	50
150	S5678901A	50
151	S4567890H	51
152	S8934323L	51
153	S0123456N	51
154	S2345678F	52
155	S678402J	52
156	S0123456N	52
157	S0123456I	53
158	S5678901A	53
159	S678402J	53
160	S4510890H	54
161	S4567890H	54
162	S0134323N	54
163	S0123456N	55
164	S8901234G	55
165	S2345678F	55

engID	NRIC	adsID
166	S0123456N	56
167	S0134323N	56
168	S4510890H	56
169	S678402J	57
170	S2335345F	57
171	S4510890H	57
172	S4567890H	58
173	S0123456N	58
174	S8901234G	58
175	S678402J	59
176	S8901234G	59
177	S2335345F	59
178	S5678901A	60
179	S0123456N	60
180	S0134323N	60
181	S0123456I	61
182	S0134323N	61
183	S5678901A	61
184	S0123456N	62
185	S678402J	62
186	S0134323N	62
187	S0123456N	63
188	S0134323N	63
189	S8934323L	63
190	S0123456N	64
191	S4510890H	64
192	S8901234G	64
193	S5678901A	65
194	S2345678F	65
195	S0134323N	65
196	S4510890H	66
197	S2345678F	66
198	S2335345F	66

199	S4510890H	67
200	S0134323N	67
NULL	NULL	NULL

c. R5 (engID, chatID)

enqID	chatID
1	1
1	2
2	3
2	4
4	5
5	6
5	7
6	8
6	9
10	10
13	11
13	12
14	13
14	14
15	15
17	16
18	17
18	18
21	19
22	20
24	21
24	22
25	23
26	24
27	25
27	26
28	27
29	28
30	29
35	30
35	31
36	32
36	33

enqID	chatID
38	34
38	35
40	36
43	37
43	38
44	39
44	40
45	41
47	42
48	43
48	44
50	45
50	46
51	47
52	48
52	49
55	50
57	51
60	52
60	53
63	54
63	55
65	56
66	57
66	58
68	59
71	60
71	61
73	62
73	63
74	64
74	65
75	66

enqID	chatID
76	67
79	68
79	69
80	70
80	71
81	72
81	73
83	74
83	75
84	76
85	77
86	78
86	79
87	80
87	81
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89	83
90	84
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91	86
91	87
94	88
95	89
95	90
96	91
97	92
97	93
98	94
99	95
99	96
100	97
100	98
101	99

enqID	chatID
101	100
103	101
103	102
106	103
107	104
108	105
108	106
109	107
109	108
110	109
110	110
112	111
112	112
113	113
113	114
114	115
114	116
115	117
115	118
117	119
117	120
118	121
118	122
119	123
119	124
120	125
121	126
122	127
124	128
124	129
126	130
126	131
128	132

enqID	chatID
129	133
129	134
131	135
131	136
133	137
134	138
134	139
135	140
136	141
137	142
137	143
138	144
138	145
140	146
140	147
143	148
144	149
146	150
146	151
149	152
151	153
151	154
154	155
155	156
157	157
159	158
159	159
164	160
166	161
166	162
167	163
167	164
168	165

enqID	chatID
168	166
169	167
169	168
170	169
170	170
172	171
173	172
174	173
174	174
175	175
175	176
177	177
180	178
181	179
183	180
183	181
185	182
185	183
189	184
189	185
190	186
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194	188
195	189
198	190
199	191
200	192
200	193
202	194
202	195
203	196
203	197
204	198

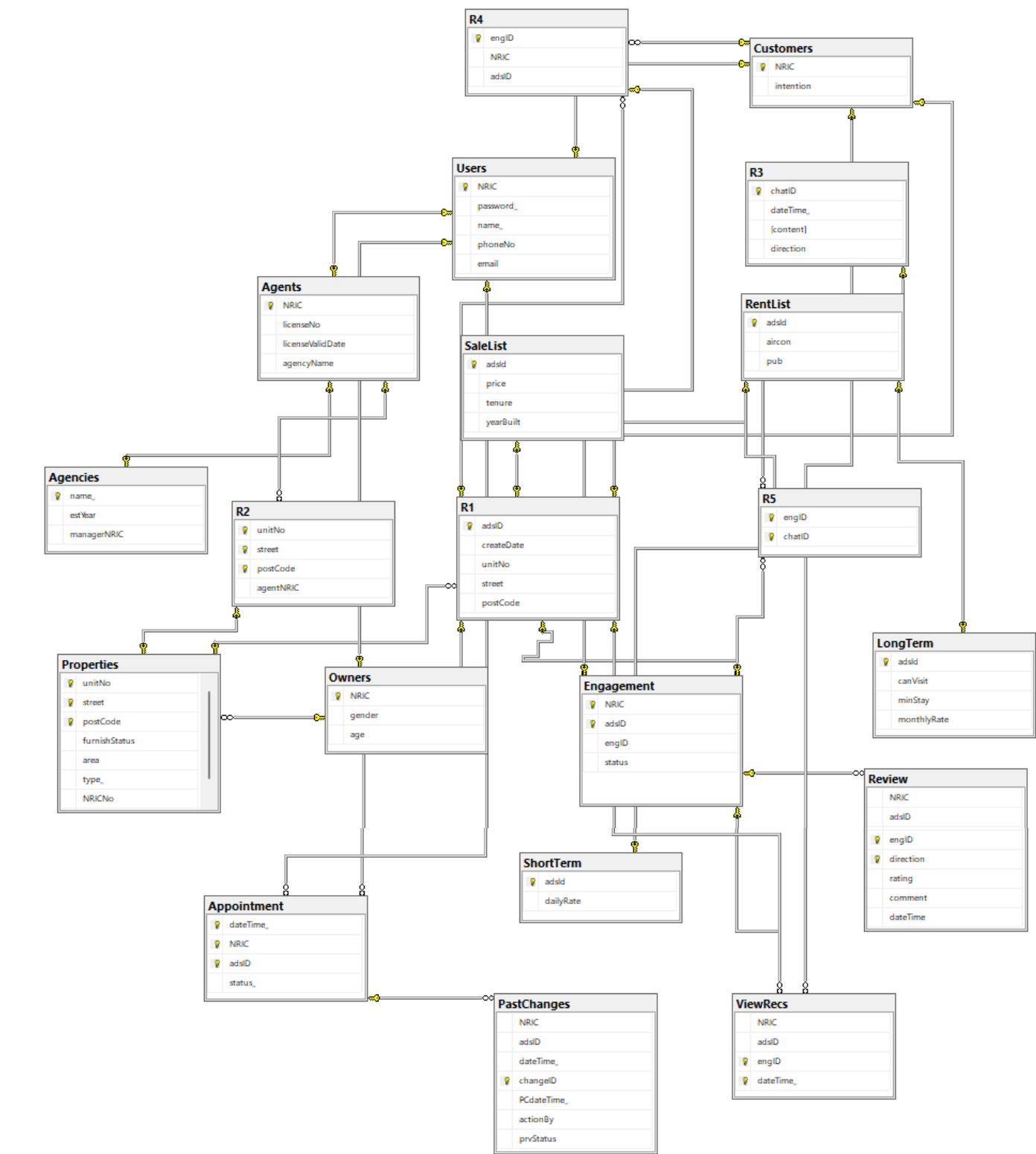|	
206	199
206	200
NULL	NULL

17. Review (NRIC, adsID, engID, direction, rating, comment, dateTime)

NRIC	adsID	engID	direction	rating	comment	dateTime
S4567890H	5	13	False	5	Wonderful	2024-12-05 11:3...
S4567890H	5	13	True	5	OK	2024-12-01 21:1...
S2335345F	6	16	False	4	OK	2024-03-06 10:5...
S2335345F	6	16	True	5	Good	2024-02-01 15:3...
S8901234G	7	20	False	1	Worst	2024-01-08 12:2...
S8901234G	7	20	True	5	Quick	2024-10-08 12:2...
S0123456N	9	25	False	4	Nice	2024-09-03 11:5...
S0123456N	9	25	True	5	OK	2024-08-06 15:1...
S0123456N	10	30	False	2	Quick	2024-08-04 19:2...
S0123456N	10	30	True	1	Slow	2024-07-01 15:1...
S0123456N	12	34	False	1	Wonderful	2024-04-09 22:2...
S0123456N	12	34	True	3	Slow	2024-06-01 12:4...
S4567890H	13	39	False	1	Bad	2024-11-06 19:3...
S4567890H	13	39	True	4	Slow	2024-02-12 20:3...
S8934323L	17	49	False	1	OK	2024-01-02 11:1...
S8934323L	17	49	True	3	Bad	2024-07-02 12:5...
S0134323N	19	57	False	1	Good	2024-03-03 13:5...
S0134323N	19	57	True	4	Slow	2024-12-11 20:4...
S0123456I	20	58	False	2	Bad	2024-04-08 18:1...
S0123456I	20	58	True	3	Worst	2024-08-10 20:3...
S8901234G	25	74	False	4	Good	2024-10-11 16:2...
S8901234G	25	74	True	3	Quick	2024-10-02 11:1...
S678402J	26	78	False	5	Quick	2024-09-06 15:2...
S678402J	26	78	True	5	Nice	2024-08-04 11:1...
S0123456N	27	80	False	3	Wonderful	2024-04-07 16:1...
S0123456N	27	80	True	5	Slow	2024-10-11 13:1...
S4510890H	28	82	False	4	Quick	2024-12-12 13:1...
S4510890H	28	82	True	1	Nice	2024-06-12 16:3...
S4510890H	29	86	False	5	Bad	2024-11-12 19:3...
S4510890H	29	86	True	4	Worst	2024-09-12 18:4...
S0134323N	30	90	False	1	Bad	2024-11-12 18:1...
S0134323N	30	90	True	1	Quick	2024-07-10 21:2...
S2335345F	31	92	False	4	Quick	2024-06-12 17:2...

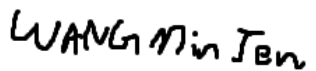| NRIC	adsID	engID	direction	rating	comment	dateTime
S2335345F	31	92	True	2	Quick	2024-12-12 12:4...
S4510890H	33	97	False	3	Worst	2024-03-12 13:2...
S4510890H	33	97	True	4	OK	2024-05-03 16:1...
S0123456I	35	103	False	1	OK	2024-01-11 18:1...
S0123456I	35	103	True	1	Wonderful	2024-04-09 13:5...
S0134323N	36	108	False	5	Worst	2024-02-04 19:1...
S0134323N	36	108	True	2	Worst	2024-12-08 19:5...
S8901234G	39	116	False	1	Wonderful	2024-11-11 10:5...
S8901234G	39	116	True	3	Slow	2024-12-02 16:2...
S8901234G	40	118	False	5	Slow	2024-06-05 22:4...
S8901234G	40	118	True	1	OK	2024-05-03 14:3...
S8901234G	43	128	False	4	Nice	2024-07-08 17:2...
S8901234G	43	128	True	5	Quick	2024-04-12 13:2...
S4510890H	46	137	False	3	Worst	2024-05-09 22:1...
S4510890H	46	137	True	4	Slow	2024-09-11 12:1...
S8934323L	49	146	False	3	Worst	2024-02-04 10:3...
S8934323L	49	146	True	5	Wonderful	2024-04-07 11:4...
S0134323N	50	149	False	5	OK	2024-05-11 20:1...
S0134323N	50	149	True	1	Nice	2024-01-10 22:1...
S4567890H	54	161	False	1	Worst	2024-08-09 22:4...
S4567890H	54	161	True	1	Slow	2024-02-12 14:3...
S678402J	57	169	False	2	OK	2024-12-10 10:2...
S678402J	57	169	True	4	Slow	2024-10-03 15:1...
S2335345F	59	177	False	1	Slow	2024-08-02 13:5...
S2335345F	59	177	True	5	OK	2024-01-03 21:5...
S5678901A	60	178	False	5	Nice	2024-12-03 18:1...
S5678901A	60	178	True	2	Wonderful	2024-12-06 21:3...
S678402J	62	185	False	1	Slow	2024-12-03 10:5...
S678402J	62	185	True	4	Good	2024-12-05 12:2...
S0134323N	63	188	False	1	Nice	2024-01-09 16:5...
S0134323N	63	188	True	3	Nice	2024-03-04 14:3...
S5678901A	65	193	False	1	Nice	2024-09-12 18:5...
S5678901A	65	193	True	1	Nice	2024-11-08 15:2...
S5678901A	65	193	True	1	Nice	2024-11-08 15:2...
S4510890H	66	196	False	1	Nice	2024-04-08 19:3...
S4510890H	66	196	True	5	Quick	2024-11-08 20:3...
S2345678F	69	205	False	2	OK	2024-05-03 22:2...
S2345678F	69	205	True	2	Good	2024-04-04 12:1...
NULL	NULL	NULL	NULL	NULL	NULL	NULL

Database Diagram

D.   Any Additional Effort

We wrote python scripts to generate SQL commands to populate the database. For example, for the table R2, our script generated the following (very long) SQL instruction:

```
INSERT INTO R1 VALUES
(1,'2022-12-9','A-100','Alpine Drive',689962),
(2,'2021-2-11','A-100','Cherries Drive',517901),
(3,'2021-10-1','A-14','Apples Drive',320437),
(4,'2023-11-4','A-14','Avocado Drive',706811),
... (truncated)
```

APPENDIX C: INDIVIDUAL CONTRIBUTION FORM

Full Name	Individual Contribution to Lab 5 Submission	Percentage of Contribution	Signature
Vannes Wijaya	Query 1-4. Database population	16.6	
Wang Min-Jen	Query 5, 6. Recording	16.6	
Melisa Lee	Query 6	16.6	
Denzel Elden Wijaya	DDL. Database population	16.6	
Dosi Veer	Presentation Preparation	16.6	
Lionel Owen Wijaya	DDL	16.6	