```
SQL> --1--
SQL> COLUMN CLIENTNAME FORMAT A40
SQL> SELECT clientNo,rentalNo, ClientName,
  2  (ReturnDate-StartDate)*24 AS "Duration",
  3  CEIL((ReturnDate-StartDate))*DailyRate AS "Cost"
  4  FROM Client JOIN Ragreement USING (clientNo) JOIN Vehicle USING(LicenseNo)
  5  WHERE State = 'PA'
  6  ORDER BY ClientName;

  CLIENTNO   RENTALNO CLIENTNAME                                Duration       Cost
---------- ---------- ---------------------------------------- ---------- ----------
8765474265  367354871 Alex                                     1838.47694       9240
8765474265  256324576 Alex                                     2053.02806      10320
4532016128 9036892903 Chiwetel Ejiofor                         312.994722       1680
4532016128 9674433000 Chiwetel Ejiofor                         139.506944        660
2998787484 5696741198 Christian Bale                           301.260556       1560
5431225125 2143214132 Cillian Murphy                           209.591389       1080
9654423553  196453526 Dwan                                     1911.11694      10400
9654423553  576345243 Dwan                                     2530.85028      11660
9654423553  224562678 Dwan                                     1702.79139       8520
2345436214  298346486 Lin                                       2234.8125      12220
2345436214  317987234 Lin                                        1917.715      10400
1092615453  468923673 Mike                                     2730.78583      15960
1092615453  177663452 Mike                                     2399.19361      14000

13 rows selected.
```

```
SQL> --2--
SQL> COLUMN "Name" FORMAT A20
SQL> SELECT EmpNo, Fname||' '||Lname AS "Name", COUNT(ReportNum) AS "# of fault reports", RANK() OVER(ORDER BY COUNT(ReportNum)
DESC) AS rank
  2   FROM Employee LEFT OUTER JOIN Faultreport USING (EmpNo)
  3  GROUP BY (EmpNo,Fname,Lname);

     EMPNO Name                 # of fault reports       RANK
---------- -------------------- ------------------ ----------
         5 Mario Brown                           4          1
         9 Jacob Baker                           3          2
         2 John Smith                            3          2
       559 Isaias Gatson                         3          2
       362 Wallace  Fernandes                    3          2
       786 Robert Meinhardt                      2          6
        20 Michele Marcum                        2          6
       863 Carl Landwehr                         1          8
       505 Georgia Murray                        1          8
         7 Luke White                            0         10
         4 David Parker                          0         10
       263 Stephen  Bentley                      0         10
         1 Molly Taylor                          0         10
         8 Erica King                            0         10
      6834 Hillary Dennis                        0         10
       285 Martha Jones                          0         10
         3 Micheal Jones                         0         10
       193 Brian Smith                           0         10
        56 Delbert Quintero                      0         10
      1939 Kelly Jackson                         0         10
       237 Helen Lewis                           0         10
         6 Larry Davis                           0         10
       341 Kevin Mares                           0         10

23 rows selected.
```

```
SQL> --3--
SQL> SELECT OutNo, NVL(SUM((DateChecked-ReturnDate)*24),0) AS "RPT_GEN_TIME"
  2  FROM RAGREEMENT JOIN FAULTREPORT USING(RentalNo) JOIN VEHICLE ON(RAGREEMENT.LicenseNo = VEHICLE.LicenseNo) JOIN OUTLET USING
(outNo)
  3  GROUP BY (OutNo)
  4  ORDER BY (OutNo);

     OUTNO RPT_GEN_TIME
---------- ------------
    134523   21.8097222
    243868   27.4138889
    348931        8.775
    386703   2012.64417
    476412   603.042222
    677386   119.869444
    926360    1144.6625
    939863   253.425278
    942762   446.954444

9 rows selected.
```

```
SQL> --4--
SQL> COLUMN CLIENTNAME  FORMAT A25
SQL> COLUMN Contact FORMAT A20
SQL> COLUMN Email FORMAT A20
SQL> SELECT clientNo, ClientName, Contact_FName ||' '||Contact_LName AS "Contact", Email, Phone
  2   FROM(SELECT DISTINCT clientNo FROM RAGREEMENT
  3  MINUS SELECT DISTINCT clientNo FROM FAULTREPORT JOIN RAGREEMENT USING (RentalNo))
  4  JOIN CLIENT USING(clientNo);

  CLIENTNO CLIENTNAME                Contact              EMAIL                              PHONE
---------- ------------------------- -------------------- -------------------- --------------------
4568323734 Kobe                      Wax Uid              ies912w@gmail.com              2167719236
5431225125 Cillian Murphy            Chin Han             cmurphy@gmail.com              3242626534
6657435424 Dirk                      Mark Yalk            8e3s2@gmail.com                2342082245
```

```
SQL> --5--
SQL> SELECT OutNo,Total_Count,Total_Rev
  2  FROM
  3  (SELECT OutNo, COUNT(RentalNo) Total_Count,
  4  SUM(CEIL(ReturnDate-StartDate)*DailyRate) Total_Rev,
  5  RANK() OVER (ORDER BY SUM(CEIL(ReturnDate-StartDate)*DailyRate) DESC) Rank
  6  FROM Ragreement JOIN Vehicle USING(LicenseNo)
  7  GROUP BY (OutNo))
  8  WHERE Rank <= 2;

     OUTNO TOTAL_COUNT  TOTAL_REV
---------- ----------- ----------
    134523           6      77020
    348931           6      61210
```

```
SQL> --6--
SQL> SELECT RentalNo, OutNo, OUTLET.Street, StartDate, ReturnDate, clientNo, ClientName
  2   FROM OUTLET
  3  JOIN
  4  (SELECT OutNo
  5  FROM Ragreement JOIN Vehicle USING(LicenseNo)
  6  HAVING (COUNT(RentalNo) = (SELECT MAX(COUNT(RentalNo))
  7  FROM Ragreement JOIN Vehicle USING(LicenseNo)
  8  GROUP BY (OutNo)))
  9  GROUP BY (OutNo)) USING(OutNo)
 10  JOIN Vehicle USING(OutNo)
 11  JOIN RAGREEMENT USING(LicenseNo)
 12  JOIN Client USING(clientNo);

  RENTALNO      OUTNO STREET               STARTDATE RETURNDAT   CLIENTNO CLIENTNAME
---------- ---------- -------------------- --------- --------- ---------- --------------------
 114567845     134523 756 S Millvale Ave   10-NOV-15 22-FEB-16 5765567583 Shang
 776842375     134523 756 S Millvale Ave   18-FEB-15 21-MAY-15 3342342521 Michael
 298346486     134523 756 S Millvale Ave   20-MAY-16 21-AUG-16 2345436214 Lin
 317987234     134523 756 S Millvale Ave   23-OCT-16 11-JAN-17 2345436214 Lin
 468923673     134523 756 S Millvale Ave   16-NOV-16 10-MAR-17 1092615453 Mike
 177663452     134523 756 S Millvale Ave   05-OCT-16 13-JAN-17 1092615453 Mike
 224562678     348931 5634 Baum Blvd       09-MAR-18 19-MAY-18 9654423553 Dwan
 256324576     348931 5634 Baum Blvd       15-JUN-16 08-SEP-16 8765474265 Alex
 367354871     348931 5634 Baum Blvd       12-NOV-16 28-JAN-17 8765474265 Alex
 169987057     348931 5634 Baum Blvd       16-JAN-18 02-MAY-18 6657435424 Dirk
 182389054     348931 5634 Baum Blvd       05-APR-17 08-JUL-17 6657435424 Dirk
 687934144     348931 5634 Baum Blvd       16-JUL-16 08-OCT-16 3342342521 Michael

12 rows selected.
```

```
SQL> --7--
SQL> SELECT clientNo, ClientName, COUNT(rentalNo), COUNT(ReportNum), NVL(AVG(ReturnDate-StartDate),0) AVG_RENTAL_DAYS
  2  FROM CLIENT
  3  LEFT OUTER JOIN RAGREEMENT USING(clientNo)
  4  LEFT OUTER JOIN FAULTREPORT USING (rentalNo)
  5  WHERE state = 'WV'
  6  GROUP BY(clientNo, ClientName);

  CLIENTNO CLIENTNAME                                COUNT(RENTALNO) COUNT(REPORTNUM) AVG_RENTAL_DAYS
---------- ---------------------------------------- --------------- ---------------- ---------------
5580424655 Eric Andre                                              1                1      12.0904398
9878511883 Alfre Woodard                                           2                2      18.4145255
3490125515 Jill Stuart                                             0                0               0
6657435424 Dirk                                                    2                0      100.339207
3342342521 Michael                                                 2                2      87.5123495
```

```
SQL> --8--
SQL> SELECT outNo, Make, COUNT(DISTINCT VEHICLE.LicenseNo) AS CAR#,
  2  TO_CHAR(SUM(CEIL(ReturnDate-StartDate)*DailyRate)/COUNT(DISTINCT VEHICLE.LicenseNo),'99999990.99') AS Revenue_Per_Car,
  3  TO_CHAR(COUNT(REPORTNUM)/COUNT(DISTINCT VEHICLE.LicenseNo),'990.99') AS FaultReport_Per_Car
  4  FROM VEHICLE JOIN outlet USING(outNo)
  5  LEFT OUTER JOIN ragreement ON(VEHICLE.LicenseNo = ragreement.LicenseNo)
  6  LEFT OUTER JOIN FAULTREPORT USING(RentalNo)
  7  GROUP BY outNo, Make;

     OUTNO MAKE                       CAR# REVENUE_PER_CAR           FAULTREPORT_PER_CAR
---------- -------------------- ---------- ------------------------ ------------------------
    677386 CHEVROLET                     1      1610.00                1.00
    476412 FORD                          1      3003.00                1.00
    476412 MERCEDES-BENZ                 1      1680.00                1.00
    386703 BMW                           2      2310.00                1.00
    348931 TOYOTA                        3     17563.33                1.00
    939863 CHEVROLET                     1      4320.00                2.00
    348931 FORD                          1      8520.00                0.00
    134523 HONDA                         1     14000.00                0.00
    243868 FORD                          1     11660.00                1.00
    134523 MITSUBISHI                    1     12480.00                0.00
    134523 TOYOTA                        1     34580.00                3.00
    476412 KIA                           1      2002.00                1.00
    243868 HONDA                         2     18590.00                1.00
    942762 AUDI                          1      3120.00                1.00
    926360 DODGE                         1      6970.00                2.00
    926360 SUBARU                        1      1400.00                1.00
    134523 CHEVROLET                     1     15960.00                1.00

17 rows selected.
```

Explanation: the two measures we chose are the ‘average revenue’ and ‘fault report number per each car’ of each pair of (outlet, car make). Assume we are the managers of outlet 134523, we would notice that ‘Toyota’ cars have a high average revenue, also the TOYOTA cars in outlet 348931 have similar high revenue. Therefore, we may want to introduce more TOYOTA cars, as well as figure out a way to lower the fault rate of our TOYOTA cars.

```
SQL> --9--
SQL> COLUMN CAR_INFO FORMAT A35
SQL> COLUMN Comments FORMAT A40
SQL> COLUMN EMP_NAME FORMAT A20
SQL> SELECT ReportNum, DateChecked, ReturnDate, Comments, VEHICLE.LicenseNo ||','|| Make ||','|| Model ||','|| Color AS "CAR_INFO",
  2  Fname || ' ' || Lname AS "EMP_NAME"
  3  FROM FAULTREPORT
  4  JOIN RAGREEMENT USING (rentalNo)
  5  JOIN VEHICLE ON (FAULTREPORT.LicenseNo = VEHICLE.LicenseNo)
  6  JOIN EMPLOYEE USING(EmpNo)
  7  WHERE ReturnDate < trunc(sysdate, 'MM')
  8  AND ReturnDate >= trunc(add_months(sysdate,-1), 'MM');

 REPORTNUM DATECHECK RETURNDAT COMMENTS                                  CAR_INFO                            EMP_NAME
---------- --------- --------- ---------------------------------------- ----------------------------------- --------------------
2662355246 25-JUL-19 12-JUL-19 engine stalls/shuts off while driving    6TRJ244,FORD,ESCAPE,Red             Isaias Gatson
7344158384 22-JUL-19 03-JUL-19 daytime led lights burning out           742982,AUDI,RS4,White               Wallace  Fernandes
3163038296 01-AUG-19 29-JUL-19 rear end slides easily                   WYF8231,CHEVROLET,W5500,Black       Georgia Murray
```

```
SQL> --10--
SQL> SELECT  m.EmpNo, m.Fname||' '||m.Lname,
  2  COUNT(DISTINCT OUTLET.outNo) AS "OUTLETS",
  3  COUNT(DISTINCT e.EmpNo) AS "EMPLOYEES",
  4  COUNT(DISTINCT LicenseNo) AS "VEHICLES"
  5  FROM EMPLOYEE m
  6  JOIN OUTLET ON(OUTLET.ManagerNo = m.EmpNo)
  7  JOIN EMPLOYEE e ON (e.outNo = OUTLET.outNo)
  8  JOIN Vehicle ON (Vehicle.outNo = OUTLET.outNo)
  9  GROUP BY (m.EmpNo, m.Fname, m.Lname);

     EMPNO M.FNAME||''||M.LNAME                       OUTLETS  EMPLOYEES   VEHICLES
---------- ---------------------------------------- ---------- ---------- ----------
       237 Helen Lewis                                       3         10         11
       341 Kevin Mares                                       2          4          2
      1939 Kelly Jackson                                     3          8          6
      6834 Hillary Dennis                                    1          1          2
```

```
SQL> --11--
SQL> SELECT PERIOD, COUNT(*) TOTAL_EACH, TO_CHAR(COUNT(*)*100/(SUM(COUNT(*)) OVER()), '990.99')||'%' PERCENTAGE FROM(
  2  SELECT
  3  (CASE
  4  WHEN TO_CHAR(StartDate,'HH24') BETWEEN 6 AND 11 THEN 'MORNING'
  5  WHEN TO_CHAR(StartDate,'HH24') BETWEEN 12 AND 17 THEN 'AFTERNOON'
  6  WHEN TO_CHAR(StartDate,'HH24') BETWEEN 18 AND 22 THEN 'EVENING'
  7  ELSE 'OUT OF WORK'
  8  END) PERIOD FROM RAGREEMENT
  9  UNION ALL
 10  SELECT
 11  (CASE
 12  WHEN TO_CHAR(ReturnDate,'HH24') BETWEEN 6 AND 11 THEN 'MORNING'
 13  WHEN TO_CHAR(ReturnDate,'HH24') BETWEEN 12 AND 17 THEN 'AFTERNOON'
 14  WHEN TO_CHAR(ReturnDate,'HH24') BETWEEN 18 AND 22 THEN 'EVENING'
 15  ELSE 'OUT OF WORK'
 16  END) PERIOD FROM RAGREEMENT)
 17  GROUP BY (PERIOD);

PERIOD      TOTAL_EACH PERCENTA
----------- ---------- --------
MORNING             28   43.75%
AFTERNOON           15   23.44%
EVENING             21   32.81%
```

```
SQL> --12--
SQL> SELECT CLIENT_TYPE, NVL(TOTAL_EACH,0) COUNT FROM
  2  (
  3  SELECT DECODE(LEVEL,1, 'EDUCATION', 2,'GOVERNMENT AGENCY',3,'NON-FOR-PROFIT ORGANIZATION',4,'FOR-PROFIT COMPANY',5,'NOT
AVAILABLE') CLIENT_TYPE FROM DUAL
  4  CONNECT BY LEVEL<=5
  5  )
  6  LEFT OUTER JOIN
  7  (
  8  SELECT CLIENT_TYPE, COUNT(*) TOTAL_EACH FROM(
  9  SELECT
 10  (CASE
 11  WHEN LOWER(WebAddress) LIKE '%.edu' THEN 'EDUCATION'
 12  WHEN LOWER(WebAddress) LIKE '%.gov' THEN 'GOVERNMENT AGENCY'
 13  WHEN LOWER(WebAddress) LIKE '%.org' THEN 'NON-FOR-PROFIT ORGANIZATION'
 14  WHEN LOWER(WebAddress) LIKE '%.com' THEN 'FOR-PROFIT COMPANY'
 15  WHEN WebAddress IS NULL THEN 'NOT AVAILABLE'
 16  ELSE 'PERSONAL'
 17  END) CLIENT_TYPE FROM CLIENT)
 18  GROUP BY (CLIENT_TYPE)
 19  )
 20  USING (CLIENT_TYPE)
 21  ;

CLIENT_TYPE                    COUNT
-------------------------- ----------
FOR-PROFIT COMPANY                  6
EDUCATION                           4
GOVERNMENT AGENCY                   2
NOT AVAILABLE                       3
NON-FOR-PROFIT ORGANIZATION         4
```