Database Project

Group #14
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Script 1

```
--Drop all existing foreign key constraints
ALTER TABLE outlet DROP CONSTRAINT outlet_managerno_fk;
ALTER TABLE employee DROP CONSTRAINT employee_outno_fk;
ALTER TABLE employee DROP CONSTRAINT employee_supervisorno_fk;
ALTER TABLE vehicle DROP CONSTRAINT vehicle_outno_fk;
ALTER TABLE ragreement DROP CONSTRAINT ragreement_clientno_fk;
ALTER TABLE ragreement DROP CONSTRAINT ragreement_licenseno_fk;
ALTER TABLE faultreport DROP CONSTRAINT faultreport_empno_fk;
ALTER TABLE faultreport DROP CONSTRAINT faultreport_licenseno_fk;
ALTER TABLE faultreport DROP CONSTRAINT faultreport_rentalno_fk;

--Drop all existing tables
DROP TABLE client;
DROP TABLE outlet;
DROP TABLE employee;
DROP TABLE vehicle;
DROP TABLE ragreement;
DROP TABLE faultreport;

CREATE TABLE client (
                clientno NUMBER(5) CONSTRAINT client_clientno_pk
                                   PRIMARY KEY,
                clientname VARCHAR2(30),
                street VARCHAR2(30) CONSTRAINT client_street_nn
                                    NOT NULL,
                city VARCHAR2(20) CONSTRAINT client_city_nn
                                  NOT NULL,
                state VARCHAR2(2) CONSTRAINT client_state_nn
                                  NOT NULL,
                zipcode NUMBER(5) CONSTRAINT client_zipcode_nn
                                  NOT NULL,
                webaddress VARCHAR2(30),
                contact_fname VARCHAR2(20) CONSTRAINT client_contactfname_nn
                                           NOT NULL,
                contact_lname VARCHAR2(20) CONSTRAINT client_contactlname_nn
                                           NOT NULL,
                phone VARCHAR2(12) CONSTRAINT client_phone_nn
                                   NOT NULL,
                email VARCHAR2(30) CONSTRAINT client_email_nn
                                   NOT NULL);
```

```
CREATE TABLE outlet (
                outno NUMBER(2) CONSTRAINT outlet_outno_pk
                                PRIMARY KEY,
                street VARCHAR2(30) CONSTRAINT outlet_street_nn
                                 NOT NULL,
                city VARCHAR2(20) CONSTRAINT outlet_city_nn
                                NOT NULL,
                state VARCHAR2(2) CONSTRAINT outlet_state_nn
                                NOT NULL,
                zipcode NUMBER(5) CONSTRAINT outlet_zipcode_nn
                                NOT NULL,
                phone VARCHAR2(12) CONSTRAINT outlet_phone_nn
                                 NOT NULL,
                managerno NUMBER(5)
                );
```

```
CREATE TABLE employee (
                empno NUMBER(5) CONSTRAINT employee_empno_pk
                                PRIMARY KEY,
                fname VARCHAR2(20) CONSTRAINT employee_fname_nn
                                   NOT NULL,
                lname VARCHAR2(20) CONSTRAINT employee_lname_nn
                                   NOT NULL,
                position VARCHAR2(20) CONSTRAINT employee_position_nn
                                      NOT NULL,
                phone VARCHAR2(12) CONSTRAINT employee_phone_nn
                                   NOT NULL,
                email VARCHAR2(40) CONSTRAINT employee_email_nn
                                   NOT NULL,
                dob DATE CONSTRAINT employee_dob_nn
                                    NOT NULL,
                gender VARCHAR2(1) CONSTRAINT employee_gender_nn
                                   NOT NULL,
                salary NUMBER(8,2) CONSTRAINT employee_salary_nn
                                   NOT NULL
                                   CONSTRAINT employee_salary_ck
                                   CHECK(salary > 0),
                hiredate DATE DEFAULT SYSDATE,
                outno NUMBER(2) CONSTRAINT employee_outno_nn
                                NOT NULL
                                CONSTRAINT employee_outno_fk
                                REFERENCES outlet(outno),
                supervisorno NUMBER(5) CONSTRAINT employee_supervisorno_fk
                                       REFERENCES employee(empno)
                );
```

```
CREATE TABLE vehicle (
                licenseno NUMBER(10) CONSTRAINT vehicle_licenseno_pk
                                     PRIMARY KEY,
                make VARCHAR2(20) CONSTRAINT vehicle_make_nn
                                  NOT NULL,
                model VARCHAR2(20) CONSTRAINT vehicle_model_nn
                                   NOT NULL,
                color VARCHAR2(20) CONSTRAINT vehicle_color_nn
                                   NOT NULL,
                year NUMBER(4) CONSTRAINT vehicle_year_nn
                               NOT NULL,
                nodoors NUMBER(1) CONSTRAINT vehicle_ndoors_nn
                                  NOT NULL
                                  CONSTRAINT vehicle_ndoors_ck
                                  CHECK(nodoors > 0),
                capacity NUMBER(2) CONSTRAINT vehicle_capacity_nn
                                    NOT NULL
                                    CONSTRAINT vehicle_capacity_ck
                                    CHECK(capacity > 0),
                dailyrate NUMBER(6,2) CONSTRAINT vehicle_dailyrate_nn
                                    NOT NULL
                                    CONSTRAINT vehicle_dailyrate_ck
                                    CHECK(dailyrate > 0),
                inspectiondate DATE CONSTRAINT vehicle_inspectiondate_nn
                                      NOT NULL,
                outno NUMBER(2) CONSTRAINT vehicle_outno_nn
                                NOT NULL
                                CONSTRAINT vehicle_outno_fk
                                REFERENCES outlet(outno)
                );
```

```
CREATE TABLE ragreement (
                rentalno NUMBER(2) CONSTRAINT ragreement_rentalno_pk
                                   PRIMARY KEY,
                startdate DATE CONSTRAINT ragreement_startdate_nn
                                   NOT NULL,
                returndate DATE,
                mileagebefore NUMBER(6) CONSTRAINT ragreement_mileagebefore_nn
                                        NOT NULL
                                        CONSTRAINT ragreement_mileagebefore_ck
                                        CHECK(mileagebefore >= 0),
                mileageafter NUMBER(6),
                insurancetype VARCHAR2(20) CONSTRAINT ragreement_insurancetype_nn
                                           NOT NULL,
                clientno NUMBER(5) CONSTRAINT ragreement_clientno_nn
                                   NOT NULL
                                   CONSTRAINT ragreement_clientno_fk
                                   REFERENCES client(clientno),
                licenseno NUMBER(5) CONSTRAINT ragreement_licenseno_nn
                                    NOT NULL
                                    CONSTRAINT ragreement_licenseno_fk
                                    REFERENCES vehicle(licenseno),
                CONSTRAINT ragreement_returndate_ck
                CHECK(returndate IS NULL
                      OR (returndate IS NOT NULL
                          AND returndate > startdate)),
                CONSTRAINT ragreement_mileageafter_ck
                           CHECK(mileageafter IS NULL
                                 OR (mileageafter IS NOT NULL
                                     AND mileageafter > mileagebefore))
                );
```

```
CREATE TABLE faultreport (
                reportnum NUMBER(5) CONSTRAINT faultreport_reportnum_pk
                                    PRIMARY KEY,
                datechecked DATE CONSTRAINT faultreport_datechecked_nn
                                 NOT NULL,
                comments VARCHAR2(100),
                empno NUMBER(5) CONSTRAINT faultreport_empno_nn
                                NOT NULL
                                CONSTRAINT faultreport_empno_fk
                                REFERENCES employee(empno),
                licenseno NUMBER(5) CONSTRAINT faultreport_licenseno_nn
                                    NOT NULL
                                    CONSTRAINT faultreport_licenseno_fk
                                    REFERENCES vehicle(licenseno),
                rentalno NUMBER(5) CONSTRAINT faultreport_rentalno_nn
                                   NOT NULL
                                   CONSTRAINT faultreport_rentalno_fk
                                   REFERENCES ragreement(rentalno)
                );

ALTER TABLE outlet ADD CONSTRAINT outlet_managerno_fk
                       FOREIGN KEY(managerno)
                       REFERENCES employee(empno);
```

Script 2

```
---Client Table---
INSERT INTO client VALUES(1, 'Bob Smith', '687 Fearing Ave', 'Los Angeles', 'CA', 90001, NULL, 'Bob',
'Smith','213-568-9682', 'bob_smith@yahoo.com');

INSERT INTO client VALUES(2, 'Jennifer Lopez', '9242 Westwood Cir', 'Los Angeles', 'CA', 90036, NULL,
'Jennifer', 'Lopez','213-857-9935', 'jlo@gmail.com');

INSERT INTO client VALUES(3, 'Tom Cruz', '1327 Gatling St', 'Los Angeles', 'CA', 90027, NULL, 'Tom ',
'Cruz','213-823-4490', 'tommi@gmail.com');

INSERT INTO client VALUES(4, 'JustLee Books', '130 Ventura Blvd', 'Los Angeles', 'CA', 90210,
'justleebooks.com', 'Tim', 'Lee','718-552-9385', 'tim@justleebooks.com');

INSERT INTO client VALUES(5, 'Apple', '938 Fifth Ave', 'New York', 'NY', 10115, 'apple.com', 'Steve',
'Jobs','718-485-2994', 'sjobs@apple.com');

INSERT INTO client VALUES(6, 'Bill Gates', '8830 Brooklyn Dr', 'New York', 'NY', 10585, NULL, 'Bill',
'Gates','718-395-1993', 'bill.gates@hotmail.com');

INSERT INTO client VALUES(7, 'Liam Neeson', '901 6th St', 'New York', 'NY', 10482, NULL, 'Liam',
'Neeson','718-298-2957', 'liamneeson@yahoo.com');

INSERT INTO client VALUES(8, 'Harry Potter', '729 Johnson Dr', 'New York', 'NY', 10847, NULL, 'Harry',
'Potter','718-320-4897', 'harryp@yahoo.com');

INSERT INTO client VALUES(9, 'Barbara Jordan', '3945 Forbes Ave', 'Pittsburgh', 'PA', 15213, NULL,
'Barbara', 'Jordan','412-582-9241', 'bjordan@yahoo.com');

INSERT INTO client VALUES(10, 'Chris Brown', '309 Spahr St', 'Pittsburgh', 'PA', 15232, NULL, 'Chris',
'Brown','412-397-5523', 'chris.brown@gmail.com');

INSERT INTO client VALUES(11, 'Giant Eagle', '485 Main St', 'Pittsburgh', 'PA', 15210, 'gianteagle.com',
'John', 'Williams','412-295-2957', 'jwilliams@gianteagle.com');

INSERT INTO client VALUES(12, 'Jeff Bezos', '4387 Craig St', 'Pittsburgh', 'PA', 15213, NULL, 'Jeff',
'Bezos','412-582-1057', 'jeff_bezos@gmail.com');
```

```
---Outlet Table---
INSERT INTO outlet VALUES(1, '495 Wilkins Ave', 'Los Angeles', 'CA', 90210, '213-495-9001', NULL);
INSERT INTO outlet VALUES(2, '8827 Forbes Ave', 'Pittsburgh', 'PA', 15213, '412-482-4900', NULL);
INSERT INTO outlet VALUES(3, '385 18th St', 'New York', 'NY', 10837, '718-385-0183', NULL);

---Employee Table---
INSERT INTO employee VALUES(1, 'William', 'Defoe', 'Area Manager', '213-232-8493',
'william.defoe@carrental.com', '25-AUG-1971', 'M', 120000, '12-AUG-1995', 1, NULL);

INSERT INTO employee VALUES(2, 'Charles', 'Babbage', 'Area Manager', '412-585-9383',
'charles.babbage@carrental.com', '28-AUG-1971', 'M', 110000, '10-SEP-1996', 2, NULL);

INSERT INTO employee VALUES(3, 'Annie', 'Besant', 'Area Manager', '718-094-4849',
'annie.besant@carrental.com', '13-JAN-1973', 'F', 115990.23, '02-OCT-1997', 3, NULL);

INSERT INTO employee VALUES(4, 'Thomas', 'Edison', 'Mechanic', '213-685-3928',
'thomas.edison@carrental.com', '16-OCT-1980', 'M', 71002, '22-JAN-2002', 1, 1);

INSERT INTO employee VALUES(5, 'Ourania', 'Siabanise', 'Sales Rep', '213-484-8629',
'ourania.siabanise@carrental.com', '08-MAY-1982', 'F', 82322, '04-MAY-2003', 1, 1);

INSERT INTO employee VALUES(6, 'Prabhas', 'Raju', 'Administrative Asst', '213-967-4282',
'prabhas.raju@carrental.com', '05-MAY-1979', 'M', 78122, '15-FEB-2001', 1, 1);

INSERT INTO employee VALUES(7, 'Ross', 'Taylor', 'Mechanic', '412-965-9209', 'ross.taylor@carrental.com',
'21-APR-1981', 'M', 70912, '09-NOV-2004', 2, 2);

INSERT INTO employee VALUES(8, 'Monica', 'Geller', 'Sales Rep', '412-484-6678',
'monica.geller@carrental.com', '10-JAN-1979', 'F', 84232, '11-JUL-2002', 2, 2);

INSERT INTO employee VALUES(9, 'Joey', 'Tribbiani', 'Administrative Asst', '412-955-6330',
'joey.tribbiani@carrental.com', '13-NOV-1980', 'M', 77092, '07-JUN-2002', 2, 2);

INSERT INTO employee VALUES(10, 'Chandler', 'Bing', 'Mechanic', '718-955-9032',
'chandler.bing@carrental.com', '12-JUN-1979', 'M', 69823, '01-MAR-2003', 3, 3);

INSERT INTO employee VALUES(11, 'Robert', 'Downey', 'Sales Rep', '718-048-3844',
'robert.downey@carrental.com', '11-JUL-1978', 'M', 83202, '05-MAY-2001', 3, 3);

INSERT INTO employee VALUES(12, 'Jie', 'Fang', 'Administrative Asst', '718-233-0422',
'jie.fang@carrental.com', '13-MAY-1981', 'F', 80123.56, '29-DEC-2004', 3, 3);
```

```
INSERT INTO employee VALUES(13, 'Michelle', 'Monaghan', 'Mechanic', '213-111-0942',
'michelle.monaghan@carrental.com', '16-JUL-1984', 'F', 58021.53, '26-JAN-2008', 1, 4);

INSERT INTO employee VALUES(14, 'Stone', 'Austin', 'Mechanic', '213-559-4842',
'stone.austin@carrental.com', '30-SEP-1986', 'M', 59121.52, '04-JUN-2010', 1, 4);

INSERT INTO employee VALUES(15, 'Dwayne', 'Johnson', 'Sales Rep', '213-958-2658',
'dwayne.johnson@carrental.com', '14-JUN-1987', 'M', 64192.25, '07-OCT-2010', 1, 5);

INSERT INTO employee VALUES(16, 'Mithali', 'Agarwal', 'Sales Rep', '213-679-0001',
'mithali.agarwal@carrental.com', '22-JUN-1987', 'F', 62109.92, '08-APR-2012', 1, 5);

INSERT INTO employee VALUES(17, 'Shaun', 'Marsh', 'Administrative Asst', '213-855-9267',
'shaun.marsh@carrental.com', '16-SEP-1986', 'M', 60121.12, '31-MAR-2010', 1, 6);

INSERT INTO employee VALUES(18, 'Maria', 'Sharapova', 'Administrative Asst', '213-842-9311',
'maria.sharapova@carrental.com', '29-OCT-1987', 'F', 60001.12, '09-DEC-2012', 1, 6);

INSERT INTO employee VALUES(19, 'Rod', 'Laver', 'Mechanic', '412-833-8521', 'rod.laver@carrental.com', '31-
MAR-1988', 'M', 57129.21, '10-JUN-2014', 2, 7);

INSERT INTO employee VALUES(20, 'Martina', 'Navratilova', 'Mechanic', '412-599-0999',
'martina.navratilova@carrental.com', '14-JUN-1989', 'F', 56092.43, '23-APR-2015', 2, 7);

INSERT INTO employee VALUES(21, 'Andre', 'Agassi', 'Sales Rep', '412-002-8002',
'andre.agassi@carrental.com', '16-NOV-1988', 'M', 64019.21, '21-FEB-2015', 2, 8);

INSERT INTO employee VALUES(22, 'Pete', 'Sampras', 'Sales Rep', '412-933-4664',
'pete.sampras@carrental.com', '28-OCT-1991', 'M', 63012.91, '27-APR-2012', 2, 8);

INSERT INTO employee VALUES(23, 'Mithilda', 'May', 'Administrative Asst', '412-092-1653',
'mithilda.may@carrental.com', '30-NOV-1992', 'F', 61222.21, '17-JUL-2014', 2, 9);

INSERT INTO employee VALUES(24, 'Julianna', 'Moore', 'Administrative Asst', '412-954-2281',
'julianna.moore@carrental.com', '13-APR-1992', 'F', 60129.12, '13-MAY-2015', 2, 9);

INSERT INTO employee VALUES(25, 'Roger', 'Federer', 'Mechanic', '718-192-5953',
'roger.federer@carrental.com', '06-SEP-1994', 'M', 55019, '27-JUL-2017', 3, 10);

INSERT INTO employee VALUES(26, 'Nancy', 'Drew', 'Mechanic', '718-694-1122', 'nancy.drew@carrental.com',
'14-MAR-1995', 'F', 54102.22, '19-SEP-2017', 3, 10);
```

```
INSERT INTO employee VALUES(27, 'Hannah', 'Beggs', 'Sales Rep', '718-122-4932',
'hannah.beggs@carrental.com', '12-JUL-1995', 'F', 66029.12, '15-JUN-2018', 3, 11);

INSERT INTO employee VALUES(28, 'Elizabeth', 'Lawrence', 'Sales Rep', '718-483-5493',
'elizabeth.lawrence@carrental.com', '19-FEB-1994', 'F', 67109.21, '04-MAR-2017', 3, 11);

INSERT INTO employee VALUES(29, 'Rafael', 'Nadal', 'Administrative Asst', '718-211-0922',
'rafael.nadal@carrental.com', '20-FEB-1996', 'M', 61000, '23-JUN-2018', 3, 12);

INSERT INTO employee VALUES(30, 'Sofia', 'Burgers', 'Administrative Asst', '718-822-9112',
'sofia.burgers@carrental.com', '01-JAN-1996', 'F', 60654, '01-FEB-2018', 3, 12);

---Add Outlet Manager Numbers---
UPDATE outlet SET managerno = 1 WHERE outno = 1;
UPDATE outlet SET managerno = 2 WHERE outno = 2;
UPDATE outlet SET managerno = 3 WHERE outno = 3;

---Vehicle Table---
INSERT INTO vehicle VALUES(10001, 'Honda', 'Accord', 'White', 2013, 4, 5, 33.86, '13-MAR-2016', 1);
INSERT INTO vehicle VALUES(10002, 'Toyota', 'Camry', 'Black', 2015, 4, 5, 67.29, '01-JAN-2017', 1);
INSERT INTO vehicle VALUES(10003, 'Honda', 'Civic', 'Silver', 2016, 2, 5, 45.83, '25-DEC-2016', 1);
INSERT INTO vehicle VALUES(10004, 'Nissan', 'Altima', 'White', 2014, 4, 5, 74.23, '01-FEB-2017', 2);
INSERT INTO vehicle VALUES(10005, 'Ford', 'Taurus', 'Black', 2015, 4, 5, 38.95, '11-NOV-2016', 2);
INSERT INTO vehicle VALUES(10006, 'BMW', '528i', 'Blue', 2016, 2, 5, 80, '03-MAR-2017', 2);
INSERT INTO vehicle VALUES(10007, 'Toyota', 'Corolla', 'Silver', 2017, 4, 5, 63.43, '20-APR-2017', 3);
INSERT INTO vehicle VALUES(10008, 'Honda', 'Odyssey', 'White', 2015, 4, 8, 120.32, '18-OCT-2016', 3);
INSERT INTO vehicle VALUES(10009, 'Hyundai', 'Sonata', 'Silver', 2016, 4, 5, 29.96, '09-DEC-2016', 3);
INSERT INTO vehicle VALUES(10010, 'Lexus', 'LS 430', 'Black', 2014, 4, 5, 96.3, '14-JAN-2017', 3);

---Rental Agreement Table---
INSERT INTO ragreement VALUES(1, TO_DATE('15-FEB-2016 12:30PM', 'DD-MON-YYYY HH:MIAM'), TO_DATE('17-FEB-
2016 09:38AM', 'DD-MON-YYYY HH:MIAM'), 25293, 25494, 'Liability', 1, 10004);

INSERT INTO ragreement VALUES(2, TO_DATE('08-MAR-2016 9:35AM', 'DD-MON-YYYY HH:MIAM'), TO_DATE('15-MAR-2016
2:56PM', 'DD-MON-YYYY HH:MIAM'), 12722, 13765, 'Liability', 2, 10002);

INSERT INTO ragreement VALUES(3, TO_DATE('1-JAN-2017 2:15PM', 'DD-MON-YYYY HH:MIAM'), TO_DATE('14-JAN-2017
08:30AM', 'DD-MON-YYYY HH:MIAM'), 15300, 15402, 'Liability', 3, 10010);

INSERT INTO ragreement VALUES(4, TO_DATE('03-JAN-2017 8:22AM', 'DD-MON-YYYY HH:MIAM'), TO_DATE('23-JAN-2017
4:59PM', 'DD-MON-YYYY HH:MIAM'), 31279, 31523, 'Collision', 7, 10009);
```

```
INSERT INTO ragreement VALUES(5, TO_DATE('02-FEB-2017 9:30AM', 'DD-MON-YYYY HH:MIAM'), TO_DATE('03-FEB-2017
4:30PM', 'DD-MON-YYYY HH:MIAM'), 24835, 25385, 'Liability', 6, 10006);

INSERT INTO ragreement VALUES(6, TO_DATE('23-FEB-2017 3:34PM', 'DD-MON-YYYY HH:MIAM'), TO_DATE('25-FEB-2017
2:15PM', 'DD-MON-YYYY HH:MIAM'), 17830, 18003, 'Collision', 4, 10002);

INSERT INTO ragreement VALUES(7, TO_DATE('23-MAR-2017 10:14AM', 'DD-MON-YYYY HH:MIAM'), TO_DATE('26-MAR-
2017 2:33PM', 'DD-MON-YYYY HH:MIAM'), 34863, 35832, 'Liability', 8, 10003);

INSERT INTO ragreement VALUES(8, TO_DATE('16-APR-2017 3:45PM', 'DD-MON-YYYY HH:MIAM'), TO_DATE('18-APR-2017
3:12PM', 'DD-MON-YYYY HH:MIAM'), 36713, 38021, 'Liability', 4, 10003);

INSERT INTO ragreement VALUES(9, TO_DATE('25-MAY-2017 12:03PM', 'DD-MON-YYYY HH:MIAM'), TO_DATE('27-MAY-
2017 8:20AM', 'DD-MON-YYYY HH:MIAM'), 12442, 12568, 'LIability', 12, 10007);

INSERT INTO ragreement VALUES(10, TO_DATE('05-MAY-2017 10:10AM', 'DD-MON-YYYY HH:MIAM'), TO_DATE('06-MAY-
2017 11:12AM', 'DD-MON-YYYY HH:MIAM'), 29475, 30001, 'Collision', 10, 10010);

INSERT INTO ragreement VALUES(11, TO_DATE('12-JUN-2017 11:45AM', 'DD-MON-YYYY HH:MIAM'), TO_DATE('17-JUN-
2017 2:33PM', 'DD-MON-YYYY HH:MIAM'), 34598, 45783, 'Liability', 4, 10009);

INSERT INTO ragreement VALUES(12, TO_DATE('15-JUL-2017 4:13PM', 'DD-MON-YYYY HH:MIAM'), TO_DATE('26-JUL-
2017 5:02PM', 'DD-MON-YYYY HH:MIAM'), 15997, 18264, 'Collision', 5, 10005);

INSERT INTO ragreement VALUES(13, TO_DATE('01-AUG-2017 8:34AM', 'DD-MON-YYYY HH:MIAM'), TO_DATE('03-AUG-
2017 8:45AM', 'DD-MON-YYYY HH:MIAM'), 34599, 34702, 'Liability', 7, 10006);

INSERT INTO ragreement VALUES(14, TO_DATE('22-SEP-2017 9:23AM', 'DD-MON-YYYY HH:MIAM'), TO_DATE('23-SEP-
2017 11:45AM', 'DD-MON-YYYY HH:MIAM'), 23445, 23600, 'Liability', 11, 10007);

INSERT INTO ragreement VALUES(15, TO_DATE('1-OCT-2017 3:16PM', 'DD-MON-YYYY HH:MIAM'), TO_DATE('16-OCT-2017
1:03PM', 'DD-MON-YYYY HH:MIAM'), 43614, 43700, 'Liability', 8, 10001);

INSERT INTO ragreement VALUES(16, TO_DATE('16-NOV-2017 10:15AM', 'DD-MON-YYYY HH:MIAM'), TO_DATE('27-NOV-
2017 2:04PM', 'DD-MON-YYYY HH:MIAM'), 35340, 37201, 'Liability', 9, 10006);

INSERT INTO ragreement VALUES(17, TO_DATE('25-DEC-2017 11:30AM', 'DD-MON-YYYY HH:MIAM'), TO_DATE('28-DEC-
2017 09:45AM', 'DD-MON-YYYY HH:MIAM'), 38765, 39215, 'Collison', 10, 10003);

INSERT INTO ragreement VALUES(18, TO_DATE('28-DEC-2017 2:00PM', 'DD-MON-YYYY HH:MIAM'), TO_DATE('30-DEC-
2017 9:35AM', 'DD-MON-YYYY HH:MIAM'), 28475, 28822, 'Liability', 6, 10007);
```

```
INSERT INTO ragreement VALUES(19, TO_DATE('09-JAN-2018 12:59PM', 'DD-MON-YYYY HH:MIAM'), TO_DATE('11-JAN-
2018 1:48PM', 'DD-MON-YYYY HH:MIAM'), 35632, 35700, 'Collision', 11, 10007);

INSERT INTO ragreement VALUES(20, TO_DATE('18-FEB-2018 2:43PM', 'DD-MON-YYYY HH:MIAM'), TO_DATE('21-FEB-
2018 10:03AM', 'DD-MON-YYYY HH:MIAM'), 33031, 33369, 'Liability', 12, 10008);

INSERT INTO ragreement VALUES(21, TO_DATE('25-MAR-2018 1:16PM', 'DD-MON-YYYY HH:MIAM'), TO_DATE('27-MAR-
2018 11:32AM', 'DD-MON-YYYY HH:MIAM'), 48202, 48456, 'Liability', 3, 10002);

INSERT INTO ragreement VALUES(22, TO_DATE('30-JUL-2018 4:23PM', 'DD-MON-YYYY HH:MIAM'), TO_DATE('03-AUG-
2018 12:40PM', 'DD-MON-YYYY HH:MIAM'), 34002, 34721, 'Liability', 5, 10005);

INSERT INTO ragreement VALUES(23, TO_DATE('02-OCT-2018 8:42AM', 'DD-MON-YYYY HH:MIAM'), TO_DATE('14-OCT-
2018 4:22PM', 'DD-MON-YYYY HH:MIAM'), 35190, 35522, 'Collision', 9, 10010);

INSERT INTO ragreement VALUES(24, TO_DATE('10-OCT-2018 3:20PM', 'DD-MON-YYYY HH:MIAM'), TO_DATE('12-OCT-
2018 12:02PM', 'DD-MON-YYYY HH:MIAM'), 50102, 50345, 'Collison', 1, 10002);

INSERT INTO ragreement VALUES(25, TO_DATE('30-OCT-2018 8:35AM', 'DD-MON-YYYY HH:MIAM'), TO_DATE('31-OCT-
2018 10:00AM', 'DD-MON-YYYY HH:MIAM'), 39663, 39700, 'Liability', 4, 10006);

INSERT INTO ragreement VALUES(26, TO_DATE('03-NOV-2018 2:32PM', 'DD-MON-YYYY HH:MIAM'), TO_DATE('06-NOV-
2018 11:45AM', 'DD-MON-YYYY HH:MIAM'), 37152, 40625, 'Liability', 6, 10010);

INSERT INTO ragreement VALUES(27, TO_DATE('23-NOV-2018 10:03AM', 'DD-MON-YYYY HH:MIAM'), TO_DATE('23-NOV-
2018 4:59PM', 'DD-MON-YYYY HH:MIAM'), 46858, 47598, 'Liability', 7, 10007);

INSERT INTO ragreement VALUES(28, TO_DATE('01-DEC-2018 11:23AM', 'DD-MON-YYYY HH:MIAM'), TO_DATE('02-DEC-
2018 11:30AM', 'DD-MON-YYYY HH:MIAM'), 45005, 45102, 'Liability', 3, 10005);

---Fault Report Table---
INSERT INTO faultreport VALUES(1, TO_DATE('05-SEP-2016 08:20AM', 'DD-MON-YYYY HH:MIAM'), 'Broken
taillight', 4, 10004, 1);

INSERT INTO faultreport VALUES(2, TO_DATE('19-SEP-2016 09:30AM', 'DD-MON-YYYY HH:MIAM'), 'A/C repair', 7,
10002, 2);

INSERT INTO faultreport VALUES(3, TO_DATE('06-APR-2017 10:15AM', 'DD-MON-YYYY HH:MIAM'), 'Flat tire', 10,
10003, 7);
```

```
INSERT INTO faultreport VALUES(4, TO_DATE('25-JAN-2017 9:35AM', 'DD-MON-YYYY HH:MIAM'), 'Strange engine noise', 14, 10009, 4);

INSERT INTO faultreport VALUES(5, TO_DATE('26-FEB-2017 10:22AM', 'DD-MON-YYYY HH:MIAM'), 'Radio not working', 20, 10002, 6);

INSERT INTO faultreport VALUES(6, TO_DATE('20-APR-2017 11:13AM', 'DD-MON-YYYY HH:MIAM'), 'Windshield wiper replacement', 7, 10003, 8);

INSERT INTO faultreport VALUES(7, TO_DATE('03-JUN-2017 8:45AM', 'DD-MON-YYYY HH:MIAM'), 'Check engine light', 13, 10007, 9);

INSERT INTO faultreport VALUES(8, TO_DATE('14-JUL-2017 10:40AM', 'DD-MON-YYYY HH:MIAM'), 'Break pad replacement', 14, 10009, 11);

INSERT INTO faultreport VALUES(9, TO_DATE('04-AUG-2017 11:00AM', 'DD-MON-YYYY HH:MIAM'), 'Flat tire', 26, 10006, 13);

INSERT INTO faultreport VALUES(10, TO_DATE('31-DEC-2017 10:03AM', 'DD-MON-YYYY HH:MIAM'), 'A/C repair', 25, 10007, 18);

INSERT INTO faultreport VALUES(11, TO_DATE('16-JAN-2018 10:25AM', 'DD-MON-YYYY HH:MIAM'), 'Steering realignment', 19, 10005, 12);

INSERT INTO faultreport VALUES(12, TO_DATE('20-SEP-2018 9:20AM', 'DD-MON-YYYY HH:MIAM'), 'Windshield wiper replacement', 20, 10003, 17);

INSERT INTO faultreport VALUES(13, TO_DATE('12-OCT-2018 8:05AM', 'DD-MON-YYYY HH:MIAM'), 'Key fob battery replacement', 25, 10008, 20);

INSERT INTO faultreport VALUES(14, TO_DATE('27-OCT-2018 9:00AM', 'DD-MON-YYYY HH:MIAM'), 'Refill wiper fluid', 26, 10002, 21);

INSERT INTO faultreport VALUES(15, TO_DATE('03-DEC-2018 11:02AM', 'DD-MON-YYYY HH:MIAM'), 'Engine oil change', 14, 10005, 28);
```

Table Contents

```
SQL> SELECT * FROM client;

CLIENTNO CLIENTNAME      STREET              CITY           ST    ZIPCODE WEBADDRESS        CONTACT_FNAME   CONTACT_LNAME   PHONE        EMAIL
-------- --------------- ------------------- -------------- -- ---------- --------------- --------------- --------------- ------------ --------------------------
       1 Bob Smith       687 Fearing Ave     Los Angeles    CA      90001                   Bob             Smith           213-568-9682 bob_smith@yahoo.com
       2 Jennifer Lopez  9242 Westwood Cir   Los Angeles    CA      90036                   Jennifer        Lopez           213-857-9935 jlo@gmail.com
       3 Tom Cruz        1327 Gatling St     Los Angeles    CA      90027                   Tom             Cruz            213-823-4490 tommi@gmail.com
       4 JustLee Books   130 Ventura Blvd    Los Angeles    CA      90210 justleebooks.com  Tim             Lee             718-552-9385 tim@justleebooks.com
       5 Apple           938 Fifth Ave       New York       NY      10115 apple.com         Steve           Jobs            718-485-2994 sjobs@apple.com
       6 Bill Gates      8830 Brooklyn Dr    New York       NY      10585                   Bill            Gates           718-395-1993 bill.gates@hotmail.com
       7 Liam Neeson     901 6th St          New York       NY      10482                   Liam            Neeson          718-298-2957 liamneeson@yahoo.com
       8 Harry Potter    729 Johnson Dr      New York       NY      10847                   Harry           Potter          718-320-4897 harryp@yahoo.com
       9 Barbara Jordan  3945 Forbes Ave     Pittsburgh     PA      15213                   Barbara         Jordan          412-582-9241 bjordan@yahoo.com
      10 Chris Brown     309 Spahr St        Pittsburgh     PA      15232                   Chris           Brown           412-397-5523 chris.brown@gmail.com
      11 Giant Eagle     485 Main St         Pittsburgh     PA      15210 gianteagle.com    John            Williams        412-295-2957 jwilliams@gianteagle.com
      12 Jeff Bezos      4387 Craig St       Pittsburgh     PA      15213                   Jeff            Bezos           412-582-1057 jeff_bezos@gmail.com

12 rows selected.
```

```
SQL> SELECT * FROM outlet;

     OUTNO STREET               CITY            ST    ZIPCODE PHONE          MANAGERNO
---------- -------------------- --------------- -- ---------- ------------ ----------
         1 495 Wilkins Ave      Los Angeles     CA       90210 213-495-9001          1
         2 8827 Forbes Ave      Pittsburgh      PA       15213 412-482-4900          2
         3 385 18th St          New York        NY       10837 718-385-0183          3
```

```
SQL> SELECT * FROM employee;
```

EMPNO	FNAME	LNAME	POSITION	PHONE	EMAIL	DOB	GENDER	SALARY	HIREDATE	OUTNO	SUPERVISORNO
1	William	Defoe	Area Manager	213-232-8493	william.defoe@carrental.com	25-AUG-71	M	120000	12-AUG-95	1	
2	Charles	Babbage	Area Manager	412-585-9383	charles.babbage@carrental.com	28-AUG-71	M	110000	10-SEP-96	2	
3	Annie	Besant	Area Manager	718-094-4849	annie.besant@carrental.com	13-JAN-73	F	115990.23	02-OCT-97	3	
4	Thomas	Edison	Mechanic	213-685-3928	thomas.edison@carrental.com	16-OCT-80	M	71002	22-JAN-02	1	1
5	Ourania	Siabanise	Sales Rep	213-484-8629	ourania.siabanise@carrental.com	08-MAY-82	F	82322	04-MAY-03	1	1
6	Prabhas	Raju	Administrative Asst	213-967-4282	prabhas.raju@carrental.com	05-MAY-79	M	78122	15-FEB-01	1	1
7	Ross	Taylor	Mechanic	412-965-9209	ross.taylor@carrental.com	21-APR-81	M	70912	09-NOV-04	2	2
8	Monica	Geller	Sales Rep	412-484-6678	monica.geller@carrental.com	10-JAN-79	F	84232	11-JUL-02	2	2
9	Joey	Tribbiani	Administrative Asst	412-955-6330	joey.tribbiani@carrental.com	13-NOV-80	M	77092	07-JUN-02	2	2
10	Chandler	Bing	Mechanic	718-955-9032	chandler.bing@carrental.com	12-JUN-79	M	69823	01-MAR-03	3	3
11	Robert	Downey	Sales Rep	718-048-3844	robert.downey@carrental.com	11-JUL-78	M	83202	05-MAY-01	3	3
12	Jie	Fang	Administrative Asst	718-233-0422	jie.fang@carrental.com	13-MAY-81	F	80123.56	29-DEC-04	3	3
13	Michelle	Monaghan	Mechanic	213-111-0942	michelle.monaghan@carrental.com	16-JUL-84	F	58021.53	26-JAN-08	1	4
14	Stone	Austin	Mechanic	213-559-4842	stone.austin@carrental.com	30-SEP-86	M	59121.52	04-JUN-10	1	4
15	Dwayne	Johnson	Sales Rep	213-958-2658	dwayne.johnson@carrental.com	14-JUN-87	M	64192.25	07-OCT-10	1	5
16	Mithali	Agarwal	Sales Rep	213-679-0001	mithali.agarwal@carrental.com	22-JUN-87	F	62109.92	08-APR-12	1	5
17	Shaun	Marsh	Administrative Asst	213-855-9267	shaun.marsh@carrental.com	16-SEP-86	M	60121.12	31-MAR-10	1	6
18	Maria	Sharapova	Administrative Asst	213-842-9311	maria.sharapova@carrental.com	29-OCT-87	F	60001.12	09-DEC-12	1	6
19	Rod	Laver	Mechanic	412-833-8521	rod.laver@carrental.com	31-MAR-88	M	57129.21	10-JUN-14	2	7
20	Martina	Navratilova	Mechanic	412-599-0999	martina.navratilova@carrental.com	14-JUN-89	F	56092.43	23-APR-15	2	7
21	Andre	Agassi	Sales Rep	412-002-8002	andre.agassi@carrental.com	16-NOV-88	M	64019.21	21-FEB-15	2	8
22	Pete	Sampras	Sales Rep	412-933-4664	pete.sampras@carrental.com	28-OCT-91	M	63012.91	27-APR-12	2	8
23	Mithilda	May	Administrative Asst	412-092-1653	mithilda.may@carrental.com	30-NOV-92	F	61222.21	17-JUL-14	2	9
24	Julianna	Moore	Administrative Asst	412-954-2281	julianna.moore@carrental.com	13-APR-92	F	60129.12	13-MAY-15	2	9
25	Roger	Federer	Mechanic	718-192-5953	roger.federer@carrental.com	06-SEP-94	M	55019	27-JUL-17	3	10
26	Nancy	Drew	Mechanic	718-694-1122	nancy.drew@carrental.com	14-MAR-95	F	54102.22	19-SEP-17	3	10
27	Hannah	Beggs	Sales Rep	718-122-4932	hannah.beggs@carrental.com	12-JUL-95	F	66029.12	15-JUN-18	3	11
28	Elizabeth	Lawrence	Sales Rep	718-483-5493	elizabeth.lawrence@carrental.com	19-FEB-94	F	67109.21	04-MAR-17	3	11
29	Rafael	Nadal	Administrative Asst	718-211-0922	rafael.nadal@carrental.com	20-FEB-96	M	61000	23-JUN-18	3	12
30	Sofia	Burgers	Administrative Asst	718-822-9112	sofia.burgers@carrental.com	01-JAN-96	F	60654	01-FEB-18	3	12

```
30 rows selected.

SQL> SELECT * FROM vehicle;
```

LICENSENO	MAKE	MODEL	COLOR	YEAR	NODOORS	CAPACITY	DAILYRATE	INSPECTION	OUTNO
10001	Honda	Accord	White	2013	4	5	33.86	13-MAR-16	1
10002	Toyota	Camry	Black	2015	4	5	67.29	01-JAN-17	1
10003	Honda	Civic	Silver	2016	2	5	45.83	25-DEC-16	1
10004	Nissan	Altima	White	2014	4	5	74.23	01-FEB-17	2
10005	Ford	Taurus	Black	2015	4	5	38.95	11-NOV-16	2
10006	BMW	528i	Blue	2016	2	5	80	03-MAR-17	2
10007	Toyota	Corolla	Silver	2017	4	5	63.43	20-APR-17	3
10008	Honda	Odyssey	White	2015	4	8	120.32	18-OCT-16	3
10009	Hyundai	Sonata	Silver	2016	4	5	29.96	09-DEC-16	3
10010	Lexus	LS 430	Black	2014	4	5	96.3	14-JAN-17	3

```
10 rows selected.
```

```
SQL> SELECT * FROM ragreement;
```

RENTALNO	STARTDATE	RETURNDATE	MILEAGEBEFORE	MILEAGEAFTER	INSURANCETYPE	CLIENTNO	LICENSENO
1	15-FEB-16	17-FEB-16	25293	25494	Liability	1	10004
2	08-MAR-16	15-MAR-16	12722	13765	Liability	2	10002
3	01-JAN-17	14-JAN-17	15300	15402	Liability	3	10010
4	03-JAN-17	23-JAN-17	31279	31523	Collision	7	10009
5	02-FEB-17	03-FEB-17	24835	25385	Liability	6	10006
6	23-FEB-17	25-FEB-17	17830	18003	Collision	4	10002
7	23-MAR-17	26-MAR-17	34863	35832	Liability	8	10003
8	16-APR-17	18-APR-17	36713	38021	Liability	4	10003
9	25-MAY-17	27-MAY-17	12442	12568	LIability	12	10007
10	05-MAY-17	06-MAY-17	29475	30001	Collision	10	10010
11	12-JUN-17	17-JUN-17	34598	45783	Liability	4	10009
12	15-JUL-17	26-JUL-17	15997	18264	Collision	5	10005
13	01-AUG-17	03-AUG-17	34599	34702	Liability	7	10006
14	22-SEP-17	23-SEP-17	23445	23600	Liability	11	10007
15	01-OCT-17	16-OCT-17	43614	43700	Liability	8	10001
16	16-NOV-17	27-NOV-17	35340	37201	Liability	9	10006
17	25-DEC-17	28-DEC-17	38765	39215	Collison	10	10003
18	28-DEC-17	30-DEC-17	28475	28822	Liability	6	10007
19	09-JAN-18	11-JAN-18	35632	35700	Collision	11	10007
20	18-FEB-18	21-FEB-18	33031	33369	Liability	12	10008
21	25-MAR-18	27-MAR-18	48202	48456	Liability	3	10002
22	30-JUL-18	03-AUG-18	34002	34721	Liability	5	10005
23	02-OCT-18	14-OCT-18	35190	35522	Collision	9	10010
24	10-OCT-18	12-OCT-18	50102	50345	Collison	1	10002
25	30-OCT-18	31-OCT-18	39663	39700	Liability	4	10006
26	03-NOV-18	06-NOV-18	37152	40625	Liability	6	10010
27	23-NOV-18	23-NOV-18	46858	47598	Liability	7	10007
28	01-DEC-18	02-DEC-18	45005	45102	Liability	3	10005

```
28 rows selected.
```

```
SQL> SELECT * FROM faultreport;
```

REPORTNUM	DATECHECKED	COMMENTS	EMPNO	LICENSENO	RENTALNO
1	05-SEP-16	Broken taillight	4	10004	1
2	19-SEP-16	A/C repair	7	10002	2
3	06-APR-17	Flat tire	10	10003	7
4	25-JAN-17	Strange engine noise	14	10009	4
5	26-FEB-17	Radio not working	20	10002	6
6	20-APR-17	Windshield wiper replacement	7	10003	8
7	03-JUN-17	Check engine light	13	10007	9
8	14-JUL-17	Break pad replacement	14	10009	11
9	04-AUG-17	Flat tire	26	10006	13
10	31-DEC-17	A/C repair	25	10007	18
11	16-JAN-18	Steering realignment	19	10005	12
12	20-SEP-18	Windshield wiper replacement	20	10003	17
13	12-OCT-18	Key fob battery replacement	25	10008	20
14	27-OCT-18	Refill wiper fluid	26	10002	21
15	03-DEC-18	Engine oil change	14	10005	28

15 rows selected.

Queries

#1)

```
SQL> SELECT rentalno AS "Rental No.",
  2         startdate AS "Start Date",
  3         returndate AS "Return Date",
  4         mileagebefore AS "Starting Mileage",
  5         mileageafter AS "Ending Mileage",
  6         licenseno AS "License No.",
  7         outno AS "Outlet No.",
  8         make AS "Make",
  9         model AS "Model",
 10         year AS "Year",
 11         NVL(TO_CHAR(datechecked), 'No fault reports') AS "Date Checked"
 12  FROM ragreement JOIN vehicle USING (licenseno)
 13                  LEFT OUTER JOIN faultreport USING (rentalno, licenseno)
 14  ORDER BY 1;

Rental No. Start Date   Return Date    Starting Mileage Ending Mileage License No. Outlet No. Make    Model           Year Date Checked
---------- ------------ ------------- ---------------- ------------- ----------- ---------- ---------- ----------- ----- ------------------
         1 15-FEB-16    17-FEB-16                25293         25494       10004          2 Nissan     Altima      2014 05-SEP-16
         2 08-MAR-16    15-MAR-16                12722         13765       10002          1 Toyota     Camry       2015 19-SEP-16
         3 01-JAN-17    14-JAN-17                15300         15402       10010          3 Lexus      LS 430      2014 No fault reports
         4 03-JAN-17    23-JAN-17                31279         31523       10009          3 Hyundai    Sonata      2016 25-JAN-17
         5 02-FEB-17    03-FEB-17                24835         25385       10006          2 BMW        528i        2016 No fault reports
         6 23-FEB-17    25-FEB-17                17830         18003       10002          1 Toyota     Camry       2015 26-FEB-17
         7 23-MAR-17    26-MAR-17                34863         35832       10003          1 Honda      Civic       2016 06-APR-17
         8 16-APR-17    18-APR-17                36713         38021       10003          1 Honda      Civic       2016 20-APR-17
         9 25-MAY-17    27-MAY-17                12442         12568       10007          3 Toyota     Corolla     2017 03-JUN-17
        10 05-MAY-17    06-MAY-17                29475         30001       10010          3 Lexus      LS 430      2014 No fault reports
        11 12-JUN-17    17-JUN-17                34598         45783       10009          3 Hyundai    Sonata      2016 14-JUL-17
        12 15-JUL-17    26-JUL-17                15997         18264       10005          2 Ford       Taurus      2015 16-JAN-18
        13 01-AUG-17    03-AUG-17                34599         34702       10006          2 BMW        528i        2016 04-AUG-17
        14 22-SEP-17    23-SEP-17                23445         23600       10007          3 Toyota     Corolla     2017 No fault reports
        15 01-OCT-17    16-OCT-17                43614         43700       10001          1 Honda      Accord      2013 No fault reports
        16 16-NOV-17    27-NOV-17                35340         37201       10006          2 BMW        528i        2016 No fault reports
        17 25-DEC-17    28-DEC-17                38765         39215       10003          1 Honda      Civic       2016 20-SEP-18
        18 28-DEC-17    30-DEC-17                28475         28822       10007          3 Toyota     Corolla     2017 31-DEC-17
        19 09-JAN-18    11-JAN-18                35632         35700       10007          3 Toyota     Corolla     2017 No fault reports
        20 18-FEB-18    21-FEB-18                33031         33369       10008          3 Honda      Odyssey     2015 12-OCT-18
        21 25-MAR-18    27-MAR-18                48202         48456       10002          1 Toyota     Camry       2015 27-OCT-18
        22 30-JUL-18    03-AUG-18                34002         34721       10005          2 Ford       Taurus      2015 No fault reports
        23 02-OCT-18    14-OCT-18                35190         35522       10010          3 Lexus      LS 430      2014 No fault reports
        24 10-OCT-18    12-OCT-18                50102         50345       10002          1 Toyota     Camry       2015 No fault reports
        25 30-OCT-18    31-OCT-18                39663         39700       10006          2 BMW        528i        2016 No fault reports
        26 03-NOV-18    06-NOV-18                37152         40625       10010          3 Lexus      LS 430      2014 No fault reports
        27 23-NOV-18    23-NOV-18                46858         47598       10007          3 Toyota     Corolla     2017 No fault reports
        28 01-DEC-18    02-DEC-18                45005         45102       10005          2 Ford       Taurus      2015 03-DEC-18

28 rows selected.
```

#2)

-- Assumption - Average distance driven per rental for last year - considered 2017
-- Within/in last year considered to be SYSDATE – 365

```
SQL> SELECT outno AS "Outlet No.",
  2         numvehicles AS "Num of Vehicles",
  3         num_rentals_within_last_year AS "Num of Rentals (Last Year)",
  4         avg_distance AS "Average Distance",
  5         numemp AS "Num of Employees",
  6         round(num_rentals_within_last_year/numEmp,2) AS "Rentals per Employee"
  7  FROM (SELECT NVL(TO_CHAR(outno),'Total') AS outno,
  8        COUNT(licenseno) AS numvehicles
  9        FROM outlet JOIN vehicle USING(outno)
 10        GROUP BY GROUPING SETS(outno,()))
 11        NATURAL JOIN
 12       (SELECT NVL(TO_CHAR(outno),'Total') AS outno, COUNT(startdate) AS num_rentals_within_last_year
 13        FROM outlet JOIN vehicle USING(outno)
 14                    JOIN ragreement USING(licenseno)
 15        WHERE startdate > (SYSDATE - 365)
 16        GROUP BY GROUPING SETS(outno,()))
 17        NATURAL JOIN
 18       (SELECT NVL(TO_CHAR(outno),'Total') AS outno,
 19        AVG(mileageafter - mileagebefore) AS avg_distance
 20        FROM outlet JOIN vehicle USING(outno)
 21                    JOIN ragreement USING(licenseno)
 22        WHERE EXTRACT(year FROM returndate) = EXTRACT(year FROM SYSDATE) - 1
 23        GROUP BY GROUPING SETS(outno,()))
 24        NATURAL JOIN
 25       (SELECT NVL(TO_CHAR(outno),'Total') AS outno,
 26        COUNT(empno) AS numEmp
 27        FROM outlet JOIN employee USING(outno)
 28        GROUP BY GROUPING SETS(outno,()));

Outlet No.  Num of Vehicles Num of Rentals (Last Year) Average Distance Num of Employees Rentals per Employee
----------- -------------- -------------------------- ---------------- ---------------- --------------------
1                        3                          3            597.2               10                   .3
2                        3                          3          1195.25               10                   .3
3                        4                          6       1812.14286               10                   .6
Total                   10                         12          1278.25               30                   .4
```

#3)

-- Assumption: "Past year" refers to last year

-- Reference: https://community.oracle.com/thread/2406870 for chronological order

```
SQL> SELECT nvl(month,'Total') AS "Month",
  2         SUM(DECODE(outno, 1, TRUNC(returndate-startdate) * dailyrate, 0)) AS "Outlet 1",
  3         SUM(DECODE(outno, 2, TRUNC(returndate-startdate) * dailyrate, 0)) AS "Outlet 2",
  4         SUM(DECODE(outno, 3, TRUNC(returndate-startdate) * dailyrate, 0)) AS "Outlet 3",
  5         NVL(SUM(TRUNC(returndate - startdate) * dailyrate), 0) AS "Total Month Revenue",
  6         NVL(COUNT(rentalno), 0) AS "Num of Rentals",
  7         ROUND(DECODE(NVL(COUNT(rentalno), 0), 0, 0, NVL(SUM(TRUNC(returndate-startdate) * dailyrate), 0) / COUNT(rentalno)),2)
  8         AS "Revenue per Rental"
  9  FROM (SELECT *
 10        FROM (SELECT DECODE(TO_CHAR(returndate,'Month'),
 11                    NULL,
 12                    'Total',
 13                    TO_CHAR(returndate,'Month')) AS month,
 14                    outno,
 15                    returndate,
 16                    startdate,
 17                    dailyrate,
 18                    rentalno
 19              FROM outlet NATURAL JOIN vehicle
 20                          NATURAL JOIN ragreement
 21              WHERE EXTRACT(YEAR FROM STARTDATE) = EXTRACT(YEAR FROM SYSDATE) - 1) y
 22        RIGHT OUTER JOIN
 23       (SELECT TO_CHAR(add_months(DATE '2018-01-15',level-1),'Month') AS month
 24        FROM dual
 25        CONNECT BY LEVEL <=12) x
 26        USING (month))
 27  GROUP BY ROLLUP(month)
 28  ORDER BY DECODE(TRIM(month),'January'  ,1,
 29                              'February' ,2,
 30                              'March'    ,3,
 31                              'April'    ,4,
 32                              'May'      ,5,
 33                              'June'     ,6,
 34                              'July'     ,7,
 35                              'August'   ,8,
 36                              'September',9,
 37                              'October'  ,10,
 38                              'November' ,11,
 39                              'December' ,12,13);
```

Month	Outlet 1	Outlet 2	Outlet 3	Total Month Revenue	Num of Rentals	Revenue per Rental
January	0	0	1754.8	1754.8	2	877.4
February	67.29	80	0	147.29	2	73.65
March	137.49	0	0	137.49	1	137.49
April	45.83	0	0	45.83	1	45.83
May	0	0	159.73	159.73	2	79.87
June	0	0	149.8	149.8	1	149.8
July	0	428.45	0	428.45	1	428.45
August	0	160	0	160	1	160
September	0	0	63.43	63.43	1	63.43
October	474.04	0	0	474.04	1	474.04
November	0	880	0	880	1	880
December	91.66	0	63.43	155.09	2	77.55
Total	816.31	1548.45	2191.19	4555.95	16	284.75

13 rows selected.

#4)

-- Assumption: Considered number of fault reports and number of rental agreements separately
-- Used SUM(monday) etc as sum of 1 measure is itself. It was needed for group function

```
SQL> SELECT DECODE(outno,NULL,'Total',outno) AS "Outlet No.",
  2         SUM(monday) AS "Monday",
  3         SUM(tuesday) AS "Tuesday",
  4         SUM(wednesday) AS "Wednesday",
  5         SUM(thursday) AS "Thursday",
  6         SUM(Friday) AS "Friday",
  7         SUM(Saturday) AS "Saturday",
  8         SUM(Sunday) AS "Sunday",
  9         SUM(totalcount) AS "Total Count"
 10  FROM ((SELECT DECODE(outno,NULL,'Total','Rent: ' || outno ) AS outno,
 11               SUM(DECODE(TO_CHAR(startdate,'DY'), 'MON',1,0)) AS Monday,
 12               SUM(DECODE(TO_CHAR(startdate,'DY'), 'TUE',1,0)) AS Tuesday,
 13               SUM(DECODE(TO_CHAR(startdate,'DY'), 'WED',1,0)) AS Wednesday,
 14               SUM(DECODE(TO_CHAR(startdate,'DY'), 'THU',1,0)) AS Thursday,
 15               SUM(DECODE(TO_CHAR(startdate,'DY'), 'FRI',1,0)) AS Friday,
 16               SUM(DECODE(TO_CHAR(startdate,'DY'), 'SAT',1,0)) AS Saturday,
 17               SUM(DECODE(TO_CHAR(startdate,'DY'), 'SUN',1,0)) AS Sunday,
 18               COUNT(rentalno) AS totalcount
 19         FROM outlet NATURAL JOIN    vehicle
 20                     NATURAL JOIN    ragreement
 21                     LEFT OUTER JOIN faultreport USING (licenseno,rentalno)
 22         WHERE  SYSDATE - startdate <= 180
 23         GROUP BY (outno))
 24         UNION
 25        (SELECT DECODE(outno,NULL,'Total','Report: ' || outno ) AS outno,
 26                SUM(DECODE(TO_CHAR(datechecked,'DY'), 'MON', 1 , 0)) AS Monday,
 27                SUM(DECODE(TO_CHAR(datechecked,'DY'), 'TUE', 1 , 0)) AS Tuesday,
 28                SUM(DECODE(TO_CHAR(datechecked,'DY'), 'WED', 1 , 0)) AS Wednesday,
 29                SUM(DECODE(TO_CHAR(datechecked,'DY'), 'THU', 1 , 0)) AS Thursday,
 30                SUM(DECODE(TO_CHAR(datechecked,'DY'), 'FRI', 1 , 0)) AS Friday,
 31                SUM(DECODE(TO_CHAR(datechecked,'DY'), 'SAT', 1 , 0)) AS Saturday,
 32                SUM(DECODE(TO_CHAR(datechecked,'DY'), 'SUN', 1 , 0)) AS Sunday,
 33                COUNT(reportnum) AS totalcount
 34         FROM outlet NATURAL JOIN    vehicle
 35                      NATURAL JOIN    ragreement
 36                      LEFT OUTER JOIN faultreport USING (licenseno,rentalno)
 37         WHERE  SYSDATE - datechecked <= 180
 38         GROUP BY (outno)))
 39  GROUP BY GROUPING SETS(outno,());

Outlet No.                                          Monday    Tuesday  Wednesday   Thursday     Friday   Saturday     Sunday Total Count
-------------------------------------------------- ---------- ---------- ---------- ---------- ---------- ---------- ---------- -----------
Rent: 1                                                     0          0          1          0          0          0          0           1
Rent: 2                                                     1          1          0          0          0          1          0           3
Rent: 3                                                     0          1          0          0          1          1          0           3
Report: 1                                                   0          0          0          1          0          1          0           2
Report: 2                                                   1          0          0          0          0          0          0           1
Report: 3                                                   0          0          0          0          1          0          0           1
Total                                                       2          2          1          1          2          3          0          11

7 rows selected.
```

#5)

```
SQL> SELECT NVL(TO_CHAR(o.outno),'Manager Total') AS "Outlet No.",
  2         managerno || ': ' || fname || ' ' || lname AS "Manager",
  3         COUNT(r.rentalno) AS "Num Rentals",
  4         ROUND(SUM((RETURNDATE - STARTDATE)*DAILYRATE)/COUNT(r.rentalno),2) AS "Revenue per Rental",
  5         ROUND(SUM(DECODE(reportnum,NULL,0,1))/COUNT(r.rentalno),2) AS "Num Faults per Rental"
  6  FROM outlet o JOIN vehicle v ON v.outno=o.outno
  7                JOIN ragreement r ON v.licenseno=r.licenseno
  8                LEFT OUTER JOIN faultreport f ON f.rentalno=r.rentalno AND f.licenseno=r.licenseno
  9                JOIN employee e ON e.empno=o.managerno
 10  GROUP BY GROUPING SETS((o.outno, o.managerno || ': ' || e.fname || ' ' || e.lname),(o.managerno || ': ' || e.fname || ' ' || e.lname))
 11  ORDER BY 2;

Outlet No.      Manager              Num Rentals Revenue per Rental Num Faults per Rental
--------------- -------------------- ----------- ------------------ ---------------------
1               1: William Defoe               8              218.4                   .75
Manager Total   1: William Defoe               8              218.4                   .75
2               2: Charles Babbage             8             249.96                    .5
Manager Total   2: Charles Babbage             8             249.96                    .5
3               3: Annie Besant               12             361.95                   .42
Manager Total   3: Annie Besant               12             361.95                   .42

6 rows selected.
```

#6)

-- Assumption : Considered Maximum and minimum revenue generated for 2 quarters combined.

```
SQL> SELECT (CASE  WHEN ROWNUM = 1 THEN 'Max Revenue'
  2                WHEN ROWNUM = 2 THEN 'Min Revenue' END) AS "Level",
  3          out_no AS "Outlet No.",
  4          revenue AS "Revenue"
  5  FROM ((SELECT *
  6         FROM (SELECT outno AS out_no, ROUND(SUM((NVL(returndate,NULL)-startdate) * dailyrate),2) AS revenue
  7               FROM ragreement JOIN vehicle USING(licenseno)
  8                               JOIN outlet  USING (outno)
  9               WHERE (EXTRACT(month FROM returndate) >= 10 AND EXTRACT(year FROM returndate) = EXTRACT(year FROM SYSDATE) - 1)
 10               OR    (EXTRACT(month FROM returndate) <= 3 AND EXTRACT(year FROM returndate) = EXTRACT(year FROM SYSDATE))
 11               GROUP BY (outno)
 12               ORDER BY 2 DESC)
 13          WHERE ROWNUM = 1)
 14          UNION
 15        (SELECT *
 16         FROM (SELECT outno as out_no,
 17                      ROUND(SUM((NVL(returndate,NULL)-startdate) * dailyrate),2) AS revenue
 18               FROM ragreement JOIN vehicle USING (licenseno)
 19                               JOIN outlet  USING (outno)
 20               WHERE (EXTRACT(month FROM returndate) >= 10 AND EXTRACT(year FROM returndate) = EXTRACT(year FROM SYSDATE) - 1)
 21               OR (EXTRACT(month FROM returndate) <= 3 AND EXTRACT(year FROM returndate) = EXTRACT(year FROM SYSDATE))
 22               GROUP BY (outno)
 23               ORDER BY 2)
 24          WHERE ROWNUM = 1));

Level       Outlet No.    Revenue
----------- ---------- ----------
Max Revenue          2     892.72
Min Revenue          3     581.77
```

#7)

-- Assumption: Average is average of (SYSDATE - year of vehicle)

```
SQL> SELECT make AS "Make",
  2         model AS "Model",
  3         num_cars AS "Num Cars",
  4         avg_age AS "Avg Age",
  5         NVL(num_rentals,0) AS "Num of Rentals",
  6         NVL(num_days_rented ,0) AS "Num of Days Rented",
  7         NVL(num_fault_reports ,0) AS "Num of Fault Reports"
  8  FROM ((SELECT NVL(make,'_total') AS make,
  9                NVL(model,DECODE(make,NULL,' ', '_Sub Total ' || make )) AS model,
 10                COUNT(*) AS num_cars,
 11                ROUND(AVG(EXTRACT(YEAR FROM SYSDATE) - year),2) AS avg_age
 12         FROM vehicle
 13         GROUP BY ROLLUP (make,model))
 14         LEFT JOIN
 15        (SELECT NVL(make,'_total') AS make,
 16                NVL(model,DECODE(make,NULL,' ', '_Sub Total ' || make )) AS model,
 17                NVL(COUNT(*),0) AS num_rentals,
 18                NVL(SUM(TRUNC(NVL(returndate,SYSDATE) - startdate)),0) AS num_days_rented,
 19                NVL(COUNT(reportnum),0) AS num_fault_reports
 20         FROM vehicle LEFT OUTER JOIN ragreement  USING (licenseno)
 21                      LEFT OUTER JOIN faultreport USING (rentalno,licenseno)
 22         WHERE EXTRACT(YEAR FROM startdate) = EXTRACT(YEAR FROM SYSDATE)
 23         GROUP BY ROLLUP (make,model))
 24         USING (make,model))
 25  ORDER BY 1,2;
```

Make	Model	Num Cars	Avg Age	Num of Rentals	Num of Days Rented	Num of Fault Reports
BMW	528i	1	2	1	1	0
BMW	_Sub Total BMW	1	2	1	1	0
Ford	Taurus	1	3	2	4	1
Ford	_Sub Total Ford	1	3	2	4	1
Honda	Accord	1	5	0	0	0
Honda	Civic	1	2	0	0	0
Honda	Odyssey	1	3	1	2	1
Honda	_Sub Total Honda	3	3.33	1	2	1
Hyundai	Sonata	1	2	0	0	0
Hyundai	_Sub Total Hyundai	1	2	0	0	0
Lexus	LS 430	1	4	2	14	0
Lexus	_Sub Total Lexus	1	4	2	14	0
Nissan	Altima	1	4	0	0	0
Nissan	_Sub Total Nissan	1	4	0	0	0
Toyota	Camry	1	3	2	2	1
Toyota	Corolla	1	1	2	2	0
Toyota	_Sub Total Toyota	2	2	4	4	1
_total		10	2.9	10	25	3

18 rows selected.

#8)

-- Reference https://www.tek-tips.com/viewthread.cfm?qid=1703809 for getting the quarter from date

-- Considering only the makes rented last year in all the quarters:

```
SQL> SELECT TO_CHAR(returndate,'Q') AS "Quarter",
  2         make AS "Make",
  3         DECODE(COUNT(rentalno),0,0,COUNT(reportnum)/COUNT(rentalno)) AS "Likelihood",
  4         RANK() over (PARTITION BY (TO_CHAR(returndate,'Q'))
  5                      ORDER BY  DECODE(COUNT(rentalno),0,0,COUNT(reportnum)/COUNT(rentalno))
DESC) AS "Rank",
  6         COUNT(rentalno) AS "Num of Rentals"
  7  FROM vehicle   LEFT OUTER JOIN ragreement  USING (licenseno)
  8                 LEFT OUTER JOIN faultreport USING (rentalno)
  9  WHERE EXTRACT(YEAR FROM returndate) = EXTRACT(YEAR FROM SYSDATE) - 1
 10  GROUP BY (TO_CHAR(returndate,'Q'), make);

Q Make       Likelihood       Rank Num of Rentals
- ---------- ---------- ---------- --------------
1 Toyota              1          1              1
1 Hyundai             1          1              1
1 Honda               1          1              1
1 BMW                 0          4              1
1 Lexus               0          4              1
2 Hyundai             1          1              1
2 Honda               1          1              1
2 Toyota              1          1              1
2 Lexus               0          4              1
3 Ford                1          1              1
3 BMW                 1          1              1
3 Toyota              0          3              1
4 Toyota              1          1              1
4 Honda              .5          2              2
4 BMW                 0          3              1

15 rows selected.
```

-- Considering all the makes irrespective of whether they are rented or not:

```
SQL> SELECT B.quarter AS "Quarter",
  2         make AS "Make",
  3         DECODE(COUNT(rentalno),0,0,COUNT(reportnum)/COUNT(rentalno)) AS "Likelihood",
  4         RANK() over (PARTITION BY B.quarter
  5                      ORDER BY  DECODE(COUNT(rentalno),0,0,COUNT(reportnum)/COUNT(rentalno)) DESC) AS "Rank",
  6         COUNT(rentalno) AS "Num of Rentals"
  7  FROM ((SELECT licenseno, TO_CHAR(returndate,'Q') AS quarter, rentalno, reportnum, returndate
  8         FROM vehicle   LEFT OUTER JOIN ragreement  USING (licenseno)
  9                        LEFT OUTER JOIN faultreport USING (rentalno,licenseno)
 10         WHERE EXTRACT(YEAR FROM returndate) = EXTRACT(YEAR FROM SYSDATE) - 1) A
 11         RIGHT OUTER JOIN
 12        (SELECT licenseno, make, quarter
 13         FROM vehicle NATURAL JOIN (SELECT LEVEL AS quarter
 14                                    FROM DUAL
 15                                    CONNECT BY LEVEL < 5)) B
 16         ON (A.licenseno = B.licenseno AND A.quarter = B.quarter))
 17  GROUP BY (B.quarter, make);

   Quarter Make       Likelihood       Rank Num of Rentals
---------- ---------- ---------- ---------- --------------
         1 Honda               1          1              1
         1 Toyota              1          1              1
         1 Hyundai             1          1              1
         1 Lexus               0          4              1
         1 BMW                 0          4              1
         1 Ford                0          4              0
         1 Nissan              0          4              0
         2 Honda               1          1              1
         2 Toyota              1          1              1
         2 Hyundai             1          1              1
         2 Ford                0          4              0
         2 Nissan              0          4              0
         2 BMW                 0          4              0
         2 Lexus               0          4              1
         3 BMW                 1          1              1
         3 Ford                1          1              1
         3 Lexus               0          3              0
         3 Honda               0          3              0
         3 Nissan              0          3              0
         3 Hyundai             0          3              0
         3 Toyota              0          3              1
         4 Toyota              1          1              1
         4 Honda              .5          2              2
         4 Lexus               0          3              0
         4 BMW                 0          3              1
         4 Nissan              0          3              0
         4 Ford                0          3              0
         4 Hyundai             0          3              0

28 rows selected.
```

#9)

```
SQL> SELECT outno AS "Outlet No.",
  2         same_state_customer_count AS "Same State Customer Count",
  3         same_state_rental_count AS "Same State Rental Count",
  4         ROUND(same_state_customer_count/total_customer_count,2) AS "Customer Proportion",
  5         ROUND(same_state_rental_count/total_rental_count,2) AS "Rental Proportion"
  6  FROM ((SELECT outno,COUNT(DISTINCT clientno) AS same_state_customer_count,
  7                      COUNT(rentalno) AS same_state_rental_count
  8         FROM client c JOIN ragreement ra USING (clientno)
  9                       JOIN vehicle USING (licenseno)
 10                       JOIN outlet o USING (outno)
 11         WHERE c.state = o.state
 12         GROUP BY outno)
 13         JOIN
 14        (SELECT outno,COUNT(DISTINCT clientno) AS total_customer_count,
 15                      COUNT(rentalno) AS total_rental_count
 16         FROM client c JOIN ragreement ra USING (clientno)
 17                       JOIN vehicle USING (licenseno)
 18                       JOIN outlet o USING (outno)
 19         GROUP BY outno)
 20         USING (outno));

Outlet No. Same State Customer Count Same State Rental Count Customer Proportion Rental Proportion
---------- ------------------------- ---------------------- ------------------- -----------------
         1                         4                      5                 .67               .63
         2                         1                      1                 .14               .13
         3                         2                      4                 .25               .33
```

#10)

```
SQL> SELECT emp_level AS "Employee Level",
  2         employee_Details AS "Employee Details",
  3         NVL(num_report,0) AS "Num of Reports",
  4         outno AS "Outlet No.",
  5         outlet_address AS "Outlet Address"
  6  FROM ((SELECT empno, LEVEL AS emp_level,
  7         LPAD(' ', 3*(LEVEL-1)) || empno || ' ' || fname || ' ' || lname AS employee_details,
  8         outno,
  9         street || ', ' || city  || ', ' || state || ' ' || zipcode AS outlet_address
 10         FROM employee JOIN outlet USING (outno)
 11         START WITH empno = 1 or empno = 2 or empno = 3
 12         CONNECT BY PRIOR empno = supervisorno)
 13         LEFT OUTER JOIN
 14        (SELECT empno,
 15         COUNT(reportnum) AS num_report
 16         FROM employee NATURAL JOIN faultreport
 17         WHERE SYSDATE - datechecked <= 90
 18         GROUP BY empno)
 19         USING (empno));

Employee Level Employee Details               Num of Reports Outlet No. Outlet Address
-------------- ------------------------------ -------------- ---------- ----------------------------------------
             1 1 William Defoe                             0          1 495 Wilkins Ave, Los Angeles, CA 90210
             2    4 Thomas Edison                          0          1 495 Wilkins Ave, Los Angeles, CA 90210
             3       13 Michelle Monaghan                  0          1 495 Wilkins Ave, Los Angeles, CA 90210
             3       14 Stone Austin                       1          1 495 Wilkins Ave, Los Angeles, CA 90210
             2    5 Ourania Siabanise                      0          1 495 Wilkins Ave, Los Angeles, CA 90210
             3       15 Dwayne Johnson                     0          1 495 Wilkins Ave, Los Angeles, CA 90210
             3       16 Mithali Agarwal                    0          1 495 Wilkins Ave, Los Angeles, CA 90210
             2    6 Prabhas Raju                           0          1 495 Wilkins Ave, Los Angeles, CA 90210
             3       17 Shaun Marsh                        0          1 495 Wilkins Ave, Los Angeles, CA 90210
             3       18 Maria Sharapova                    0          1 495 Wilkins Ave, Los Angeles, CA 90210
             1 2 Charles Babbage                           0          2 8827 Forbes Ave, Pittsburgh, PA 15213
             2    7 Ross Taylor                            0          2 8827 Forbes Ave, Pittsburgh, PA 15213
             3       19 Rod Laver                          0          2 8827 Forbes Ave, Pittsburgh, PA 15213
             3       20 Martina Navratilova                1          2 8827 Forbes Ave, Pittsburgh, PA 15213
             2    8 Monica Geller                          0          2 8827 Forbes Ave, Pittsburgh, PA 15213
             3       21 Andre Agassi                       0          2 8827 Forbes Ave, Pittsburgh, PA 15213
             3       22 Pete Sampras                       0          2 8827 Forbes Ave, Pittsburgh, PA 15213
             2    9 Joey Tribbiani                         0          2 8827 Forbes Ave, Pittsburgh, PA 15213
             3       23 Mithilda May                       0          2 8827 Forbes Ave, Pittsburgh, PA 15213
             3       24 Julianna Moore                     0          2 8827 Forbes Ave, Pittsburgh, PA 15213
             1 3 Annie Besant                              0          3 385 18th St, New York, NY 10837
             2    10 Chandler Bing                         0          3 385 18th St, New York, NY 10837
             3       25 Roger Federer                      1          3 385 18th St, New York, NY 10837
             3       26 Nancy Drew                         1          3 385 18th St, New York, NY 10837
             2    11 Robert Downey                         0          3 385 18th St, New York, NY 10837
             3       27 Hannah Beggs                       0          3 385 18th St, New York, NY 10837
             3       28 Elizabeth Lawrence                 0          3 385 18th St, New York, NY 10837
             2    12 Jie Fang                              0          3 385 18th St, New York, NY 10837
             3       29 Rafael Nadal                       0          3 385 18th St, New York, NY 10837
             3       30 Sofia Burgers                      0          3 385 18th St, New York, NY 10837

30 rows selected.
```