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REM: Assignment 3 – ADVANCED DML: NESTED QUERIES, JOINS, SET OPERATIONS

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REM: ********************************************************************

set echo ON;

@z:/ex3/air_main.sql

REM: 1. Display the flight number,departure date and time of a flight, its
REM: route details and aircraft name of type either Schweizer or Piper that
REM: departs during 8.00 PM and 9.00 PM.

SELECT flno, departs, dtime,
        routeid, orig_airport, dest_airport, distance,
        aname
FROM fl_schedule, flights, routes, aircraft
WHERE flno=flightno AND
        rid=routeid AND
        flights.aid=aircraft.aid AND
        type in('Schweizer', 'Piper') AND
        dtime BETWEEN 2000 AND 2100;


REM: 2. For all the routes, display the flight number, origin and destination
REM: airport, if a flight is assigned for that route.

SELECT DISTINCT routeid, orig_airport, dest_airport, distance, flightno
FROM flights, fl_schedule, routes
WHERE rid=routeid AND flightno=flno;


REM: 3. For all aircraft with cruisingrange over 5,000 miles, find the name
REM: of the aircraft and the average salary of all pilots certified for this
REM: aircraft.

SELECT aname, avg(salary)
 FROM aircraft a, employee e, certified c
 WHERE a.aid=c.aid AND
  c.eid=e.eid AND
  cruisingrange > 5000
 GROUP BY aname;


REM: 4. Show the employee details such as id, name and salary who are not
REM: pilots and whose salary is more than the average salary of pilots.
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SELECT eid, ename, salary
FROM employee
WHERE eid NOT IN (SELECT eid FROM certified) AND
 salary > (SELECT avg(salary)
   FROM employee e, certified c
   where e.eid=c.eid);


REM: 5. Find the id and name of pilots who were certified to operate some
REM: aircrafts but at least one of that aircraft is not scheduled from
REM: any routes.

SELECT e.eid, ename
FROM employee e, certified c
WHERE e.eid=c.eid AND
        NOT EXISTS (SELECT * FROM flights WHERE c.aid=aid);


REM: 6. Display the origin and destination of the flights having at least
REM: three departures with maximum distance covered.

SELECT orig_airport, dest_airport
FROM routes JOIN flights ON routeid=rid
WHERE distance=(SELECT MAX(distance) FROM routes)
GROUP BY orig_airport, dest_airport
HAVING COUNT(*)>=3;


REM: 7. Display name and salary of pilot whose salary is more than the
REM: average salary of any pilots for each route other than flights
REM: originating from Madison airport.

SELECT DISTINCT ename, salary
FROM employee e, certified c
WHERE e.eid=c.eid AND
        salary >ANY (SELECT AVG(salary)
                        FROM employee e1, routes r1, flights f1, certified c1
                        WHERE e1.eid=c1.eid AND
                        c1.aid=f1.aid AND
                        f1.rid=routeid AND
                        orig_airport <> 'Madison'
                        GROUP BY orig_airport, dest_airport);


REM: 8. Display the flight number, aircraft type, source and destination
REM: airport of the aircraft having maximum number of flights to Honolulu.

SELECT DISTINCT flightno, type, orig_airport, dest_airport
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FROM ((aircraft a JOIN certified c ON a.aid=c.aid)
      JOIN flights f ON a.aid=f.aid)
      JOIN routes ON routeid=rid
WHERE a.aid=( SELECT aid
            FROM flights
            WHERE rid = ( SELECT routeid
            FROM routes
            WHERE dest_airport='Honolulu')
            GROUP BY aid
            HAVING COUNT(*)=(SELECT MAX(COUNT(*))
                        FROM flights
                        WHERE rid = ( SELECT routeid
                                    FROM routes
                                    WHERE dest_airport='Honolulu')
                        GROUP BY aid)
         ) AND
  dest_airport='Honolulu';


REM: 9. Display the pilot(s) who are certified exclusively to pilot all
REM: aircraft in a type.

SELECT eid, type
FROM (SELECT e.eid,e.ename, a.type
          FROM (employee e JOIN certified c ON e.eid=c.eid)
          JOIN aircraft a ON a.aid=c.aid
GROUP BY e.eid,e.ename, a.type
HAVING count(*)=(SELECT count(*)
                    FROM aircraft ac WHERE a.type=ac.type))
ORDER BY eid;


SELECT eid
FROM (SELECT e.eid
          FROM (employee e JOIN certified c ON e.eid=c.eid)
          JOIN aircraft a ON a.aid=c.aid
          GROUP BY e.eid, a.type
          HAVING count(*)=(SELECT count(*)
                              FROM aircraft ac WHERE a.type=ac.type))
GROUP BY eid
HAVING COUNT(*)=1
ORDER BY eid;


REM: 10. Name the employee(s) who is earning the maximum salary among the
REM: airport having maximum number of departures.

SELECT eid, ename, salary
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FROM employee
WHERE salary = (SELECT MAX(salary)
                FROM employee e, certified c, flights f, routes
                WHERE routeid=rid AND f.aid=c.aid AND c.eid=e.eid AND
                orig_airport=(SELECT orig_airport
                              FROM routes
                              GROUP BY orig_airport
                              HAVING COUNT(orig_airport)=(SELECT MAX(COUNT(orig_airport))
                                                          FROM routes
                                                          GROUP BY orig_airport)));


REM: 11. Display the departure chart as follows:
REM: flight number, departure(date,airport,time), destination airport,
REM: arrival time, aircraft name for the flights from New York airport during
REM: 15 to 19th April 2005. Make sure that the route contains at least two
REM: flights in the above specified condition.

SELECT flno, orig_airport, departs, dtime, dest_airport, arrives, atime, aname
FROM fl_schedule, flights f, routes, aircraft a
WHERE flno=flightno AND rid=routeid AND f.aid=a.aid AND
        orig_airport='New York' AND departs BETWEEN '15-APR-05' AND '19-APR-05';


REM: 12. A customer wants to travel from Madison to New York with no more
REM: than two changes of flight. List the flight numbers from Madison if the
REM: customer wants to arrive in New York by 6.50 p.m.

SELECT flightno, orig_airport, dest_airport
FROM flights f JOIN routes r ON routeid=rid
WHERE flightno IN (     (SELECT f1.flightno
                        FROM ((routes JOIN flights f1 ON routeid=rid)
                                JOIN fl_schedule ON f1.flightno=flno)
                        WHERE orig_airport = 'Madison' AND
                        dest_airport = 'New York' AND
                        atime <= 1850)
                                UNION
                        (SELECT DISTINCT f1.flightno
                        FROM ((routes r1 JOIN flights f1 ON routeid=rid)
                                JOIN fl_schedule fl1 ON f1.flightno=flno)
                                ,
                                ((routes r2 JOIN flights f2 ON routeid=rid)
                                JOIN fl_schedule fl2 ON f2.flightno=flno)
                        WHERE r1.orig_airport = 'Madison' AND
                        r1.dest_airport=r2.orig_airport AND
                        r2.dest_airport = 'New York' AND
                        fl1.atime < fl2.dtime AND
                        fl2.atime <= 1850)
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                UNION
        (SELECT DISTINCT f1.flightno
        FROM ((routes r1 JOIN flights f1 ON routeid=rid)
                JOIN fl_schedule fl1 ON flightno=flno)
                ,
                ((routes r2 JOIN flights f2 ON routeid=rid)
                JOIN fl_schedule fl2 ON flightno=flno)
                ,
                ((routes r3 JOIN flights f3 ON routeid=rid)
                JOIN fl_schedule fl3 ON flightno=flno)
        WHERE r1.orig_airport = 'Madison' AND
        r1.dest_airport <> 'New York' AND
        r2.orig_airport <> 'New York' AND
        r2.dest_airport <> 'New York' AND
        r3.orig_airport <> 'New York' AND
        r3.dest_airport = 'New York' AND
        r1.dest_airport = r2.orig_airport AND
        r2.dest_airport = r3.orig_airport AND
        fl1.atime < fl2.dtime AND
        fl2.atime < fl3.dtime AND
        fl3.atime <= 1850)
);
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REM: 13. Display the id and name of employee(s) who are not pilots.
(SELECT eid, ename
FROM employee)
        MINUS
(SELECT e.eid, ename
FROM employee e, certified c
WHERE e.eid=c.eid);
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REM: 14. Display the id and name of employee(s) who pilots the aircraft from
REM: Los Angels and Detroit airport.

(SELECT e.eid, ename
FROM employee e, certified c, flights f, routes
WHERE routeid=rid AND f.aid=c.aid AND c.eid=e.eid AND
orig_airport='Los Angeles')
INTERSECT
(SELECT e.eid, ename
FROM employee e, certified c, flights f, routes
WHERE routeid=rid AND f.aid=c.aid AND c.eid=e.eid AND
orig_airport='Detroit');
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REM: **********

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