SQL Assignment Solutions

CMSC 424 - Database Design
Fall 2007

Part A

1. List the names of all the players in the database.

```
select Player.name
from Player
```

2. List the names of all players who have ever been assigned a seed for any tournament (doubles or singles).

```
select distinct p.name
from Player p, Registration r, PlayedIn pi
where p.pid = r.pid AND r.registrnum = pi.registrnum AND pi.seed is not null
```

3. List the pairs of players who played doubles tennis at Wimbledon in 2007. Do not include duplicate entries (ex: $\langle personA, personB \rangle$ as well as $\langle personB, personA \rangle$).

```
select p1.name, p2.name
from player p1, player p2, registration r1, registration r2, playedin pi
where p1.pid = r1.pid AND p2.pid = r2.pid AND r1.registrnum = r2.registrnum AND
      r1.registrnum = pi.registrnum AND r1.pid != r2.pid AND p1.pid < p2.pid AND
      pi.tid in (select tid
                 from tournament t
                 where to_char(t.startdate, 'YYYY') = '2007' AND
                       t.ttype = 'Doubles' AND t.name = 'Wimbledon')
```

4. List the names of all players who have lost to Roger Federer in the finals of any tournament, as well as the name of the tournament they lost in. Include results only for singles tennis.

```
select p.name, t.name
from registration rroger, registration r, match m, matchresults mr,
  (select p.pid pid
   from Player p
   where name='Roger Federer') roger, tournament t, player p
where rroger.pid = roger.pid AND m.mid = mr.mid AND
      mr.winner = rroger.registrnum AND
( (rroger.registrnum = m.registrnum1 AND r.registrnum = m.registrnum2) OR
  (rroger.registrnum = m.registrnum2 AND r.registrnum = m.registrnum1) ) AND
      t.tid = m.tid AND t.numrounds = m.round AND t.ttype = 'Singles' AND
      p.pid = r.pid
```

*** Note that we do not **have** to actually check for `rroger.registrnum` equal to one of the match registration numbers, because we assume the winner is always one of the registration numbers, but we do it here for good practice. If we chose to omit the check, we would need to constrain `rroger.registrnum != r.registrnum`

5. For all final round single matches, list the winner and loser of matches that were between two seeded players, as well as their seeds. Modify the titles of the columns to be something useful, like `WinnerName`, `WinnerSeed`, `LoserName`, `LoserSeed`.

```
select winner.playername winnername, winner.seed winnerseed,
       loser.playername losername, loser.seed loserseed
from match m, tournament t, matchresults mr,
     (select r.registrnum, pi.seed seed, p.name playerName
      from player p, registration r, playedin pi
      where p.pid = r.pid AND r.registrnum = pi.registrnum AND
            pi.seed is not null) winner,
     (select r.registrnum, pi.seed seed, p.name playerName
      from player p, registration r, playedin pi
      where p.pid = r.pid AND r.registrnum = pi.registrnum AND
            pi.seed is not null) loser
where m.tid = t.tid AND t.ttype = 'Singles' AND m.round = t.numrounds AND
      m.mid = mr.mid AND
      (m.registrnum1 = winner.registrnum OR m.registrnum2 = winner.registrnum) AND
      (m.registrnum1 = loser.registrnum OR m.registrnum2 = loser.registrnum) AND
      winner.registrnum != loser.registrnum AND mr.winner = winner.registrnum
```

*** See note for question 4, similarly here for the two registration relations.

6. List the names of all US players who have participated in at least two tournaments in 2007. Do **not** use any aggregating functions for this problem.

```
select distinct usplayers.name
from tournament t1, tournament t2, registration r1, registration r2,
     playedin pi1, playedin pi2,
     (select p.pid pid, p.name
      from Player p, CountryCodes cc
      where p.ccode = cc.code AND cc.country = 'United States') usplayers
where t1.tid = pi1.tid AND pi1.registrnum = r1.registrnum AND
      t2.tid = pi2.tid AND pi2.registrnum = r2.registrnum AND
      r1.pid = usplayers.pid AND r2.pid = usplayers.pid AND
      r1.registrnum != r2.registrnum AND
      to_char(t1.startdate,'YYYY') = '2007' AND
      to_char(t2.startdate,'YYYY') = '2007'
```

7. List all tournaments having more than 5 rounds. Print the name of the tournament, the tournament type, the start and end dates, and the number of rounds.

```
select t.name, t.startdate, t.enddate, t.ttype, t.numrounds
from tournament t
where t.numrounds > 5
```

8. List all doubles matches that were won because one of the teams retired. Include the winner's names, the loser's names, the tournament name, the year of the tournament, and the round number of the match.

```
select p1.name winner1, p2.name winner2, p3.name loser1, p4.name loser2,
       matchinfo.name tournament_name, matchinfo.year, matchinfo.round roundnum
from player p1, registration r1, playedin pi1,
     player p2, registration r2, playedin pi2,
     player p3, registration r3, playedin pi3,
     player p4, registration r4, playedin pi4,
     (select t.name, to_char(t.startdate, 'YYYY') year, m.round round,
             m.registrnum1 rn1, m.registrnum2 rn2, mr.winner winner
      from tournament t, match m, retiredmatch rm, matchresults mr
      where t.tid = m.tid AND m.mid = rm.mid AND t.ttype = 'Doubles' AND
      mr.mid = m.mid) matchinfo
where p1.pid < p2.pid AND p3.pid < p4.pid AND
      p1.pid = r1.pid AND r1.registrnum = pi1.registrnum AND
        r1.registrnum = matchinfo.winner AND
      p2.pid = r2.pid AND r2.registrnum = pi2.registrnum AND
        r2.registrnum = matchinfo.winner AND
      p3.pid = r3.pid AND r3.registrnum = pi3.registrnum AND
        r3.registrnum != matchinfo.winner AND
      (r3.registrnum = matchinfo.rn1 OR r3.registrnum = matchinfo.rn2) AND
      p4.pid = r4.pid AND r4.registrnum = pi4.registrnum AND
        r4.registrnum != matchinfo.winner AND
      (r4.registrnum = matchinfo.rn1 OR r4.registrnum = matchinfo.rn2)
```

*** Following the notes from questions 4 and 5, we do the suggested alternative in this question.

9. Find all singles matches where the loser retired after playing at least one complete set. Include the winner's name, the loser's name, the tournament name, the year of the tournament, and the round number of the match.

```
select p1.name winner, p2.name loser, matchinfo.tname,
       matchinfo.year, matchinfo.roundnum
from player p1, registration r1,
     player p2, registration r2,
     (select t.name tname,to_char(t.startdate,'YYYY') year, m.round roundnum,
             m.registrnum1 rn1, m.registrnum2 rn2, mr.winner winner
      from match m, tournament t, retiredmatch rm, matchresults mr
      where m.tid = t.tid AND rm.mid = m.mid AND t.ttype = 'Singles' AND
            mr.mid = m.mid AND mr.numsets > 1) matchinfo
where p1.pid = r1.pid AND r1.registrnum = matchinfo.winner AND
      p2.pid = r2.pid AND r2.registrnum != matchinfo.winner AND
      (r2.registrnum = matchinfo.rn1 OR r2.registrnum = matchinfo.rn2)
```

10. For all tournaments in the database, list the name, tournament type, surface type, and the number of rounds it has. Sort the results in descending order by the number of rounds.

```
select t.name, t.ttype, t.surface, t.numrounds
from tournament t
order by t.numrounds desc
```

11. List the names, tournament types, and lengths (in days) of all tournaments that were longer than one week.

```
select t.name, t.ttype, t.enddate - t.startdate length
from tournament t
where (t.enddate - t.startdate > 7)
```

12. List the names of all male German players who registered for the 2007 Australian Open singles.

```
select distinct germans.name
from registration r, playedin pi, tournament t,
     (select p.pid pid, p.name name
      from player p, countrycodes cc
      where p.ccode = cc.code AND
      p.gender = 'M' AND cc.country = 'Germany') germans
where germans.pid = r.pid AND r.registrnum = pi.registrnum AND
      pi.tid = t.tid AND t.name = 'Australian Open' AND
      t.ttype = 'Singles' AND to_char(t.startdate,'YYYY') = '2007'
```

Part B

1. For all singles quarterfinal, semifinal, and final round matches that only took 3 sets, list the Tournament Name, Year, Winner of the Match, and the Match score (For the match score, print two columns per set, displaying the number of games each player won. Call these columns something meaningful, and ignore any tiebreaker results.).

```
select t.name, to_char(t.startdate, 'YYYY') year, p.name winner,
       ss1.winnergames Set1Win, ss1.losergames Set1Lose,
       ss2.winnergames Set2Win, ss2.losergames Set2Lose,
       ss3.winnergames Set3Win, ss3.losergames Set3Lose
from Tournament t, Match m, MatchResults mr,
     Player p, Registration r,
     SetScore ss1, SetScore ss2, SetScore ss3
where t.ttype = 'Singles' AND t.tid = m.tid AND
      m.mid = mr.mid AND mr.numsets = 3 AND
      m.round >= t.numrounds - 2 AND
      p.pid = r.pid AND r.registrnum = mr.winner AND
      ss1.mid = m.mid AND ss1.setnum = 1 AND
      ss2.mid = m.mid AND ss2.setnum = 2 AND
      ss3.mid = m.mid AND ss3.setnum = 3
```

2. List the names of all triples of players that have played doubles with each other. Only list each triple once.

```
select distinct p1.name, p2.name, p3.name
from player p1, player p2, player p3, registration r1a, registration r1b,
     registration r2a, registration r2b, registration r3a, registration r3b
where r1a.pid = r1b.pid AND r2a.pid = r2b.pid AND r3a.pid = r3b.pid AND
      r1a.pid = p1.pid AND r2a.pid = p2.pid AND r3a.pid = p3.pid AND
      r1a.registrnum = r2b.registrnum AND
      r2a.registrnum = r3b.registrnum AND
      r3a.registrnum = r1b.registrnum AND
      p1.pid < p2.pid AND p2.pid < p3.pid
```

3. List the names of all pairs of players that have played against each other in both singles and doubles.

```
select distinct p1.name, p2.name
from Match m_singles, Tournament t_singles,
     Match m_doubles, Tournament t_doubles,
     Player p1, Registration r1s, Registration r1d,
     Player p2, Registration r2s, Registration r2d
where m_singles.tid = t_singles.tid AND t_singles.ttype = 'Singles' AND
      m_doubles.tid = t_doubles.tid AND t_doubles.ttype = 'Doubles' AND
      r1s.registrnum = m_singles.registrnum1 AND p1.pid = r1s.pid AND
      r2s.registrnum = m_singles.registrnum2 AND p2.pid = r2s.pid AND
      (r1d.registrnum = m_doubles.registrnum1 OR
       r1d.registrnum = m_doubles.registrnum2) AND
      (r2d.registrnum = m_doubles.registrnum2 OR
       r2d.registrnum = m_doubles.registrnum1) AND
      p1.pid = r1d.pid AND p2.pid = r2d.pid AND p1.pid != p2.pid
```

4. Find all singles matches won by James Blake containing a love set (i.e the score of a set was either `6-0` or `0-6`). Print the name of the tournament, the year of the tournament, the round of the tournament, and the name of the player James Blake defeated.

```
select winning_matches.tname, winning_matches.tyear,
       m.round, loser.name
from Player loser, registration rloser, Match m,
     (select t.name tname, to_char(t.startdate,'YYYY') tyear, m.mid mid
      from Player blake, Registration r, Match m, Tournament t,
           MatchResults mr, SetScore ss
      where blake.name = 'James Blake' AND r.pid = blake.pid AND
            r.registrnum = mr.winner AND mr.mid = m.mid AND
            t.tid = m.tid AND ss.mid = m.mid AND t.ttype = 'Singles' AND
            ((ss.winnergames = 0 AND ss.losergames = 6) OR
             (ss.winnergames = 6 AND ss.losergames = 0))) winning_matches
where winning_matches.mid = m.mid AND rloser.pid = loser.pid AND
      (rloser.registrnum = m.registrnum1 OR
       rloser.registrnum = m.registrnum2) AND
      loser.name != 'James Blake'
```

5. List the names of all partners of a player in doubles tennis who also was seeded in a singles tournament at some point. This means that we want all players x who have partners y where partner y was seeded in men's singles.

```
select distinct pairs.name2
from player p, registration r, playedin pi, tournament t,
    (select p1.pid pid1, p2.name name2
     from player p1, player p2,
     registration r1, registration r2,
     playedin pi, tournament t
     where
       p1.pid != p2.pid AND
       p1.pid = r1.pid AND r1.registrnum = pi.registrnum AND
       p2.pid = r2.pid AND r2.registrnum = pi.registrnum AND
       pi.tid = t.tid AND t.ttype = 'Doubles') pairs
where
  p.pid = pairs.pid1 AND r.pid = p.pid AND pi.registrnum = r.registrnum AND
  t.tid = pi.tid AND t.ttype = 'Singles' AND pi.seed is not null
```

6. List the name of the player who has registered for the most tournaments, as well as the number of tournaments he has registered for. NOTE: If a player has registered for both singles and doubles play in a particular tournament, this counts as two tournaments.

```
select p.name, count(r.registrnum) registered_tournaments
from Player p, Registration r
where p.pid not in
       (select count1.pid
       from
         (select p.pid pid, count(r.registrnum) numreg
          from Registration r, player p
          where r.pid = p.pid
          group by p.pid) count1,
         (select p.pid, count(r.registrnum) numreg
          from Registration r, player p
          where r.pid = p.pid
          group by p.pid) count2
       where count1.numreg < count2.numreg)
       AND p.pid = r.pid
group by p.name
```

7. List the names of all Russian, Chilean, and US players Tommy Haas has played against. Include results from both doubles and singles matches.

```
select distinct p.name
from CountryCodes cc, Player p, Registration r,
     Player haas, Registration haas_r, Match m
where haas.name = 'Tommy Haas' AND haas_r.pid = haas.pid AND
      (haas_r.registrnum = m.registrnum1 OR
```

```
 haas_r.registrnum = m.registrnum2) AND
(r.registrnum = m.registrnum1 OR r.registrnum = m.registrnum2) AND
r.pid = p.pid AND p.pid != haas.pid AND p.ccode = cc.code AND
(cc.country = 'United States' OR cc.country = 'Chile' OR
 cc.country = 'Russia')
```

8. List the names of all players who have made it to at least the quarter finals of the four Grand Slam tournaments (Wimbledon, US Open, French Open, and Australian Open) in 2007 (they could have made it to the finals in either doubles or singles for each tournament considered).

```
select distinct p.name
from Tournament wimt, Tournament ust,
     Tournament frt, Tournament aut,
     Player p, Registration wimr, Registration usr,
     Registration frr, Registration aur,
     Match wimm, Match usm, Match frm, Match aum
where wimt.name = 'Wimbledon' AND ust.name = 'US Open' AND
      frt.name = 'French Open' AND aut.name = 'Australian Open' AND
      p.pid = wimr.pid AND p.pid = usr.pid AND
      p.pid = frr.pid AND p.pid = aur.pid AND
      (wimr.registrnum = wimm.registrnum1 OR
       wimr.registrnum = wimm.registrnum2) AND
      (usr.registrnum = usm.registrnum1 OR
       usr.registrnum = usm.registrnum2) AND
      (frr.registrnum = frm.registrnum1 OR
       frr.registrnum = frm.registrnum2) AND
      (aur.registrnum = aum.registrnum1 OR
       aur.registrnum = aum.registrnum2) AND
      wimm.tid = wimt.tid AND usm.tid = ust.tid AND
      frm.tid = frt.tid AND aum.tid = aut.tid AND
      wimm.round >= wimt.numrounds - 2 AND
      usm.round >= ust.numrounds - 2 AND
      frm.round >= frt.numrounds - 2 AND
      aum.round >= aut.numrounds - 2
```