

# Database Systems, CSCI 4380-01

## Homework # 5 Answers

### Answers.

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```
SELECT 'Student: Yunhe Wang (wangy43@rpi.edu)';
```

```
SELECT 'Query 1';
```

```
SELECT
    sp1.name
    , count(DISTINCT o1.id) as num_winter_games
    , count(DISTINCT o2.id) as num_summer_games
FROM
    sports sp1
    left join events e1
    on sp1.id = e1.sid
    left join winter_medals wm
    on e1.id = wm.eid
    left join olympics o1
    on wm.oid = o1.id
    , sports sp2
    left join events e2
    on sp2.id = e2.sid
    left join summer_medals sm
    on e2.id = sm.eid
    left join olympics o2
    on sm.oid = o2.id
WHERE
    sp1.name = sp2.name
GROUP BY
    sp1.name
ORDER BY
    name asc;
```

```
SELECT 'Query 2';
```

```
SELECT
    a.country
    , round((count(wm.medal)::numeric/count(DISTINCT o.year)), 2) as avg_medals
FROM
    athletes a
    , winter_medals wm
    , olympics o
WHERE
    a.id = wm.aid
    and wm.oid = o.id
GROUP BY
    a.country
ORDER BY
    avg_medals desc;
```

```
SELECT 'Query 3';
```

```
SELECT
    a.name
    , a.country
    , o.year
    , o.city
FROM
    athletes a
    , winter_medals wm
    , olympics o
    , events e
    , sports sp
WHERE
    a.country = 'JPN'
    and a.id = wm.aid
    and wm.oid = o.id
    and wm.medal = 'Gold'
    and wm.eid = e.id
    and e.name = 'Individual'
    and e.etype = 'm'
    and e.sid = sp.id
    and sp.discipline = 'Figure skating'
ORDER BY
    o.year asc
LIMIT 1;
```

```
SELECT 'Query 4';

SELECT DISTINCT
  a1.id
  , a1.name
  , a1.country
  , o1.city
  , o1.year
  , e1.name
  , sp1.discipline
FROM
  athletes a1
  , winter_medals wm1
  , olympics o1
  , events e1
  , sports sp1
  , athletes a2
  , winter_medals wm2
  , olympics o2
  , events e2
  , sports sp2
WHERE
  a1.id = wm1.aid
  and wm1.oid = o1.id
  and wm1.eid = e1.id
  and e1.sid = sp1.id
  and wm1.medal = 'Gold'
  and a2.id = wm2.aid
  and wm2.oid = o2.id
  and wm2.eid = e2.id
  and e2.sid = sp2.id
  and wm2.medal = 'Gold'
  and a1.country <> a2.country
  and a1.name <> a2.name
  and wm1.oid = wm2.oid
  and wm1.eid = wm2.eid
ORDER BY
  e1.name asc
  , year asc
  , city asc
  , country asc
  , a1.name asc;
```

```
SELECT 'Query 5';

SELECT
    foo.country
    , sum(count) as medal_count
FROM
    (
    SELECT
        a.country
        , count(wm.medal)
    FROM
        olympics o
        , winter_medals wm
        , events e
        , winter_eventcategories we
        , athletes a
    WHERE
        o.id = wm.oid
        and wm.aid = a.id
        and wm.eid = e.id
        and e.id = we.eid
        and o.year = '2018'
        and we.etype = 'single'
    GROUP BY
        a.country
    UNION ALL
    SELECT
        a.country
        , count(DISTINCT e.id)
    FROM
        olympics o
        , winter_medals wm
        , events e
        , winter_eventcategories we
        , athletes a
    WHERE
        o.id = wm.oid
        and wm.aid = a.id
        and wm.eid = e.id
        and e.id = we.eid
        and o.year = '2018'
        and we.etype <> 'single'
    GROUP BY
        a.country
    )
    as foo
GROUP BY
    foo.country
ORDER BY
    medal_count desc
    , country asc;
```

```
SELECT 'Query 6';
```

```
SELECT
  a.country
  , count(wm.medal) as num_firsttimers
FROM
  athletes a
  , winter_medals wm
  , olympics o
WHERE
  a.id = wm.aid
  and wm.oid = o.id
  and wm.medal = 'Gold'
  and o.year = '2018'
  and NOT EXISTS
  (SELECT 1
   FROM
     athletes a2
     , winter_medals wm2
     , olympics o2
   WHERE
     a2.id = a.id
     and a2.id = wm2.aid
     and wm2.oid = o2.id
     and wm2.medal = 'Gold'
     and o2.year < o.year)
GROUP BY
  a.country
ORDER BY
  num_firsttimers desc
  , country asc;
```

```
SELECT 'Query 7';
```

```
SELECT
  a.country
FROM
  athletes a
  , winter_medals wm
  , olympics o
WHERE
  a.id = wm.aid
  and wm.oid = o.id
GROUP BY
  a.country
HAVING
  count(DISTINCT o.year) = (SELECT count(o.id)
                           FROM olympics o
                           WHERE o.otype = 'winter')
ORDER BY
  country asc;
```

```
SELECT 'Query 8';

SELECT DISTINCT
    sp.name
    , o.year
    , o.city
FROM
    athletes a
    , winter_medals wm
    , olympics o
    , events e
    , sports sp
WHERE
    a.id = wm.aid
    and wm.medal = 'Gold'
    and a.country = 'USA'
    and wm.oid = o.id
    and wm.eid = e.id
    and e.sid = sp.id
    and NOT EXISTS
    (SELECT 1
     FROM
         athletes a2
         , winter_medals wm2
         , olympics o2
         , events e2
         , sports sp2
     WHERE
         sp.name = sp2.name
         and a2.id = wm2.aid
         and wm2.medal = 'Gold'
         and a2.country = 'USA'
         and wm2.oid = o2.id
         and wm2.eid = e2.id
         and e2.sid = sp2.id
         and o2.year < o.year)
ORDER BY
    name asc;
```

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