

Database Systems, CSCI 4380-01

Homework # 4 Answers

Answers.

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

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

```
SELECT
    e.name
    , e.etype
FROM
    events e
    , sports sp
WHERE
    sp.discipline = 'Figure skating'
    and sp.id = e.sid
ORDER BY
    name asc
    ,etype asc;
```

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

```
SELECT DISTINCT
    c.code
    , c.name
FROM
    olympics o
    , winter_medals wm
    , athletes a
    , countries c
WHERE
    o.year = '1924'
    and o.city = 'Chamonix'
    and o.otype = 'winter'
    and o.id = wm.oid
    and wm.aid = a.id
    and a.country = c.code;
```

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

```
SELECT
  o.year
  , count(DISTINCT a.country) as num_countries
FROM
  olympics o
  , winter_medals wm
  , athletes a
WHERE
  o.otype = 'winter'
  and o.id = wm.oid
  and wm.aid = a.id
  and a.country is not null
GROUP BY
  o.year
ORDER BY
  num_countries desc
  , year desc;
```

```
SELECT 'Query 4';
```

```
SELECT
```

```
    o1.year as year1
  , o1.city as city1
  , o2.year as year2
  , o2.city as city2
  , a1.name as athlete
  , a1.country
  , e1.name as event
```

```
FROM
```

```
    olympics o1
  , olympics o2
  , athletes a1
  , athletes a2
  , events e1
  , events e2
  , winter_medals wm1
  , winter_medals wm2
```

```
WHERE
```

```
    o1.otype = 'winter'
  and o2.otype = 'winter'
  and wm1.oid = o1.id
  and wm1.aid = a1.id
  and wm1.eid = e1.id
  and wm1.medal = 'Gold'
  and wm2.oid = o2.id
  and wm2.aid = a2.id
  and wm2.eid = e2.id
  and wm2.medal = 'Gold'
  and wm1.oid <> wm2.oid
  and wm1.aid = wm2.aid
  and wm1.eid = wm2.eid
  and o2.year - o1.year >= 12
```

```
ORDER BY
```

```
    year1 asc
  , year2 asc
  , athlete asc;
```

```
SELECT 'Query 5';

SELECT DISTINCT
  e.id
  , e.name
  , sp.discipline
FROM
  olympics o
  , sports sp
  , winter_medals wm
  , events e
WHERE
  o.year < 2000
  and o.otype = 'winter'
  and o.id = wm.oid
  and wm.eid = e.id
  and e.sid = sp.id
EXCEPT
SELECT DISTINCT
  e.id
  , e.name
  , sp.discipline
FROM
  olympics o
  , sports sp
  , winter_medals wm
  , events e
WHERE
  o.year > 2000
  and o.otype = 'winter'
  and o.id = wm.oid
  and wm.eid = e.id
  and e.sid = sp.id
ORDER BY
  name asc
  , discipline asc
  , id desc;
```

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

```
SELECT DISTINCT
  a1.id
  , a1.name
  , a1.country
FROM
  olympics o1
  , olympics o2
  , athletes a1
  , athletes a2
  , winter_medals wm
  , summer_medals sm
WHERE
  o1.otype = 'winter'
  and o2.otype = 'summer'
  and wm.oid = o1.id
  and wm.aid = a1.id
  and wm.medal = 'Gold'
  and sm.oid = o2.id
  and sm.aid = a2.id
  and sm.medal = 'Gold'
  and wm.aid = sm.aid
ORDER BY
  name asc
  , country asc;
```

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

```
SELECT DISTINCT
  a.id
  , a.name
  , a.country
FROM
  olympics o
  , summer_medals sm
  , athletes a
WHERE
  o.otype = 'summer'
  and o.id = sm.oid
  and sm.aid = a.id
  and sm.medal = 'Gold'
GROUP BY
  a.id
  , o.year
HAVING
  count(a.id) >= 6
ORDER BY
  name
  , country;
```

```
SELECT 'Query 8';
```

```
SELECT DISTINCT
```

```
    a.id  
    , a.name  
    , a.country
```

```
FROM
```

```
    olympics o  
    , summer_medals sm  
    , athletes a
```

```
WHERE
```

```
    o.id = sm.oid  
    and sm.aid = a.id  
    and sm.medal = 'Bronze'  
    and a.name like '%, Z%'  
    and a.country like '%U%'
```

```
UNION
```

```
SELECT DISTINCT
```

```
    a.id  
    , a.name  
    , a.country
```

```
FROM
```

```
    olympics o  
    , winter_medals wm  
    , athletes a
```

```
WHERE
```

```
    o.id = wm.oid  
    and wm.aid = a.id  
    and wm.medal = 'Bronze'  
    and a.name like '%, Z%'  
    and a.country like '%U%'
```

```
ORDER BY
```

```
    name asc  
    , country asc;
```

```
SELECT 'Query 9';
```

```
SELECT DISTINCT
  c.code
  , c.name
  , count(sm.medal) as medalcount
  , round(c.gdp::numeric) as gdp
  , round((count(sm.medal)/c.gdp)::numeric, 2) as investmentreturn
FROM
  olympics o
  , summer_medals sm
  , countries c
  , athletes a
WHERE
  o.id = sm.oid
  and sm.aid = a.id
  and a.country = c.code
  and c.gdp is not null
GROUP BY
  c.code
ORDER BY
  investmentreturn desc
LIMIT 10;
```

```
SELECT 'Query 10';
```

```
SELECT
  a.name
FROM
  olympics o
  , summer_medals sm
  , athletes a
WHERE
  o.id = sm.oid
  and sm.aid = a.id
GROUP BY
  a.name
HAVING
  count(DISTINCT a.country) >= 3
  and count(DISTINCT sm.medal) >= 3;
```

```
SELECT 'Query 11';
```

```
SELECT DISTINCT
  a1.name as name1
  , a2.name as name2
FROM
  athletes a1
  , athletes a2
  , split_part(a1.name, ' ', 1) a1ln
  , split_part(a1.name, ' ', 2) a1fn
  , split_part(a2.name, ' ', 1) a2ln
  , split_part(a2.name, ' ', 2) a2fn
WHERE
  a1ln = upper(a2fn)
  and a2ln = upper(a1fn)
  and a1.id < a2.id
EXCEPT
SELECT DISTINCT
  a1.name
  , a2.name
FROM
  athletes a1
  , athletes a2
  , split_part(a1.name, ' ', 1) a1ln
  , split_part(a1.name, ' ', 2) a1fn
  , split_part(a2.name, ' ', 1) a2ln
  , split_part(a2.name, ' ', 2) a2fn
WHERE
  a1ln = upper(a1fn)
  and a2ln = upper(a2fn)
ORDER BY
  name1 asc
  , name2 asc;
```



```
SELECT 'Query 12';
```

```
SELECT DISTINCT
```

```
    a.id  
    , a.name  
    , a.country
```

```
FROM
```

```
    summer_medals sm  
    , athletes a  
    , events e  
    , sports sp
```

```
WHERE
```

```
    sm.aid = a.id  
    and sm.eid = e.id  
    and e.sid = sp.id
```

```
GROUP BY
```

```
    a.id
```

```
HAVING
```

```
    count(DISTINCT sp.name) = 3  
    and count(sm.medal) >= 3;
```
