

Introduction to Database Systems 2020/2021, Test 1 (SQL SELECT), Variant: A

Duration: 70min

Maximal number of points/minimal number of points: 40/20

Only complete and correct solution will be evaluated by non-zero points.

Tasks

1. For each manufacturer, find out how many of his devices had less than two reported events in 2015. (15 points)

```
select d.manufacturer, count(t.manufacturer)
from (select distinct manufacturer from test.device) d
left join (
    select d.manufacturer
    from test.device d
    left join test.device_event e on d.dID = e.dID
                                and year(startDate) = 2015
    group by d.dID, d.manufacturer
    having count(e.startDate) < 2
) t on d.manufacturer = t.manufacturer
group by d.manufacturer
```

2. Find the longest event for each device. List the attributes dID, startDate, label, event_description, and name. (13 points)

```
select de.dID, de.startDate, d.label, et.event_description, p.name
from test.device_event de
join test.device d on de.dID = d.dID
join test.event_type et on de.tID = et.tID
join test.person p on de.pID = p.pID
join (
    select dID, max(DateDiff(minute, startDate, endDate)) max_datediff
    from test.device_event
    group by dID
) t on de.dID = t.dID
    and DateDiff(minute, de.startDate, de.endDate) = max_datediff
```

3. Find the people who have never reported an event longer than 100 minutes on a Bosh device. Use the function datediff (minute, startDate, endDate) to get the duration of the event. (12 points)

```
select *
from test.person p
where not exists(
    select 1
    from test.device_event e
    join test.device d on d.dID = e.dID
    where p.pID = e.pID and datediff(minute, startDate, endDate) > 100
    and d.manufacturer = 'bosh'
)
```

Introduction to Database Systems 2020/2021, Test 1 (SQL SELECT), Variant: B

Duration: 70min

Maximal number of points/minimal number of points: 40/20

Only complete and correct solution will be evaluated by non-zero points.

Tasks

1. For each manufacturer, find out how many of his devices have less than two events lasting more than 100 minutes. (15 points)

```
select d.manufacturer, count(t.manufacturer)
from (select distinct manufacturer from test.device) d
left join (
    select d.manufacturer
    from test.device d
    left join test.device_event e on d.dID = e.dID
        and datediff(minute, startDate, endDate) > 100
    group by d.dID, d.manufacturer
    having count(e.startDate) < 2
) t on d.manufacturer = t.manufacturer
group by d.manufacturer
```

2. For each person, find the longest event they reported. In other words, select those events where the person did not report an event of longer duration. Use the function `datediff (minute, startDate, endDate)` to get the duration of the event. List the attributes `pID`, `startDate`, `label`, `event_description`, and `name`. (13 points)

```
select de.pID, de.startDate, d.label, et.event_description, p.name
from test.device_event de
join test.device d on de.dID = d.dID
join test.event_type et on de.tID = et.tID
join test.person p on de.pID = p.pID
join (
    select pID, max(DateDiff(minute, startDate, endDate)) max_datediff
    from test.device_event
    group by pID
) t on de.pID = t.pID
    and DateDiff(minute, de.startDate, de.endDate) = max_datediff
```

3. Find people who have never reported an event with importance 0 that is longer than 100 minutes. Use the function `datediff (minute, startDate, endDate)` to get the duration of the event. (12 points)

```
select *
from test.person p
where not exists (
    select 1
    from test.device_event e
    join test.event_type t on t.tID = e.tID
    where p.pID = e.pID and datediff(minute, startDate, endDate) > 100
        and t.importance = 0
)
```