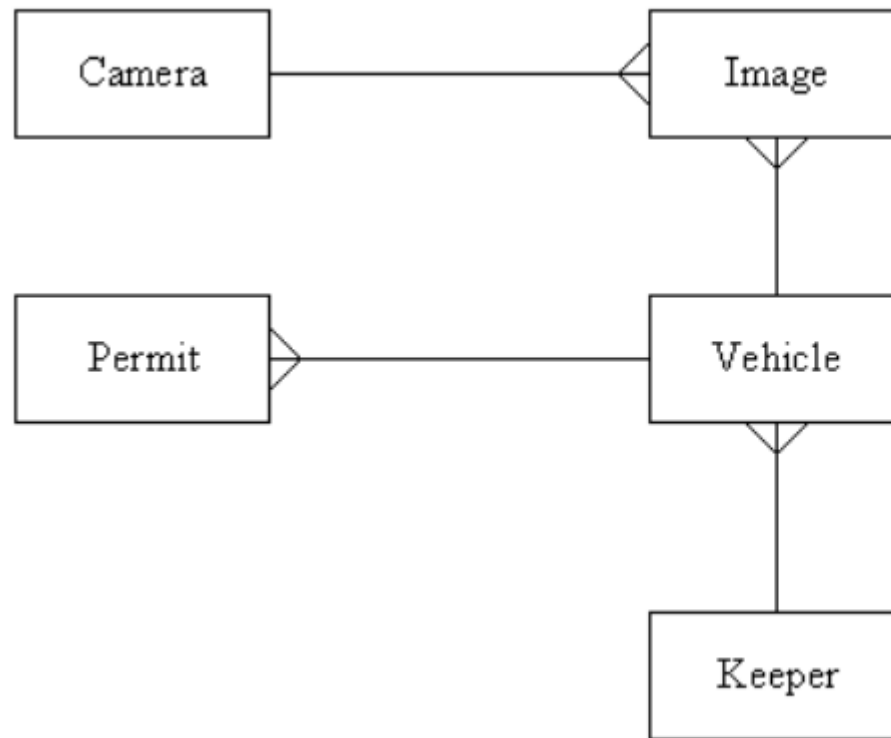


Database Management Systems

SQL Query

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Database Structure



Camera(id, perim)

Keeper(id, name, address)

Vehicle(id, *keeper*)

Image(camera, whn, reg)

Permit(reg, sDate,
chargeType)

Database Structure

Keeper

<u>id</u>	<u>name</u>	<u>address</u>
1	Ambiguous, Arthur	Absorption Ave.
2	Inconspicuous, Iain	Interception Rd.
3	Contiguous, Carol	Circumscription Close
4	Strenuous, Sam	Surjection Street
5	Assiduous, Annie	Attribution Alley
6	Incongruous, Ingrid	Irresolution Pl.

Camera

<u>id</u>	<u>perim</u>
1	IN
2	IN
3	IN
4	IN
5	IN
6	IN
7	IN
8	IN
9	OUT
10	OUT
11	OUT
12	OUT
13	OUT
14	OUT
15	OUT
16	OUT
17	NULL
18	NULL
19	NULL

Vehicle

<u>id</u>	<u>keeper</u>	SO 02 PSP	4
SO 02 ASP	1	SO 02 QSP	6
SO 02 BSP	3	SO 02 RSP	1
SO 02 CSP	1	SO 02 SSP	2
SO 02 DSP	4	SO 02 TSP	6
SO 02 ESP	1	SO 02 ATP	1
SO 02 FSP	3	SO 02 BTP	2
SO 02 GSP	6	SO 02 CTP	1
SO 02 HSP	5	SO 02 DTP	3
SO 02 ISP	6	SO 02 ETP	5
SO 02 JSP	2	SO 02 FTP	4
SO 02 KSP	5	SO 02 GTP	5
SO 02 LSP	2	SO 02 HTP	2
SO 02 MSP	2	SO 02 ITP	2
SO 02 NSP	4	SO 02 JTP	4
SO 02 OSP	6		

Database Structure

Image

camera	whn	reg	9	2003-02-25 16:45:04	SO 02 HSP
1	2003-02-25 06:10:13	SO 02 ASP	9	2003-02-25 16:48:11	SO 02 HSP
17	2003-02-25 06:20:01	SO 02 ASP	9	2003-02-25 16:51:30	SO 02 HSP
18	2003-02-25 06:23:40	SO 02 ASP	9	2003-02-25 16:58:01	SO 02 ISP
9	2003-02-25 06:26:04	SO 02 ASP	12	2003-02-25 17:01:13	SO 02 ISP
17	2003-02-25 06:57:31	SO 02 CSP	3	2003-02-25 17:07:00	SO 02 JSP
17	2003-02-25 07:00:40	SO 02 CSP	18	2003-02-25 17:10:43	SO 02 JSP
12	2003-02-25 07:04:31	SO 02 CSP	19	2003-02-25 17:14:11	SO 02 JSP
5	2003-02-25 07:10:00	SO 02 GSP	3	2003-02-25 17:17:03	SO 02 JSP
16	2003-02-25 07:13:00	SO 02 GSP	10	2003-02-25 18:23:11	SO 02 MUP
2	2003-02-25 07:20:01	SO 02 TSP	11	2003-02-25 18:26:13	SO 02 NUP
19	2003-02-25 07:23:00	SO 02 TSP	12	2003-02-25 18:29:01	SO 02 OUP
19	2003-02-25 07:26:31	SO 02 TSP	3	2003-02-25 18:33:10	SO 02 PUP
19	2003-02-25 07:29:00	SO 02 TSP	15	2003-02-25 18:36:31	SO 02 PUP
8	2003-02-25 07:35:41	SO 02 CSP	3	2003-02-25 18:39:10	SO 02 PUP
18	2003-02-25 07:39:04	SO 02 CSP	10	2003-02-26 05:13:30	SO 02 TSP
18	2003-02-25 07:42:30	SO 02 CSP	18	2003-02-25 16:29:11	SO 02 DSP
10	2003-02-25 07:45:11	SO 02 CSP	19	2003-02-25 16:31:01	SO 02 DSP
8	2003-02-25 07:48:10	SO 02 CSP	19	2003-02-25 17:42:41	SO 02 DSP
19	2003-02-25 07:51:10	SO 02 CSP	9	2003-02-25 18:54:30	SO 02 DSP
18	2003-02-25 07:55:11	SO 02 CSP	3	2003-02-25 17:16:11	SO 02 ESP
11	2003-02-25 07:58:01	SO 02 CSP	10	2003-02-25 18:08:40	SO 02 ESP
18	2003-02-25 16:28:40	SO 02 SSP	11	2003-02-25 18:08:00	SO 02 FSP
9	2003-02-25 16:31:01	SO 02 SSP	12	2003-02-25 18:08:13	SO 02 GSP
18	2003-02-25 16:38:31	SO 02 RSP			
9	2003-02-25 16:39:10	SO 02 RSP			

Permit

reg	sdate	chargetype	SO 02 FTP	2003-02-25 00:00:00	Daily
SO 02 ASP	2002-01-21 00:00:00	Weekly	SO 02 GTP	2003-02-28 00:00:00	Daily
SO 02 BSP	2002-01-30 00:00:00	Weekly	SO 02 HTP	2002-01-21 00:00:00	Daily
SO 02 CSP	2003-01-21 00:00:00	Weekly	SO 02 ITP	2002-01-30 00:00:00	Daily
SO 02 DSP	2003-01-30 00:00:00	Weekly	SO 02 JTP	2003-01-21 00:00:00	Daily
SO 02 ESP	2003-02-21 00:00:00	Weekly	SO 02 KTP	2003-01-30 00:00:00	Daily
SO 02 FSP	2003-02-25 00:00:00	Weekly	SO 02 ATP	2003-01-22 00:00:00	Daily
SO 02 GSP	2003-02-28 00:00:00	Weekly	SO 02 BTP	2002-01-31 00:00:00	Daily
SO 02 HSP	2002-01-21 00:00:00	Monthly	SO 02 CTP	2003-01-22 00:00:00	Daily
SO 02 ISP	2002-01-30 00:00:00	Monthly	SO 02 DTP	2003-01-31 00:00:00	Daily
SO 02 JSP	2003-01-21 00:00:00	Monthly	SO 02 ETP	2003-02-22 00:00:00	Daily
SO 02 KSP	2003-01-30 00:00:00	Monthly	SO 02 FTP	2003-02-26 00:00:00	Daily
SO 02 LSP	2003-02-21 00:00:00	Monthly	SO 02 GTP	2003-03-01 00:00:00	Daily
SO 02 MSP	2003-02-25 00:00:00	Monthly	SO 02 HTP	2002-01-22 00:00:00	Daily
SO 02 NSP	2003-02-28 00:00:00	Monthly	SO 02 ITP	2002-01-31 00:00:00	Daily
SO 02 OSP	2002-01-21 00:00:00	Monthly	SO 02 JTP	2003-01-22 00:00:00	Daily
SO 02 PSP	2002-01-30 00:00:00	Monthly	SO 02 KTP	2003-01-31 00:00:00	Daily
SO 02 QSP	2003-01-21 00:00:00	Annual	SO 02 BTP	2003-02-03 00:00:00	Daily
SO 02 RSP	2003-01-30 00:00:00	Annual	SO 02 BTP	2003-02-04 00:00:00	Daily
SO 02 SSP	2003-02-21 00:00:00	Annual	SO 02 BTP	2003-02-05 00:00:00	Daily
SO 02 TSP	2003-02-25 00:00:00	Annual	SO 02 BTP	2003-02-06 00:00:00	Daily
SO 02 ATP	2003-01-21 00:00:00	Daily	SO 02 BTP	2003-02-07 00:00:00	Daily
SO 02 BTP	2002-01-30 00:00:00	Daily			
SO 02 CTP	2003-01-21 00:00:00	Daily			
SO 02 DTP	2003-01-30 00:00:00	Daily			
SO 02 ETP	2003-02-21 00:00:00	Daily			

Examples

- SO 02 PSP plakalı aracın sahibinin adını ve adresini bulunuz.

```
SELECT name, address FROM keeper,vehicle  
WHERE vehicle.keeper = keeper.id  
AND vehicle.id='SO 02 PSP'
```

- Gelen araçların resmini çeken kameraların sayısını bulunuz.

```
SELECT COUNT(*) FROM camera WHERE perim='IN'
```

- Kamera 10 tarafından 26 Feb 2003 tarihinden önce çekilen resimlerin bilgilerini bulunuz.

```
SELECT whn,reg  
FROM image  
WHERE camera=10  
AND whn<'2003-02-26'
```

Examples

- Kamera 1 veya 18 tarafından yakalanan araç sahiplerinin bilgilerini tekrarlama olmadan listeleyin

```
SELECT DISTINCT k.name, k.address
FROM image as i, vehicle as v, keeper as k
WHERE i.reg=v.id AND v.keeper = k.id
AND (i.camera = 1 or i.camera=18)
```

- 5'ten fazla aracı olan kişilerin bilgilerini tekrarlama olmadan listeleyin.

```
SELECT k.name, k.address, count(v.id)
FROM keeper as k, vehicle as v
WHERE v.keeper = k.id
GROUP BY k.name,k.address
HAVING COUNT(v.id)>5
```

Examples

- Bugünün 1 Feb 2003 olduğu varsayımıyla, geçerli izin sahibi araçları ve kaç izinleri olduğunu listeleyin.

```
SELECT v.id, COUNT(p.reg)
FROM vehicle as v, permit as p
WHERE v.id=p.reg AND
(
    (p.chargeType = 'Daily' and p.sDate='2003-02-01') OR
    (p.chargeType = 'Weekly' and p.sDate>'2003-01-24') OR
    (p.chargeType = 'Monthly' and p.sDate>'2003-01-01') OR
    (p.chargeType = 'Annual' and p.sDate>'2002-02-01')
)
GROUP BY v.id
```

Examples

- Kamera 10'dan 25th Feb 2003 tarihinde geçen araçlar için zaman, plaka ve sürücü bilgilerini listeleyin

```
SELECT whn, reg, name
FROM image as i, vehicle as v
LEFT OUTER JOIN keeper as k ON v.keeper = k.id
WHERE i.reg = v.id AND
      Date(i.whn) = '2003-02-25' AND
      i.Camera = 10
```


Examples

- 4'ten fazla aracı olan ve bu araçlardan en az biri 2Den fazla izin sahibi olan kişileri ve araç/izin sayılarını listeleyin.

```
SELECT k.name, COUNT(v.id), COUNT(p.reg)
FROM vehicle as v, keeper as k, permit as p
WHERE v.keeper = k.id AND p.reg = v.id
GROUP BY k.name
HAVING COUNT(v.id) > 4 AND COUNT(p.reg)>2
```

- En az popüler izin tipini bulunuz.

```
SELECT * FROM (
SELECT chargeType, COUNT(*) as Total FROM permit
GROUP BY chargeType ) as D
ORDER BY Total DESC
Limit 1
```

Examples

- Kamera 19 tarafından yakalanan tüm araçlar için plaka, kamera 19'daki en erken zamanı ve hangi kameradan hangi saatte çıkış yaptığı bilgilerini listeleyiniz.

```
SELECT i.reg, regs.earlyCaught, c.id as leftCamera, whn
FROM image as i, camera as c,
    (SELECT i.reg, min(i.whn) as earlyCaught FROM image as i
     WHERE i.camera = 19 GROUP BY reg
    ) as regs
WHERE regs.reg = i.reg AND i.camera = c.id AND
      regs.earlyCaught < i.whn AND
      c.perim = 'OUT'
```

Examples

- Tüm kameralar için IN, OUT veya INTERNAL bilgilerini ve o kameranın en meşgul saatini listeleyiniz.

```
SELECT c.id, COALESCE(c.perim, 'INTERNAL'), Hour FROM camera as c,  
      (SELECT i.camera, EXTRACT(hour from whn) as Hour , COUNT(*) as imagesTaken  
       FROM image as i GROUP BY i.camera, EXTRACT(hour from whn)  
       ORDER BY i.camera, Hour, imagesTaken DESC  
       ) as Hours,  
      (SELECT CamHour.camera,Max(imagesTaken) as MaxImages  
       FROM (SELECT i.camera, EXTRACT(hour from whn) as Hour, COUNT(*) as imagesTaken  
            FROM image as i GROUP BY i.camera, EXTRACT(hour from whn)  
            ORDER BY i.camera, Hour, imagesTaken DESC  
            ) as CamHour  
       GROUP BY CamHour.camera  
       ) as busiest  
WHERE Hours.imagesTaken = busiest.Maximages AND  
Hours.camera = busiest.camera AND c.id = Hours.camera
```