COMP 3311: Database Management Systems

Tutorial 4 Structured Query Language (SQL)

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Submission: Upload this exercise worksheet by 11.59pm Friday (11 Mar) (Only one student needs to upload)

Customer(customerId, name)

Account(accountId, *customerId*)

Deposit(depositId, *accountId*, *customerId*, amount)

Withdrawal(withdrawalId, *accountId*, *customerId*, amount)

Exercise 1: Find the customer id of the customers who deposited into both account A1 and A2.

Using intersect

```
Select distinct customerId
From Deposit
Where accountId = 'A1'
intersect
Select distinct customerId
from Deposit
where accountId = 'A2'
```

Using a subquery without intersect

```
select distinct customerId
from Deposit
where accountId='A1'
      and customerId in
                  (select distinct customerId
                  from Deposit
                  where accountId='A2');
```

Using only one select statement

```
select distinct D1.customerId
from Deposit D1, Deposit D2
where D1.customerId=D2.customerId
and D1.accountId='A1'
and D2.accountId='A2';
```

Exercise 2: Find the ids of the accounts which have been deposited into by *more than one* customer.

Without using group by

```
select distinct D1.accountId
from Deposit D1, Deposit D2
where D1.customerId<>D2.customerId
and D1.accountId=D2.accountId;
```

Using group by

```
select distinct accountId
from Deposit
group by accountId
having count(distinct customerId)≥2;
```

Exercise 3: Find the customer id of the customers who deposited into either account A1 or account A2 but not both accounts.

Use only one select statement

```
select customerId
from Deposit
where accountId='A1'
or accountId='A2'
group by customerId
having count(distinct accountId)=1;
```

Exercise 4: Find the customer id of the customers who deposited the largest number of times.

Using aggregate functions

```
select customerId
from Deposit
group by customerId
having count(*)=(select max(count(*))
                        from Deposit
                        group by customerId)
```

Using set membership

```
select customerId
from Deposit
group by customerId
having count(*)≥all (select count(*)
from Deposit
group by customerId);
```

Exercise 5: Find all the names of the customers who have withdrawn more than 1000 dollars in a single withdrawal. If a customer made several such withdrawals, report her/his name only once.

```
select distinct name
from Customer, Withdrawal
where Customer.customerId=Withdrawal.customerId
and amount>1000;
```

Exercise 6: While an account has only one owner, it may be shared by multiple customers who deposit money into and/or withdraw money from it. Find the account id of all the shared accounts. Assume that all shared account customers have made withdrawals from the account.

```
select distinct W1.accountId
from Withdrawal W1, Withdrawal W2
where W1.customerId<>W2.customerId
and W1.accountId=W2.accountId;
```

Exercise 7: An “interesting account” is an account from which the withdrawal with the smallest amount was made. Find the account id of accounts from which withdrawals have been made, excluding the interesting accounts.

```
select distinct accountId
from Withdrawal
minus
select accountId
from Withdrawal
where amount=(select min(amount)
from Withdrawal);
```