MOCKSLACK
(Part-1)

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Naming Attributes:

Company_ID	A
Company_Name	B
Company_Admin	C
Channel_ID	D
Channel_Name	E
Channel_Admin	F
Email_ID	G
User_Name	H
Password	I
Designation	J
Contact Number	K
Skype_ID	L
Image_URL	M
Thread_name	N
Thread_type	O
Status	P
Time_stamp	Q
Sender_Email_ID	R
Receiver_Email_ID	S
Channel_ID	T
Comment	U
Block_ID	V
Email_ID_1	W
Email_ID_2	X
Reaction_ID	Y
Reactedby_Email_ID	Z
Star_ID	a
Sttared_by_Email_ID	b

Functional Dependencies:

A	->	BC
B	->	CA
D	->	EF
G	->	HIJKLM
AG	->	P
AN	->	OG
V	->	WX
QDR	->	SU
QAG	->	DU
a	->	NAQb

Assumption:
Assuming that a particular channel_comment can be identified only by the Time_stamp,
Email_ID of the sender and Company_ID of the company in which the message has been sent.

Step-1:
Breaking RHS

A	->	B
A	->	C
B	->	C
B	->	A
D	->	E
D	->	F
L	->	G
G	->	H
G	->	I
G	->	J
G	->	K
G	->	L
G	->	M
AG	->	P
AN	->	O
AN	->	G

V	->	W
V	->	X
QDR	->	S
QDR	->	U
QAG	->	D
QAG	->	U
a	->	N
a	->	A
a	->	Q
a	->	b

Closures:

A^+ :   {A,B,C};
B^+ :   {A,B,C}
D^+ :   {E,F}
AG^+ :   {A,B,C,G,P,H,I,J,K,L,M}
AN^+ :   {A,B,C,N,O,G,P,H,I,J,K,L,M}
V^+ :   {W,X}
QDR^+ :   {Q,D,R,S,U,E,F}
QAG^+ :   {Q,A,G,P,D,U,E,F,B,C,H,I,J,K,L,M};
L^+ :   {G,H,I,J,K,L,M}
G^+ :   {G,H,I,J,K,L,M}
a^+ :   {a,A,N,Q,b,B,C,O,G,P,H,I,J,K,L,M}

Removed Dependency:

A	->	C

Step-2:
Breaking LHS.
No dependency removed.

A	->	B
B	->	C
B	->	A
D	->	E

D	->	F
L	->	G
G	->	H
G	->	I
G	->	J
G	->	K
G	->	L
G	->	M
AG	->	P
AN	->	O
AN	->	G
V	->	W
V	->	X
QDR	->	S
QDR	->	U
QAG	->	D
QAG	->	U
a	->	N
a	->	A
a	->	Q
a	->	b

Step-3:

Minimal Cover is

A	->	B
B	->	C
B	->	A
D	->	EF
L	->	G
G	->	HIJKLM
AG	->	P
AN	->	OG
V	->	WX
QDR	->	SU

QAG	->	DU
a	->	NAQb

Candidate Key:
   RTVYZa.

Tables:

1. **Channel_comment:**
   a. *Contains:*
      Time_stamp, Company_ID, Channel_ID,Email_ID,Comment.

   b. *Functional Dependencies:*

QAG	->	D
QAG	->	U

   c. *Candidate Key:*
         QAG

   d. *Normalisation:*
      In BCNF (as the LHS is superkey).

2. **Company:**
   a. *Contains:*
      Company_ID, Company_name,Company_admin

   b. *Functional Dependencies:*

A	->	B
B	->	C
B	->	A

   c. *Candidate Key:*
         A,B.

   d. *Normalization:*
      In BCNF (as the LHS is superkey).

3. **User:**
   a. *Contains:*

Email_ID, name, Password, Designation, Company_ID, Contact Number, Skype_ID, Image_URL.

b. *Functional Dependencies:*

L	->	G
G	->	H
G	->	I
G	->	J
G	->	K
G	->	L
G	->	M

c. *Candidate Key:*
   G,L

d. *Normalization:*
   In BCNF (as the LHS is superkey).

4. **Threads:**
   a. *Contains*:
      Company_ID, Thread_name, Thread_type, Email_ID.

   b. *Functional Dependency:*

AN	->	O
AN	->	G

   c. *Candidate Key:*
      AN.

   d. *Normalization:*
      In BCNF (as the LHS is superkey).

5. **Direct_Message:**
   a. *Contains:*
      Time_stamp, Company_ID, Sender_Email_ID, Receiver_Email_ID,comment.

   b. *Functional Dependency:*

QDR	->	S
QDR	->	U

    c. *Candidate Key:*

        QDR.

    d. *Normalisation:*

    In BCNF (as the LHS is superkey).

---End--

(Part-2)

Some Query Operations:

1. **Messages received from a particular user in a particular channel.**

   select comment
   from channelComment
   where channelName="hello" and companyName="duvedi" and
   emailId="amanazad38@gmail.com";

```
mysql> select comment
    -> from channelcomment
    -> where channelName="hello" and companyName="duvedi" and emailId="amanazad38@gmail.com";
+--------------------------------+
| comment                        |
+--------------------------------+
| hi there
                     |
| i am also in the channel now   |
| lets start the project         |
+--------------------------------+
3 rows in set (0.00 sec)
```

2. **Total number of members in a channel of a company**

   select emailId from threads
   where threadType="direct message" and companyName="duvedi";

```
mysql> select emailId from threads
    -> where threadType="direct message" and companyName="duvedi";
+---------------------------+
| emailId                   |
+---------------------------+
| amanazad38@gmail.com      |
| amishah01111998@gmail.com |
| amrityavagmi@gmail.com    |
+---------------------------+
3 rows in set (0.00 sec)
```

3. Number of users in a Company:

select companyName, count(threadName) as total_users
from threads
where threadType="direct message"
group by companyName;

```
mysql> select companyName, count(threadName) as total_users
    -> from threads
    -> where threadType="direct message"
    -> group by companyName
    -> ;
+-------------+-------------+
| companyName | total_users |
+-------------+-------------+
| Appeti      |           1 |
| duvedi      |           3 |
| facebook    |           1 |
| Google      |           1 |
| microsoft   |           4 |
| Slack       |           1 |
+-------------+-------------+
6 rows in set (0.00 sec)
```

4. Company with maximum number of users:

```
select companyName, count(threadName) as total_users
from threads
where threadType="direct message"
group by companyName
having total_users >= all(select count(threadName)
from threads
where threadType="direct message"
group by companyName);
```

```
mysql> select companyName, count(threadName) as total_users
    -> from threads
    -> where threadType="direct message"
    -> group by companyName
    -> having total_users >= all(select count(threadName)
    -> from threads
    -> where threadType="direct message"
    -> group by companyName);
+-------------+-------------+
| companyName | total_users |
+-------------+-------------+
| microsoft   |           4 |
+-------------+-------------+
1 row in set (0.05 sec)
```

5. Number of channels in a Company:

```
select companyName, count(threadName) as total_channels
from threads
where threadtype="channel"
group by companyName;
```

```
mysql> select companyname, count(threadname) as total_channels
    -> from threads
    -> where threadtype="channel"
    -> group by companyname
    -> ;
+-------------+----------------+
| companyname | total_channels |
+-------------+----------------+
| duvedi      |              3 |
| facebook    |              3 |
| google      |              1 |
| microsoft   |             12 |
| mozilla     |              1 |
| Slack       |              2 |
+-------------+----------------+
6 rows in set (0.00 sec)
```

6. Company with maximum channels:

```
select companyName, count(threadName) as total_channels
from threads
where threadType="channel"
group by companyName
having total_channels >= all(select count(threadName)
from threads
where threadType="channel"
group by companyName);
```

```
mysql> select companyname, count(threadname) as total_channels
    -> from threads
    -> where threadtype="channel"
    -> group by companyname
    -> having total_channels >= all(select count(threadname)
    -> from threads
    -> where threadtype="channel"
    -> group by companyname);
+-------------+----------------+
| companyname | total_channels |
+-------------+----------------+
| microsoft   |             12 |
+-------------+----------------+
1 row in set (0.00 sec)
```

7. Total number of messages in a company:

```
select companyName, count(comment) as total_messages
from channelComment
group by companyName;
```

```
mysql> select companyname, count(comment) as total_messages
    -> from channelcomment group by companyname;
+-------------+----------------+
| companyname | total_messages |
+-------------+----------------+
| duvedi      |             14 |
| microsoft   |             10 |
| Slack       |              1 |
+-------------+----------------+
3 rows in set (0.00 sec)
```

8. Maximum messages in company:

```
select companyName, count(comment) as total_messages
from channelComment
group by companyName
having total_messages >=all(select count(comment)
from channelComment
group by companyName);
```

```
mysql> select companyname, count(comment) as total_messages
    -> from channelcomment
    -> group by companyname
    -> having total_messages >=all(select count(comment)
    -> from channelcomment
    -> group by companyname);
+-------------+----------------+
| companyname | total_messages |
+-------------+----------------+
| duvedi      |             14 |
+-------------+----------------+
1 row in set (0.01 sec)
```

9. **Number of messages within a timestamp limit** (e.g
2017.07.31.17.31.00 to 2017.11.04.11.59.30):

<div style="color:red">
select companyName,channelName,emailid, comment
from channelComment
where timestamp>= "2017.07.31.17.31.00" and timestamp <=
"2017.11.04.11.59.30";
</div>

```
mysql> select companyname,channelname,emailid, comment
    -> from channelcomment
    -> where timestamp>= "2017.07.31.17.31.00" and timestamp <= "2017.11.04.11.59.30";
+-------------+---------------------+-------------------------+-------------------------------------------------------------------------+
| companyname | channelname         | emailid                 | comment                                                                 |
+-------------+---------------------+-------------------------+-------------------------------------------------------------------------+
| microsoft   | general             | submiitr07@gmail.com    | Hi @here, welcome to general channel                                    |
| microsoft   | general             | navin@gmail.com         | Hello there                                                             |
| microsoft   | general             | submiitr07@gmail.com    | Good to see you back here                                               |
| microsoft   | general             | submiitr07@gmail.com    | Lets take things forward from here                                      |
| microsoft   | general             | navin@gmail.com         | Sure.                                                                   |
| microsoft   | general             | navin@gmail.com         | How about your placements. All prepared.                                |
:) :)                                               |
| microsoft   | java- Graphics driver | navin@gmail.com       | Users are complaining that drivers Intellij drivers are not getting installed |
| microsoft   | java- Graphics driver | navin@gmail.com       | @shubham May you complete this taks by EOD                              |
| microsoft   | speakout            | harpreet@gmail.com      | First message at speakout                                               |
| microsoft   | java- Graphics driver | submiitr07@gmail.com  | ok, I will look through it                                              |
| Slack       | class               | amrityavagmi@gmail.com  | asdfs                                                                   |
                                               |
| duvedi      | hello               | amrityavagmi@gmail.com  | kaisi h                                                                 |
                                               |
| duvedi      | hello               | amishah01111998@gmail.com | hello everyone                                                        |
                                               |
| duvedi      | hello               | amishah01111998@gmail.com | I am Amritya'                                                         |
                                               |
| duvedi      | hello               | amanazad38@gmail.com    | hi there                                                                |
                                               |
| duvedi      | hello               | amanazad38@gmail.com    | i am also in the channel now                                            |
| duvedi      | hello               | amanazad38@gmail.com    | lets start the project                                                  |
| duvedi      | hello               | amishah01111998@gmail.com | hi aman                                                               |
                                               |
| duvedi      | hello               | amrityavagmi@gmail.com  | hello aman                                                              |
welcome                                             |
| duvedi      | general             | amanazad38@gmail.com    | ab bas hone wala hi h project                                           |
+-------------+---------------------+-------------------------+-------------------------------------------------------------------------+
20 rows in set (0.00 sec)
```

10. Direct messages sent from one user to another:

```
select companyName,senderEmailid,receiverEmailid,comment
from directMessages
where senderEmailid="amrityavagmi@gmail.com" and
 receiverEmailid="amishah01111998@gmail.com";
```

```
mysql> select companyname,senderemailid,receiveremailid,comment
    -> from directmessages
    -> where senderemailid="amrityavagmi@gmail.com" and receiveremailid="amishah01111998@gmail.com";
+-------------+------------------------+---------------------------+----------------+
| companyname | senderemailid          | receiveremailid           | comment        |
+-------------+------------------------+---------------------------+----------------+
| duvedi      | amrityavagmi@gmail.com | amishah01111998@gmail.com | sun bhai       |
| duvedi      | amrityavagmi@gmail.com | amishah01111998@gmail.com | majak nhi kar  |
| duvedi      | amrityavagmi@gmail.com | amishah01111998@gmail.com | project karna h |
+-------------+------------------------+---------------------------+----------------+
3 rows in set (0.00 sec)
```

11. All the messages containing a particular substring:

```
select *
from channelComment
where comment like '%hi%';
```

```
mysql> select * from channelcomment
    -> where comment like '%hi%';
+---------------------+-------------+----------------------+------------------------------+------------------------------------------+
| timestamp           | companyName | channelName          | emailId                      | comment                                  |
+---------------------+-------------+----------------------+------------------------------+------------------------------------------+
| 2017.07.31.17.31.59 | microsoft   | general              | submiitr07@gmail.com         | Hi @here, welcome to general channel     |
| 2017.07.31.18.10.59 | microsoft   | general              | submiitr07@gmail.com         | Lets take things forward from here       |
| 2017.07.31.20.30.54 | microsoft   | java- Graphics driver| navin@gmail.com              | @shubham May you complete this taks by EOD |
| 2017.11.04.10.50.51 | duvedi      | hello                | amanazad38@gmail.com         | hi there                                 |
|                     |             |                      |                              |                                          |
| 2017.11.04.10.51.34 | duvedi      | hello                | amishah01111998@gmail.com    | hi aman                                  |
|                     |             |                      |                              |                                          |
| 2017.11.04.11.59.29 | duvedi      | general              | amanazad38@gmail.com         | ab bas hone wala hi h project            |
| 2017.11.04.12.00.28 | duvedi      | general              | amanazad38@gmail.com         | main to aa hi gya bhai                   |
|                     |             |                      |                              |                                          |
+---------------------+-------------+----------------------+------------------------------+------------------------------------------+
7 rows in set (0.00 sec)
```

12. Number of companies in which a given user is:

```
select threadName, count(companyName) as total_companies
from threads
group by threadName;
```

```
mysql> select threadname, count(companyname) as total_companies
    -> from threads
    -> group by threadname;
+------------------------+-----------------+
| threadname             | total_companies |
+------------------------+-----------------+
| aka38                  |               1 |
| ami                    |               1 |
| amishah01111998        |               1 |
| amrityavagmi           |               2 |
| backend                |               1 |
| class                  |               1 |
| designs                |               1 |
| email-list             |               1 |
| facebook-chatOn        |               1 |
| first channel added    |               1 |
| friends                |               1 |
| frontend               |               1 |
| general                |               3 |
| Harpreet Singh         |               1 |
| hello                  |               1 |
| java- Graphics driver  |               1 |
| Joshi                  |               1 |
| maddy                  |               1 |
| madHEYsia              |               1 |
| marketing              |               1 |
| marketing-campaigns    |               2 |
| Navin Gupta            |               1 |
| newFestive issues      |               1 |
| Nitesh prajapati       |               1 |
| nwe                    |               1 |
| random                 |               2 |
| shubham                |               1 |
| speakout               |               2 |
+------------------------+-----------------+
28 rows in set (0.03 sec)
```

Tables in our database:

```
mysql> show tables;
+-------------------------+
| Tables_in_classroomslack |
+-------------------------+
| channelcomment          |
| company                 |
| currentuser             |
| directmessages          |
| threads                 |
+-------------------------+
5 rows in set (0.00 sec)
```

Table ChannelComment:

```
mysql> describe channelcomment;
+-------------+---------------+------+-----+---------+-------+
| Field       | Type          | Null | Key | Default | Extra |
+-------------+---------------+------+-----+---------+-------+
| timestamp   | varchar(50)   | NO   | PRI | NULL    |       |
| companyName | varchar(100)  | NO   | PRI | NULL    |       |
| channelName | varchar(100)  | NO   | PRI | NULL    |       |
| emailId     | varchar(50)   | NO   | PRI | NULL    |       |
| comment     | varchar(2000) | NO   |     | NULL    |       |
+-------------+---------------+------+-----+---------+-------+
5 rows in set (0.00 sec)
```

Table Company:

```
mysql> describe company;
+-----------------+--------------+------+-----+---------+-------+
| Field           | Type         | Null | Key | Default | Extra |
+-----------------+--------------+------+-----+---------+-------+
| companyName     | varchar(500) | NO   | PRI | NULL    |       |
| userName        | varchar(100) | NO   |     | NULL    |       |
| employeeEmailId | varchar(500) | NO   | PRI | NULL    |       |
| password        | varchar(100) | NO   |     | NULL    |       |
| slackId         | varchar(100) | NO   |     | NULL    |       |
+-----------------+--------------+------+-----+---------+-------+
5 rows in set (0.00 sec)
```

Table CurrentUser:

```
mysql> describe currentuser;
+-----------------+--------------+------+-----+---------+-------+
| Field           | Type         | Null | Key | Default | Extra |
+-----------------+--------------+------+-----+---------+-------+
| id              | varchar(100) | NO   | PRI | NULL    |       |
| companyName     | varchar(100) | NO   |     | NULL    |       |
| userName        | varchar(400) | NO   |     | NULL    |       |
| employeeEmailId | varchar(100) | NO   |     | NULL    |       |
| slackId         | varchar(100) | NO   |     | NULL    |       |
+-----------------+--------------+------+-----+---------+-------+
5 rows in set (0.03 sec)
```

Table Threads:

```
mysql> describe threads;
+-------------+--------------+------+-----+---------+-------+
| Field       | Type         | Null | Key | Default | Extra |
+-------------+--------------+------+-----+---------+-------+
| companyName | varchar(100) | NO   | PRI | NULL    |       |
| threadName  | varchar(100) | NO   | PRI | NULL    |       |
| emailId     | varchar(100) | YES  |     | NULL    |       |
| threadType  | varchar(100) | YES  |     | NULL    |       |
+-------------+--------------+------+-----+---------+-------+
4 rows in set (0.00 sec)
```

---END---