Name: Nazib Mondal

ID: XXXX7217

CS 331 – Database Systems

December 18th, 2016

Project Number 3

Thank you for a wonderful semester,
And for your valuable words of closing.
I wish you happy holidays!

Table Creation:

- ## Email_Account Table
  - ### Key(s): EmailAddress (PK)

```
SQL> CREATE TABLE Email_Account (
  2   EmailAddress varChar(30) NOT NULL Primary Key,
  3   FirstName varChar(30) NOT NULL,
  4   LastName varChar(30) NOT NULL,
  5   AccountPW varChar(20) NOT NULL,
  6   PWExpiration DATE NOT NULL,
  7   DateCreated DATE NOT NULL,
  8   DateClosed DATE );

Table created.
```

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
EMAIL_ACCOUNT	EMAILADDRESS	VARCHAR2	30	-	-	1	-	-	-
	FIRSTNAME	VARCHAR2	30	-	-	-	-	-	-
	LASTNAME	VARCHAR2	30	-	-	-	-	-	-
	ACCOUNTPW	VARCHAR2	20	-	-	-	-	-	-
	PWEXPIRATION	DATE	7	-	-	-	-	-	-
	DATECREATED	DATE	7	-	-	-	-	-	-
	DATECLOSED	DATE	7	-	-	-	✓	-	-
									1 - 7

- ## Folder Table
  - ### Key(s): FolderID (PK)

```
SQL> CREATE TABLE Folder (
  2   FolderID varChar(6) NOT NULL Primary Key,
  3   FolderName varChar (15) NOT NULL );

Table created.
```

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
FOLDER	FOLDERID	VARCHAR2	6	-	-	1	-	-	-
	FOLDERNAME	VARCHAR2	15	-	-	-	-	-	-
									1 - 2

- o **Message** Table
  - ▪ Key(s): MessageID (PK), MessageFrom (FK)

```
SQL> CREATE TABLE Message (
  2  MessageID varChar(6) NOT NULL Primary Key,
  3  Subject varChar(20),
  4  Body varChar (4000),
  5  Priority number (1),
  6  MessageSize number (15) NOT NULL,
  7  SentDate DATE NOT NULL,
  8  ReceiveDate DATE NOT NULL,
  9  MessageFrom varChar (30) NOT NULL,
 10  FOREIGN KEY (MessageFrom) REFERENCES Email_Account (EmailAddress) );

Table created.
```

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
MESSAGE	MESSAGEID	VARCHAR2	6	-	-	1	-	-	-
	SUBJECT	VARCHAR2	20	-	-	-	✓	-	-
	BODY	VARCHAR2	4000	-	-	-	✓	-	-
	PRIORITY	NUMBER	-	1	0	-	✓	-	-
	MESSAGESIZE	NUMBER	-	15	0	-	-	-	-
	SENTDATE	DATE	7	-	-	-	-	-	-
	RECEIVEDATE	DATE	7	-	-	-	-	-	-
	MESSAGEFROM	VARCHAR2	30	-	-	-	-	-	-
									1 - 8

- o **Message_Location** Table
  - ▪ Key(s): Location ID (PK), MessageID (FK), FolderID (FK)

```
SQL> CREATE TABLE Message_Location (
  2  LocationID varChar (6) NOT NULL Primary Key,
  3  MessageID varChar (6) NOT NULL,
  4  FolderID varChar (6) NOT NULL,
  5  FOREIGN KEY (FolderID) REFERENCES Folder (FolderID),
  6  FOREIGN KEY (MessageID) REFERENCES Message (MessageID) );

Table created.
```

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
MESSAGE_LOCATION	LOCATIONID	VARCHAR2	6	-	-	1	-	-	-
	MESSAGEID	VARCHAR2	6	-	-	-	-	-	-
	FOLDERID	VARCHAR2	6	-	-	-	-	-	-
									1 - 3

- ## Meta_To Table
  - ### Key: MessageID (PK)

```
SQL> CREATE TABLE Meta_To (
  2  MessageID varChar(6) NOT NULL,
  3  FOREIGN KEY (MessageID) REFERENCES Message (MessageID),
  4  ToAddress varChar (30) );

Table created.
```

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
META_TO	MESSAGEID	VARCHAR2	6	-	-	-	-	-	-
	TOADDRESS	VARCHAR2	30	-	-	-	✓	-	-
								1 - 2	

- ## Meta_CC Table
  - ### Key: MessageID (PK)

```
SQL> CREATE TABLE Meta_CC (
  2  MessageID varChar(6) NOT NULL,
  3  FOREIGN KEY (MessageID) REFERENCES Message (MessageID),
  4  CCAddress varChar (30) );

Table created.
```

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
META_CC	MESSAGEID	VARCHAR2	6	-	-	-	-	-	-
	CCADDRESS	VARCHAR2	30	-	-	-	✓	-	-
								1 - 2	

- ## Meta_BCC Table
  - ### Key: MessageID (PK)

```
SQL> CREATE TABLE Meta_BCC (
  2  MessageID varChar(6) NOT NULL,
  3  FOREIGN KEY (MessageID) REFERENCES Message (MessageID),
  4  BCCAddress varChar (30) );

Table created.
```

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
META_BCC	MESSAGEID	VARCHAR2	6	-	-	-	-	-	-
	BCCADDRESS	VARCHAR2	30	-	-	-	✓	-	-
								1 - 2	

Table Inserts:

Email_Account Table:

EMAILADDRESS	FIRSTNAME	LASTNAME	ACCOUNTPW	PWEXPIRATION	DATECREATED	DATECLOSED
kwhite@yahoo.com	Katherine	White	password2	12/23/2016	04/04/2016	-
jturner@yahoo.com	Julia	Turner	password5	01/07/2017	07/08/2016	-
rrobertson@yahoo.com	Rachel	Robertson	password3	12/30/2016	01/04/2016	-
bortiz@yahoo.com	Bonnie	Ortiz	password1	12/26/2016	06/29/2016	-
pramos@yahoo.com	Paul	Ramos	password0	12/18/2016	04/26/2016	-

```
INSERT ALL

into Email_Account (EmailAddress, FirstName, LastName, AccountPW,
PWExpiration, DateCreated)

values ('kwhite@yahoo.com', 'Katherine', 'White', 'password2',
'12/23/2016', '4/4/2016')

into Email_Account (EmailAddress, FirstName, LastName, AccountPW,
PWExpiration, DateCreated)

values ('jturner@yahoo.com', 'Julia', 'Turner', 'password5',
'01/07/2017', '7/8/2016')

into Email_Account (EmailAddress, FirstName, LastName, AccountPW,
PWExpiration, DateCreated)

values ('rrobertson@yahoo.com', 'Rachel', 'Robertson', 'password3',
'12/30/2016', '1/4/2016')

into Email_Account (EmailAddress, FirstName, LastName, AccountPW,
PWExpiration, DateCreated)

values ('bortiz@yahoo.com', 'Bonnie', 'Ortiz', 'password1',
'12/26/2016', '6/29/2016')

into Email_Account (EmailAddress, FirstName, LastName, AccountPW,
PWExpiration, DateCreated)

values ('pramos@yahoo.com', 'Paul', 'Ramos', 'password0',
'12/18/2016', '4/26/2016')

select * from dual;
```

Folder Table:

FOLDERID	FOLDERNAME
000000	Inbox
000001	Sent
000002	Spam
000003	Deleted

```
INSERT ALL
into Folder (FolderID, FolderName)
values ('000000', 'Inbox')
into Folder (FolderID, FolderName)
values ('000001', 'Sent')
into Folder (FolderID, FolderName)
values ('000002', 'Spam')
into Folder (FolderID, FolderName)
values ('000003', 'Deleted')
select * from dual;
```

Message Table:

MESSAGEID	SUBJECT	MBODY	PRIORITY	MESSAGESIZE	SENTDATE	RECEIVEDATE	MESSAGEFROM
1	Shakespeare	From Hamlet	-	426	01/04/2017	01/04/2017	kwhite@yahoo.com
2	To	Some gibberish	-	1858	01/23/2017	01/23/2017	kwhite@yahoo.com
3	Be	Yes, I am in fact, a bee	-	1198	01/14/2017	01/14/2017	kwhite@yahoo.com
4	Or	or what?	-	2485	12/24/2016	12/24/2016	kwhite@yahoo.com
5	Not	story of my life	-	658	01/23/2017	01/23/2017	kwhite@yahoo.com
6	To	more gibberish	-	477	01/15/2017	01/15/2017	kwhite@yahoo.com
7	Be	bees everywhere!!	-	2872	12/28/2016	12/28/2016	kwhite@yahoo.com
8	Michael Jackson	Annie are you okay?	-	158	01/18/2017	01/18/2017	jturner@yahoo.com
9	Smooth Criminal	Are you okay, Annie?	-	1000	01/23/2017	01/23/2017	jturner@yahoo.com
10	hmm...	You been hit by	-	2563	01/13/2017	01/13/2017	jturner@yahoo.com
11	You	You been struck by	-	1720	01/27/2017	01/27/2017	jturner@yahoo.com
12	been	A	-	621	01/07/2017	01/07/2017	jturner@yahoo.com
13	struck	Smooth	-	1918	12/30/2016	12/30/2016	jturner@yahoo.com
14	by	Criminal	-	2936	01/18/2017	01/18/2017	jturner@yahoo.com
15	Welcome	Guns N Roses	-	153	01/21/2017	01/21/2017	rrobertson@yahoo.com
16	To	This song is actually	-	2568	12/27/2016	12/27/2016	rrobertson@yahoo.com
17	The	not in my top 5 GNR Songs	-	2987	12/19/2016	12/19/2016	rrobertson@yahoo.com
18	Jungle	Ironically enough I like	-	230	01/14/2017	01/14/2017	rrobertson@yahoo.com
19	We	The more recent song BETTER	-	1969	01/07/2017	01/07/2017	rrobertson@yahoo.com
20	Got	Much more than this one	-	210	12/19/2016	12/19/2016	rrobertson@yahoo.com
21	fun	I suppose one could call it better	-	573	01/13/2017	01/13/2017	rrobertson@yahoo.com
22	Shelter	by Porter Robinson	-	1376	01/18/2017	01/18/2017	bortiz@yahoo.com
23	I could never	and I left behind	-	2522	01/18/2017	01/18/2017	bortiz@yahoo.com
24	Find the right way	the home that you	-	245	01/19/2017	01/19/2017	bortiz@yahoo.com
25	to tell you	made me	-	1333	01/15/2016	01/15/2016	bortiz@yahoo.com
26	Have you noticed	but I will carry	-	2447	01/15/2017	01/15/2017	bortiz@yahoo.com
27	Ive been	it along	-	1000	01/16/2017	01/16/2017	bortiz@yahoo.com
28	Gone?	And its a long way far	-	353	12/19/2016	12/19/2016	bortiz@yahoo.com
29	Hi	Yay, some normal messages	-	1901	12/18/2016	12/18/2016	pramos@yahoo.com
30	Shelter	In a predicament where im homeless, send help	-	1011	01/08/2017	01/08/2017	pramos@yahoo.com
31	Hmm...	these are a lot harder than you think	-	2651	12/25/2016	12/25/2016	pramos@yahoo.com
32	Hello	Darkness my old friend	-	2315	01/06/2017	01/06/2017	pramos@yahoo.com
33	Joking	You thought these were going to be normal huh?	-	586	01/10/2017	01/10/2017	pramos@yahoo.com
34	Dat Boi	Waddup	-	920	01/06/2017	01/06/2017	pramos@yahoo.com
35	Memes	Memes2spicey5me	-	1435	01/30/2017	01/30/2017	pramos@yahoo.com

INSERT ALL

--K. White's Messages

into Message (MessageID, MessageFrom, Subject, MBody, SentDate, ReceiveDate, MessageSize) values ('1', 'kwhite@yahoo.com', 'Shakespeare', 'From Hamlet', '01/04/2017', '01/04/2017', 426)

into Message (MessageID, MessageFrom, Subject, MBody, SentDate, ReceiveDate, MessageSize) values ('2', 'kwhite@yahoo.com', 'To', 'Some gibberish', '01/23/2017', '01/23/2017', 1858)

into Message (MessageID, MessageFrom, Subject, MBody, SentDate, ReceiveDate, MessageSize) values ('3', 'kwhite@yahoo.com', 'Be', 'Yes, I am in fact, a bee', '01/14/2017', '01/14/2017', 1198)

into Message (MessageID, MessageFrom, Subject, MBody, SentDate, ReceiveDate, MessageSize) values ('4', 'kwhite@yahoo.com', 'Or', 'or what?', '12/24/2016', '12/24/2016', 2485)

```
into Message (MessageID, MessageFrom, Subject, MBody, SentDate,
ReceiveDate, MessageSize) values ('5', 'kwhite@yahoo.com', 'Not',
'story of my life', '01/23/2017', '01/23/2017', 658)

into Message (MessageID, MessageFrom, Subject, MBody, SentDate,
ReceiveDate, MessageSize) values ('6', 'kwhite@yahoo.com', 'To', 'more
gibberish', '01/15/2017', '01/15/2017', 477)

into Message (MessageID, MessageFrom, Subject, MBody, SentDate,
ReceiveDate, MessageSize) values ('7', 'kwhite@yahoo.com', 'Be', 'bees
everywhere!!', '12/28/2016', '12/28/2016', 2872)

--J. Turners's Messages

into Message (MessageID, MessageFrom, Subject, MBody, SentDate,
ReceiveDate, MessageSize) values ('8', 'jturner@yahoo.com', 'Michael
Jackson', 'Annie are you okay?', '01/18/2017', '01/18/2017', 158)

into Message (MessageID, MessageFrom, Subject, MBody, SentDate,
ReceiveDate, MessageSize) values ('9', 'jturner@yahoo.com', 'Smooth
Criminal', 'Are you okay, Annie?', '01/23/2017', '01/23/2017', 1000)

into Message (MessageID, MessageFrom, Subject, MBody, SentDate,
ReceiveDate, MessageSize) values ('10', 'jturner@yahoo.com', 'hmm...',
'You been hit by', '01/13/2017', '01/13/2017', 2563)

into Message (MessageID, MessageFrom, Subject, MBody, SentDate,
ReceiveDate, MessageSize) values ('11', 'jturner@yahoo.com', 'You',
'You been struck by', '01/27/2017', '01/27/2017', 1720)

into Message (MessageID, MessageFrom, Subject, MBody, SentDate,
ReceiveDate, MessageSize) values ('12', 'jturner@yahoo.com', 'been',
'A', '01/07/2017', '01/07/2017', 621)

into Message (MessageID, MessageFrom, Subject, MBody, SentDate,
ReceiveDate, MessageSize) values ('13', 'jturner@yahoo.com', 'struck',
'Smooth', '12/30/2016', '12/30/2016', 1918)

into Message (MessageID, MessageFrom, Subject, MBody, SentDate,
ReceiveDate, MessageSize) values ('14', 'jturner@yahoo.com', 'by',
'Criminal', '01/18/2017', '01/18/2017', 2936)

--R. Robertson's Messages

into Message (MessageID, MessageFrom, Subject, MBody, SentDate,
ReceiveDate, MessageSize) values ('15', 'rrobertson@yahoo.com',
'Welcome', 'Guns N Roses', '01/21/2017', '01/21/2017', 153)

into Message (MessageID, MessageFrom, Subject, MBody, SentDate,
ReceiveDate, MessageSize) values ('16', 'rrobertson@yahoo.com', 'To',
'This song is actually', '12/27/2016', '12/27/2016', 2568)
```

```
into Message (MessageID, MessageFrom, Subject, MBody, SentDate,
ReceiveDate, MessageSize) values ('17', 'rrobertson@yahoo.com', 'The',
'not in my top 5 GNR Songs', '12/19/2016', '12/19/2016', 2987)

into Message (MessageID, MessageFrom, Subject, MBody, SentDate,
ReceiveDate, MessageSize) values ('18', 'rrobertson@yahoo.com',
'Jungle', 'Ironically enough I like', '01/14/2017', '01/14/2017', 230)

into Message (MessageID, MessageFrom, Subject, MBody, SentDate,
ReceiveDate, MessageSize) values ('19', 'rrobertson@yahoo.com', 'We',
'The more recent song BETTER', '01/07/2017', '01/07/2017', 1969)

into Message (MessageID, MessageFrom, Subject, MBody, SentDate,
ReceiveDate, MessageSize) values ('20', 'rrobertson@yahoo.com', 'Got',
'Much more than this one', '12/19/2016', '12/19/2016', 210)

into Message (MessageID, MessageFrom, Subject, MBody, SentDate,
ReceiveDate, MessageSize) values ('21', 'rrobertson@yahoo.com', 'fun',
'I suppose one could call it better', '01/13/2017', '01/13/2017', 573)

--B. Ortiz's Messages

into Message (MessageID, MessageFrom, Subject, MBody, SentDate,
ReceiveDate, MessageSize) values ('22', 'bortiz@yahoo.com', 'Shelter',
'by Porter Robinson', '01/18/2017', '01/18/2017', 1376)

into Message (MessageID, MessageFrom, Subject, MBody, SentDate,
ReceiveDate, MessageSize) values ('23', 'bortiz@yahoo.com', 'I could
never', 'and I left behind', '01/18/2017', '01/18/2017', 2522)

into Message (MessageID, MessageFrom, Subject, MBody, SentDate,
ReceiveDate, MessageSize) values ('24', 'bortiz@yahoo.com', 'Find the
right way', 'the home that you', '01/19/2017', '01/19/2017', 245)

into Message (MessageID, MessageFrom, Subject, MBody, SentDate,
ReceiveDate, MessageSize) values ('25', 'bortiz@yahoo.com', 'to tell
you', 'made me', '01/15/2016', '01/15/2016', 1333)

into Message (MessageID, MessageFrom, Subject, MBody, SentDate,
ReceiveDate, MessageSize) values ('26', 'bortiz@yahoo.com', 'Have you
noticed', 'but I will carry', '01/15/2017', '01/15/2017', 2447)

into Message (MessageID, MessageFrom, Subject, MBody, SentDate,
ReceiveDate, MessageSize) values ('27', 'bortiz@yahoo.com', 'Ive
been', 'it along', '01/16/2017', '01/16/2017', 1000)

into Message (MessageID, MessageFrom, Subject, MBody, SentDate,
ReceiveDate, MessageSize) values ('28', 'bortiz@yahoo.com', 'Gone?',
'And its a long way far', '12/19/2016', '12/19/2016', 353)

--P. Ramos's Messages
```

```
into Message (MessageID, MessageFrom, Subject, MBody, SentDate,
ReceiveDate, MessageSize) values ('29', 'pramos@yahoo.com', 'Hi',
'Yay, some normal messages', '12/18/2016', '12/18/2016', 1901)

into Message (MessageID, MessageFrom, Subject, MBody, SentDate,
ReceiveDate, MessageSize) values ('30', 'pramos@yahoo.com', 'Shelter',
'In a predicament where im homeless, send help', '01/08/2017',
'01/08/2017', 1011)

into Message (MessageID, MessageFrom, Subject, MBody, SentDate,
ReceiveDate, MessageSize) values ('31', 'pramos@yahoo.com', 'Hmm...',
'these are a lot harder than you think', '12/25/2016', '12/25/2016',
2651)

into Message (MessageID, MessageFrom, Subject, MBody, SentDate,
ReceiveDate, MessageSize) values ('32', 'pramos@yahoo.com', 'Hello',
'Darkness my old friend', '01/06/2017', '01/06/2017', 2315)

into Message (MessageID, MessageFrom, Subject, MBody, SentDate,
ReceiveDate, MessageSize) values ('33', 'pramos@yahoo.com', 'Joking',
'You thought these were going to be normal huh?', '01/10/2017',
'01/10/2017', 586)

into Message (MessageID, MessageFrom, Subject, MBody, SentDate,
ReceiveDate, MessageSize) values ('34', 'pramos@yahoo.com', 'Dat Boi',
'Waddup', '01/06/2017', '01/06/2017', 920)

into Message (MessageID, MessageFrom, Subject, MBody, SentDate,
ReceiveDate, MessageSize) values ('35', 'pramos@yahoo.com', 'Memes',
'Memes2spicey5me', '01/30/2017', '01/30/2017', 1435)

Select* from dual;
```

Message_Location Table:

LOCATIONID	MESSAGEID	FOLDERID
01	1	000000
02	2	000000
03	3	000000
04	4	000000
05	5	000000
06	6	000001
07	7	000003
08	8	000000
09	9	000000
10	10	000000
11	11	000000
12	12	000000
13	13	000001
14	14	000002
15	15	000000
16	16	000000
17	17	000000
18	18	000000
19	19	000000
20	20	000003
21	21	000003
22	22	000000
23	23	000000
24	24	000000
25	25	000000
26	26	000000
27	27	000001
28	28	000001
29	29	000000
30	30	000000
31	31	000000
32	32	000000
33	33	000000
34	34	000002
35	35	000002

```
INSERT ALL

--White's

into Message_Location(LocationID, MessageID, FolderID)
values('01','1','000000')

into Message_Location(LocationID, MessageID, FolderID)
values('02','2','000000')

into Message_Location(LocationID, MessageID, FolderID)
values('03','3','000000')

into Message_Location(LocationID, MessageID, FolderID)
values('04','4','000000')

into Message_Location(LocationID, MessageID, FolderID)
values('05','5','000000')

into Message_Location(LocationID, MessageID, FolderID)
values('06','6','000001')

into Message_Location(LocationID, MessageID, FolderID)
values('07','7','000003')

--Turner's

into Message_Location(LocationID, MessageID, FolderID)
values('08','8','000000')

into Message_Location(LocationID, MessageID, FolderID)
values('09','9','000000')

into Message_Location(LocationID, MessageID, FolderID)
values('10','10','000000')

into Message_Location(LocationID, MessageID, FolderID)
values('11','11','000000')

into Message_Location(LocationID, MessageID, FolderID)
values('12','12','000000')

into Message_Location(LocationID, MessageID, FolderID)
values('13','13','000001')

into Message_Location(LocationID, MessageID, FolderID)
values('14','14','000002')

--Robertson's

into Message_Location(LocationID, MessageID, FolderID)
values('15','15','000000')
```

```
into Message_Location(LocationID, MessageID, FolderID)
values('16','16','000000')

into Message_Location(LocationID, MessageID, FolderID)
values('17','17','000000')

into Message_Location(LocationID, MessageID, FolderID)
values('18','18','000000')

into Message_Location(LocationID, MessageID, FolderID)
values('19','19','000000')

into Message_Location(LocationID, MessageID, FolderID)
values('20','20','000003')

into Message_Location(LocationID, MessageID, FolderID)
values('21','21','000003')

--Ortiz

into Message_Location(LocationID, MessageID, FolderID)
values('22','22','000000')

into Message_Location(LocationID, MessageID, FolderID)
values('23','23','000000')

into Message_Location(LocationID, MessageID, FolderID)
values('24','24','000000')

into Message_Location(LocationID, MessageID, FolderID)
values('25','25','000000')

into Message_Location(LocationID, MessageID, FolderID)
values('26','26','000000')

into Message_Location(LocationID, MessageID, FolderID)
values('27','27','000001')

into Message_Location(LocationID, MessageID, FolderID)
values('28','28','000001')

--Ramos

into Message_Location(LocationID, MessageID, FolderID)
values('29','29','000000')

into Message_Location(LocationID, MessageID, FolderID)
values('30','30','000000')

into Message_Location(LocationID, MessageID, FolderID)
values('31','31','000000')

into Message_Location(LocationID, MessageID, FolderID)
values('32','32','000000')
```

```
into Message_Location(LocationID, MessageID, FolderID)
values('33','33','000000')

into Message_Location(LocationID, MessageID, FolderID)
values('34','34','000002')

into Message_Location(LocationID, MessageID, FolderID)
values('35','35','000002')

select * from dual;
```

Meta_To, Meta_CC, Meta_BCC Tables:

MESSAGEID	TOADDRESS
6	jturner@yahoo.com
28	pramos@yahoo.com

MESSAGEID	CCADDRESS
27	kwhite@yahoo.com

MESSAGEID	BCCADDRESS
13	rrobertson@yahoo.com

```
INSERT ALL
into Meta_To(MessageID, TOAddress) values ('6','jturner@yahoo.com')
into Meta_To(MessageID, TOAddress) values ('28','pramos@yahoo.com')
into Meta_CC(MessageID, CCAddress) values ('27','kwhite@yahoo.com')
into Meta_BCC(MessageID, BCCAddress) values
('13','rrobertson@yahoo.com')
select * from dual;
```

Modifications to tables:

```
--Change Column name of "Body" in the "Message" table
ALTER TABLE Message
RENAME COLUMN Body to MBody;
```

Email Database Questions (Skipped 2-4, 6-7, 13)

1. Identify the number of messages and total size by email accounts. Display four columns: email account, account owner name, number of messages and total size. Display the account with the greatest storage requirements first.

```
SQL> select ea.EmailAddress,
  2         FirstName "First Name", LastName "Last Name",
  3         Count(1) "Number of Messages",
  4         Sum(MessageSize) "Total Size (in Kilobytes)"
  5  From Email_Account ea, Message m
  6  where ea.EmailAddress = m.MessageFrom
  7  Group by EmailAddress, FirstName, LastName
  8  Order by 5 desc;
```

EMAILADDRESS	First Name	Last Name	Number of Messages	Total Size (in Kilobytes)
jturner@yahoo.com	Julia	Turner	7	10916
pramos@yahoo.com	Paul	Ramos	7	10819
kwhite@yahoo.com	Katherine	White	7	9974
bortiz@yahoo.com	Bonnie	Ortiz	7	9276
rrobertson@yahoo.com	Rachel	Robertson	7	8690

5. Identify all messages with the term "Some" in the subject or body. Display the columns Received Date, FROM, TO, Subject. Display the most recent message first.

```
SQL> Select ReceiveDate, MessageFrom, Subject, MBody
  2  From Message_Location ML, Folder F, Message M
  3  where ML.FolderID = F.FolderID AND
  4        ML.MessageID = M.MessageID AND
  5             (lower(Subject) like '%some%' OR
  6              lower(MBody) like '%some%')
  7  order by 1 desc;
```

RECEIVEDATE	MESSAGEFROM	SUBJECT	MBODY
01/23/2017	kwhite@yahoo.com	To	Some gibberish
12/18/2016	pramos@yahoo.com	Hi	Yay, some normal messages

8. Identify accounts that have not received new messages <u>on December 19th, 2016</u>. Display the email address.

```
SQL> Select EmailAddress
  2  From Email_Account Acc
  3  where acc.EmailAddress NOT IN (Select MessageFrom
  4                                     from Message
  5                                     where ReceiveDate = '19-DEC-16');

EMAILADDRESS
------------------------------
pramos@yahoo.com
kwhite@yahoo.com
jturner@yahoo.com
```

9. In one SQL window, move message <u>22</u> to a new folder. Don't commit. In another SQL window, move message <u>22</u> to different folder. Don't commit. Explain your results. Resolve the problem. Disable the auto commit flag at the top of the window before performing this operation.

Note that session 2 (green) has a cursor, while session 1 (blue) is waiting for the next command. This means that the rows that session 2 would like to modify are locked, this is due to the fact that we have made an uncommitted change in session 1. The way to resolve this is to commit the change in session 1 so that session 2 will be able to make modifications to the newly modified rows from session 1. Otherwise perform a rollback to the most recently committed values, thus releasing all locks and letting session 2 perform its updates.

10. In one SQL window, delete all messages for one account. Don't commit. In another SQL window, move all messages for the same account to the SPAM folder. Don't commit. Explain your results. Resolve the problem. Create a backup of your table before implementing. To create a backup table, enter CREATE TABLE AS SELECT * FROM ; COMMIT; Then you can rename a table using the RENAME TABLE commit. Disable the auto commit flag at the top of the window before performing this operation.

(Was not able to program this correctly, but I understand what occurs here)

By not committing on the changes we made to the account in our first session, the rows affected by this change still hold the lock. Thus, when we enter any form of change to the same rows, we are waiting for the lock to be released from session 1. In order to resolve this, we must either commit our changes from session 1, or rollback to a committed state (exiting session 1 will also release the lock, as the values that were changed will be non-committed and the table will have rolled back).

11. In one SQL window, change the password for kwhite@yahoo.com. Don't commit. In another SQL window, change the last name of the owner of kwhite@yahoo.com. Don't commit. Quit both Oracle sessions. Login to Oracle and display all information. Explain your results. Disable the auto commit flag at the top of the windows before performing this operation.

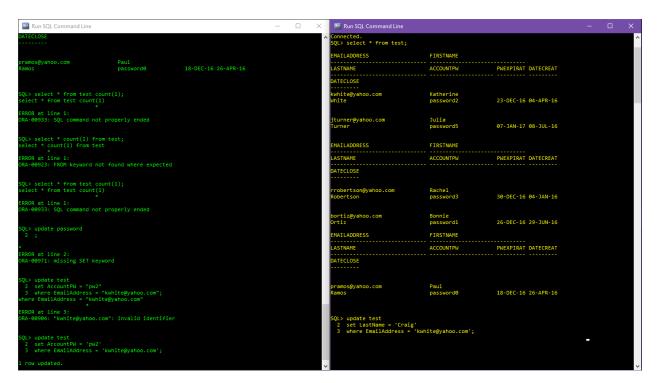| EMAILADDRESS	FIRSTNAME	LASTNAME	ACCOUNTPW	PWEXPIRATION	DATECREATED	DATECLOSED
kwhite@yahoo.com	Katherine	White	password2	12/23/2016	04/04/2016	-
jturner@yahoo.com	Julia	Turner	password5	01/07/2017	07/08/2016	-
rrobertson@yahoo.com	Rachel	Robertson	password3	12/30/2016	01/04/2016	-
bortiz@yahoo.com	Bonnie	Ortiz	password1	12/26/2016	06/29/2016	-
pramos@yahoo.com	Paul	Ramos	password0	12/18/2016	04/26/2016	-

 Firstly, while updating the table during the first session and not committing, we hold on to that row's lock. Thus, when we enter our second session and update the same row, we are waiting for the lock to be released. Once we exit both sessions and check our final table – nothing is changed as there were no commits involved in either session, thus our table is rolled back to its last committed stage.

12. Use the SQL DESCRIBE operation to list the table structure for all tables.

DESC Email_Account;

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
EMAIL_ACCOUNT	EMAILADDRESS	VARCHAR2	30	-	-	1	-	-	-
	FIRSTNAME	VARCHAR2	30	-	-	-	-	-	-
	LASTNAME	VARCHAR2	30	-	-	-	-	-	-
	ACCOUNTPW	VARCHAR2	20	-	-	-	-	-	-
	PWEXPIRATION	DATE	7	-	-	-	-	-	-
	DATECREATED	DATE	7	-	-	-	-	-	-
	DATECLOSED	DATE	7	-	-	-	✓	-	-
									1 - 7

DESC Folder;

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
FOLDER	FOLDERID	VARCHAR2	6	-	-	1	-	-	-
	FOLDERNAME	VARCHAR2	15	-	-	-	-	-	-
									1 - 2

DESC Message;

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
MESSAGE	MESSAGEID	VARCHAR2	6	-	-	1	-	-	-
	SUBJECT	VARCHAR2	20	-	-	-	✓	-	-
	MBODY	VARCHAR2	4000	-	-	-	✓	-	-
	PRIORITY	NUMBER	-	1	0	-	✓	-	-
	MESSAGESIZE	NUMBER	-	15	0	-	-	-	-
	SENTDATE	DATE	7	-	-	-	-	-	-
	RECEIVEDATE	DATE	7	-	-	-	-	-	-
	MESSAGEFROM	VARCHAR2	30	-	-	-	-	-	-
									1 - 8

DESC Message_Location;

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
MESSAGE_LOCATION	LOCATIONID	VARCHAR2	6	-	-	1	-	-	-
	MESSAGEID	VARCHAR2	6	-	-	-	-	-	-
	FOLDERID	VARCHAR2	6	-	-	-	-	-	-
									1 - 3

```
DESC Meta_To;
```

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
META_TO	MESSAGEID	VARCHAR2	6	-	-	-	-	-	-
	TOADDRESS	VARCHAR2	30	-	-	-	✓	-	-
									1 - 2

```
DESC Meta_CC;
```

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
META_CC	MESSAGEID	VARCHAR2	6	-	-	-	-	-	-
	CCADDRESS	VARCHAR2	30	-	-	-	✓	-	-
									1 - 2

```
DESC Meta_BCC;
```

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
META_BCC	MESSAGEID	VARCHAR2	6	-	-	-	-	-	-
	BCCADDRESS	VARCHAR2	30	-	-	-	✓	-	-
									1 - 2