Database Requirements

Your design must include the following requirements. All references to

“dates” refer to month, day, year and time.

• Customers

o Identify the customer first name, last name, billing address,

date of birth, age and email

• Device

o Identify the device manufacturer and device model. For

instance, Apple iPhone 8 Plus, 64 GB

o Identify the unique device IMEI number, assigned SIM card,

date the customer activated device and date customer

deactivated the device.

o Devices are owned by customers. Only 1 customer can own 1

device.

o 1 customer can own many devices

o Devices access the Verizon Wireless network to:

§ send/receive calls

§ send/receive texts

§ access the web

• Customer Texts

o Identify the device, text date, text number, if a text was sent or

received, location of the sender, location of the receiver and text

message.

• Customer Calls

o Identify the device, call date, call number, if a call was sent or

received, location of the sender, location of the receiver

• Customer Web

o Identify the device, start web access date, bytes sent/received,

URL accessed

• Invoices

o Invoices are created monthly

o Identify the customer, device, cost and method of payment

Data

You will create

• At least 10 customers

• At least 15 devices

• All customers except for 1 will own a device

• At least 10 phone calls

• At least 10 text messages

• At least 10 web access

Tip: (ctrl + A 🡪 ctrl + shift + c to copy result with header)

1. Identify customers with no text and phone call activity in 2020. Display the customer’s name and device model.

select

verizon\_customer.customer\_first,

verizon\_customer.customer\_last,

verizon\_device.device\_model

from verizon\_device\_ownership

join verizon\_customer on verizon\_customer.customer\_id = verizon\_device\_ownership.customer\_id

join verizon\_texts on verizon\_texts.device\_imei = verizon\_device\_ownership.device\_imei

join verizon\_calls on verizon\_calls.device\_imei = verizon\_device\_ownership.device\_imei

join verizon\_device on verizon\_device.device\_imei = verizon\_device\_ownership.device\_imei

where text\_date <= to\_date('01/01/2020', 'DD/MM/YYYY') or text\_date >= to\_date('31/12/2020', 'DD/MM/YYYY')

CUSTOMER\_FIRST CUSTOMER\_LAST DEVICE\_MODEL

Vere Shaw NOTE

2. Identify customers without phones. Display the customer’s name and email.

select

verizon\_customer.customer\_first,

verizon\_customer.customer\_last,

verizon\_customer.customer\_email

from verizon\_sim

join verizon\_customer on verizon\_customer.customer\_id = verizon\_sim.customer\_id

where verizon\_sim.sim\_status = 'deactivate'

CUSTOMER\_FIRST CUSTOMER\_LAST CUSTOMER\_EMAIL

Vere Shaw 0ali\_a@n3tflx.club

3. Identify bytes sent and received by customers in Jan, 2020. Display 6 columns: Customer first, Customer last, Device model, total bytes sent, total bytes received, total bytes (sent and received). Display the bytes as GB. Display 1 row for each distinct customer.

select

verizon\_customer.customer\_first,

verizon\_customer.customer\_last,

verizon\_device.device\_model,

verizon\_web.web\_status,

sum(verizon\_web.web\_bytes / 1000000000)"Total Bytes / GB"

from verizon\_web

join verizon\_device on verizon\_device.device\_imei = verizon\_web.device\_imei

join verizon\_device\_ownership on verizon\_device\_ownership.device\_imei = verizon\_web.device\_imei

join verizon\_customer on verizon\_customer.customer\_id = verizon\_device\_ownership.customer\_id

where verizon\_web.web\_date >= to\_date('01/01/2020', 'DD/MM/YYYY') and verizon\_web.web\_date <= to\_date('31/01/2020', 'DD/MM/YYYY')

group by verizon\_customer.customer\_first,verizon\_customer.customer\_last,verizon\_device.device\_model,verizon\_web.web\_status

CUSTOMER\_FIRST CUSTOMER\_LAST DEVICE\_MODEL WEB\_STATUS Total Bytes / GB

Stan Parham GALAXY S10 sent 0.000030473

Doran Harper PIXEL 5 receive 0.000004695

Doran Harper PIXEL 5 sent 0.000111684

Stan Parham GALAXY S10 receive 0.000092634

4. Identify the most popular phone number called in 2020 in NY. Display 2 columns: Phone number called and number of calls. Display the most popular phone number called first. Display 1 row for each

distinct phone number called.

SELECT phone\_number, COUNT(1)"number of calls"

FROM verizon\_calls

WHERE call\_begin >= TO\_DATE('01-JAN-2020', 'DD-MM-YYYY') AND call\_begin <= TO\_DATE('31-DEC-2020', 'DD-MM-YYYY') and call\_city = 'NY'

GROUP BY phone\_number

ORDER BY 2 DESC

PHONE\_NUMBER number of calls

888-888-8888 5

111-111-1111 2

215-595-1358 1

215-595-1364 1

355-555-6615 1

5. Identify customers who sent or received calls from 355-555-6615 last October. Display the customer’s name, date of call and length of call.

select

verizon\_customer.customer\_first,

verizon\_customer.customer\_last,

call\_begin,

call\_end,

24\* (call\_end - call\_begin) "Length (hr)"

from verizon\_calls

join verizon\_device\_ownership on verizon\_device\_ownership.device\_imei = verizon\_calls.device\_imei

join verizon\_customer on verizon\_customer.customer\_id = verizon\_device\_ownership.customer\_id

where phone\_number = '355-555-6615' and call\_begin >= TO\_DATE('01/10/2020', 'DD-MM-YYYY') AND call\_begin <= TO\_DATE('30/10/2020', 'DD-MM-YYYY')

CUSTOMER\_FIRST CUSTOMER\_LAST CALL\_BEGIN CALL\_END Length (hr)

Vere Shaw 11-OCT-2020 15:00:00 11-OCT-2020 16:00:00 1

6. Identify customers who included angry words in text messages in Jan 2020. Display the customer’s name, date of text and text message.

select

verizon\_customer.customer\_first,

verizon\_customer.customer\_last,

verizon\_texts.text\_date,

verizon\_angry\_words.full\_content

from verizon\_texts

join verizon\_angry\_words on verizon\_angry\_words.text\_id = verizon\_texts.text\_id

join verizon\_device\_ownership on verizon\_device\_ownership.device\_imei = verizon\_texts.device\_imei

join verizon\_customer on verizon\_customer.customer\_id = verizon\_device\_ownership.customer\_id

where verizon\_texts.text\_date >= TO\_DATE('01/01/2020', 'DD-MM-YYYY') AND verizon\_texts.text\_date <= TO\_DATE('31/01/2020', 'DD-MM-YYYY')

and verizon\_angry\_words.words like 'retard' or verizon\_angry\_words.words like 'asshole' or verizon\_angry\_words.words like 'cum'

CUSTOMER\_FIRST CUSTOMER\_LAST TEXT\_DATE FULL\_CONTENT

Kain Mandy 01-JAN-2020 15:00:00 she is a retard, asshole cum.

Kain Mandy 01-JAN-2020 15:00:00 she is a retard, asshole cum.

Kain Mandy 01-JAN-2020 15:00:00 she is a retard, asshole cum.

7. Identify the most popular device model for NY active customers in 2020. Display 4 columns: Customer first, customer last, device model, number of devices. Display the most popular device first. Display 1 distinct row for each customer.

select

verizon\_customer.customer\_first,

verizon\_customer.customer\_last,

verizon\_device.device\_model, count(verizon\_device.device\_model)"number of device"

from verizon\_sim

join verizon\_device\_ownership on verizon\_device\_ownership.customer\_id = verizon\_sim.customer\_id

join verizon\_customer on verizon\_sim.customer\_id = verizon\_customer.customer\_id

join verizon\_device on verizon\_device\_ownership.device\_imei = verizon\_device.device\_imei

where verizon\_sim.active\_date >= to\_date('01/01/2020', 'DD/MM/YYYY')

and verizon\_sim.active\_date <= to\_date('31/12/2020', 'DD/MM/YYYY')

and verizon\_customer.customer\_state = 'NY'

group by verizon\_customer.customer\_first, verizon\_customer.customer\_last, verizon\_device.device\_model

order by count(verizon\_device.device\_model) desc

CUSTOMER\_FIRST CUSTOMER\_LAST DEVICE\_MODEL number of device

Gale Greer NOTE 2

Kain Mandy IPHONE6 2

Kain Mandy NOTE 2

Stan Parham IPHONE7 2

Stan Parham GALAXY S10 2

Robert Chandler IPAD 1

Darren Hanson GALAXY S21 1

Doran Harper PIXEL 5 1

Doran Harper IPAD 1

Skye Butler PIXEL 5 1

Robert Chandler PIXEL 5 1

Ambrose Dolton IPHONEX 1

Skye Butler IPHONEX 1

Hughie Bennett GALAXY S21 1

8. Identify text messages exchanged between Kain and Stan in Jan 2020. Display the date of text, sender, receiver and text message. Display the messages in chronological order.

select

verizon\_customer.customer\_first,

text\_date,

text\_status,

text\_content

from verizon\_texts

join verizon\_device\_ownership on verizon\_device\_ownership.device\_imei = verizon\_texts.device\_imei

join verizon\_customer on verizon\_device\_ownership.customer\_id = verizon\_customer.customer\_id

where verizon\_customer.customer\_first = 'Kain' or verizon\_customer.customer\_first = 'Stan'

order by text\_date asc

CUSTOMER\_FIRST TEXT\_DATE TEXT\_STATUS TEXT\_CONTENT

Kain 01-JAN-2020 10:00:00 sent hi, 123

Stan 01-JAN-2020 11:00:00 receive hi, 1234

Stan 01-JAN-2020 12:00:00 sent hi, 12345

Kain 01-JAN-2020 13:00:00 receive hi, 123456

Kain 01-JAN-2020 14:00:00 sent hi, 1234567

Stan 01-JAN-2020 15:00:00 receive hi, 12345678

Kain 01-JAN-2020 15:00:00 sent hi, 123456789

Kain 30-JAN-2020 15:00:00 sent hi, 1234567890

9. Identify text messages exchanged in NY on Jan 1 between 10 am and 1 pm. Display the date of text, sender, receiver and text message. Display the messages in chronological order.

select

verizon\_customer.customer\_first,

text\_date,

text\_status,

text\_content

from verizon\_texts

join verizon\_device\_ownership on verizon\_device\_ownership.device\_imei = verizon\_texts.device\_imei

join verizon\_customer on verizon\_device\_ownership.customer\_id = verizon\_customer.customer\_id

where verizon\_texts.text\_date >= to\_date ('01/01/2020 10:00:00', 'DD/MM/YYYY HH24:MI:SS')

and verizon\_texts.text\_date <= to\_date ('01/01/2020 13:00:00', 'DD/MM/YYYY HH24:MI:SS')

and verizon\_texts.text\_city = 'NY'

order by text\_date asc

CUSTOMER\_FIRST TEXT\_DATE TEXT\_STATUS TEXT\_CONTENT

Kain 01-JAN-2020 10:00:00 sent hi, 123

Stan 01-JAN-2020 11:00:00 receive hi, 1234

Stan 01-JAN-2020 12:00:00 sent hi, 12345

Kain 01-JAN-2020 13:00:00 receive hi, 123456

10. Identify customers with more than 1 phone. Display the customer’s name and number of phones. Display 1 distinct row for each customer.

select

verizon\_customer.customer\_first,

verizon\_customer.customer\_last,

count(verizon\_device.device\_model)"number of device"

from verizon\_sim

join verizon\_device\_ownership on verizon\_device\_ownership.customer\_id = verizon\_sim.customer\_id

join verizon\_customer on verizon\_sim.customer\_id = verizon\_customer.customer\_id

join verizon\_device on verizon\_device\_ownership.device\_imei = verizon\_device.device\_imei

group by verizon\_customer.customer\_first, verizon\_customer.customer\_last, verizon\_device.device\_model

HAVING count(verizon\_device.device\_model) > 1

CUSTOMER\_FIRST CUSTOMER\_LAST number of device

Kain Mandy 2

Robert Chandler 2

Stan Parham 2

Stan Parham 2

Kain Mandy 2

Doran Harper 2

Robert Chandler 2

Doran Harper 2

Gale Greer 2

11. Display the structure of ALL tables using SQL Describe.

verizon\_customer

Name Null? Type

---------------- -------- -------------

CUSTOMER\_ID NOT NULL NUMBER

CUSTOMER\_FIRST VARCHAR2(255)

CUSTOMER\_LAST VARCHAR2(255)

CUSTOMER\_STREET VARCHAR2(255)

CUSTOMER\_CITY VARCHAR2(255)

CUSTOMER\_STATE VARCHAR2(255)

CUSTOMER\_ZIPCODE VARCHAR2(255)

CUSTOMER\_DOB DATE

CUSTOMER\_AGE NUMBER

CUSTOMER\_EMAIL VARCHAR2(255)

Graphical user interface, table

Description automatically generated

verizon\_angry\_words

Name Null? Type

------------- -------- -------------

ANGRY\_WORD\_ID NOT NULL VARCHAR2(255)

TEXT\_ID VARCHAR2(255)

WORDS VARCHAR2(255)

FULL\_CONTENT VARCHAR2(255)

Table

Description automatically generated

verizon\_calls

Name Null? Type

------------ -------- -------------

CALL\_ID NOT NULL VARCHAR2(255)

DEVICE\_IMEI VARCHAR2(255)

CALL\_STATUS VARCHAR2(255)

CALL\_BEGIN DATE

CALL\_END DATE

PHONE\_NUMBER VARCHAR2(255)

CALL\_CITY VARCHAR2(255)

Table

Description automatically generated

verizon\_device

Name Null? Type

------------------- -------- -------------

DEVICE\_IMEI NOT NULL VARCHAR2(255)

DEVICE\_MANUFACTURER VARCHAR2(255)

DEVICE\_MODEL VARCHAR2(255)

DEVICE\_STORAGE VARCHAR2(255)

Table

Description automatically generated

verizon\_device\_ownership

Name Null? Type

----------- -------- -------------

DEVICE\_IMEI NOT NULL VARCHAR2(255)

CUSTOMER\_ID NUMBER

Table

Description automatically generated

verizon\_invoice

Name Null? Type

------------ -------- -------------

INVOICE\_ID NOT NULL VARCHAR2(255)

INVOICE\_DATE VARCHAR2(255)

DEVICE\_IMEI VARCHAR2(255)

CUSTOMER\_ID NUMBER

INVOICE\_COST NUMBER

PAYMENT VARCHAR2(255)

Table

Description automatically generated

verizon\_sim

Name Null? Type

--------------- -------- -------------

SIM\_ID NOT NULL VARCHAR2(255)

DEVICE\_IMEI VARCHAR2(255)

CUSTOMER\_ID NUMBER

SIM\_STATUS VARCHAR2(255)

ACTIVE\_DATE DATE

DEACTIVATE\_DATE DATE

PHONE\_NUMBER VARCHAR2(255)

Table

Description automatically generated

verizon\_texts

Name Null? Type

-------------- -------- -------------

TEXT\_ID NOT NULL VARCHAR2(255)

DEVICE\_IMEI VARCHAR2(255)

TEXT\_DATE DATE

RECEIVE\_NUMBER VARCHAR2(255)

SENT\_NUMBER VARCHAR2(255)

TEXT\_STATUS VARCHAR2(255)

TEXT\_CITY VARCHAR2(255)

TEXT\_CONTENT VARCHAR2(255)

Graphical user interface, table

Description automatically generated

verizon\_web

Name Null? Type

----------- -------- -------------

WEB\_ID NOT NULL VARCHAR2(255)

DEVICE\_IMEI VARCHAR2(255)

WEB\_DATE DATE

URL VARCHAR2(255)

WEB\_STATUS VARCHAR2(255)

WEB\_BYTES NUMBER

Text, table

Description automatically generated with medium confidence

12. Display the version of Oracle. Enter:

SELECT \*

FROM v$version;

BANNER BANNER\_FULL BANNER\_LEGACY CON\_ID

Oracle Database 18c Express Edition Release 18.0.0.0.0 - Production "Oracle Database 18c Express Edition Release 18.0.0.0.0 - Production

Version 18.4.0.0.0" Oracle Database 18c Express Edition Release 18.0.0.0.0 - Production 0

**Need SQL: (presenting with an example)**

create form:

create table VERIZON\_DEVICE

(DEVICE\_IMEI VARCHAR(255) PRIMARY KEY,

DEVICE\_MANUFACTURER VARCHAR(255) ,

DEVICE\_MODEL VARCHAR(255),

DEVICE\_STORAGE VARCHAR(255));

Insert value:

INSERT INTO VERIZON\_DEVICE

(DEVICE\_IMEI, DEVICE\_MANUFACTURER, DEVICE\_MODEL, DEVICE\_STORAGE )

VALUES

('device-15', 'GOOGLE', 'PIXEL 5', '128G' );

Update value:

update verizon\_customer

set customer\_id = 1000

where customer\_first = 'Vere'

create primary key with chronological value

create sequence staff\_ID\_SEQ

increment by 1

start with 10000;

insert whole column

INSERT

INTO verizon\_device\_ownership

(

device\_imei

)

SELECT device\_imei

FROM verizon\_device;

Alter datatype

alter table

verizon\_invoice

modify

(

invoice\_date varchar(255)

);

Delete value

delete

from verizon\_invoice

where invoice\_date = '02-JAN-20'