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RDB Design, Implementation, and Queries
Due: Thursday 4/20/17

Part 1: Forward Engineering Table:

TECHNICIAN (technician_id, technician_name, unit)

PRODUCT_CATEGORY (product_category_id, model_name)

CUSTOMER (customer_id, customer_name)

SKILL (skill_name, technician_id)
technician_id is a FK to TECHNICIAN

CAN_REPAIR (technician_id, product_category_id, certification)
technician_id is a FK to TECHNICIAN
product_category_id is a FK to PRODUCT_CATEGORY

SOLD_PRODUCT (product_id, standard_price, product_name, start_date, length_date, repair_date, repair_amount, product_category_id, technician_id)
product_category_id is a FK to PRODUCT_CATEGORY
technician_id is a FK to TECHNICIAN

SERVICE_AGREEMENT (agreement_type, product_category_id, agreement_condition)
product_category_id is a FK to PRODUCT_CATEGORY

SELLS (technician_id, product_id, customer_id, sales_amount)
technician_id is a FK to TECHNICIAN
product_id is a FK to SOLD_PRODUCT
customer_id is a FK to CUSTOMER

Part 2: Contents of populated relations:

Table: can_repair

Answer Set

Answer Set 1

	certification	technician_id	product_category_id
	cert A	00000003	001
	cert B	00000012	004
	cert B	00000011	001
	cert A	00000006	004
	cert B	00000010	003
	cert B	00000008	002
	cert A	00000001	001
	cert A	00000002	002
	cert A	00000004	003
	cert B	00000007	001
	cert A	00000005	001
	cert B	00000009	001

Table: customer

Answer Set

Answer Set 1

	customer_name	customer_id
	Ben	b
	AJ	a
	Cheng	d
	Davis	e
	Nan	l
	Paul	j
	Han	c
	George	k
	Talaga	f
	Montjoy	i
	Perdy	g
	Nui	h

Table: product_category

Answer Set

Answer Set 1

	product_category_id	model_name
	012	model 6
	007	model 1
	004	model 2
	013	model 2
	009	model 3
	003	model 3
	002	model 2
	014	model 1
	011	model 1
	010	model 2
	008	model 2
	001	model 1
	005	model 6
	006	model 2

Table: sells

Answer Set

Answer Set 1

technician_id	product_id	customer_id	sales_amount
00000006	P01	b	1203
00000006	P02	b	1209
00000007	P01	c	1304
00000003	P01	c	1304
00000001	P01	d	1000
00000008	P01	b	9876
00000004	P01	b	9875
00000007	P02	c	130
00000008	P02	b	98711
00000001	P01	c	5
00000005	P01	d	1001
00000005	P02	d	100
00000001	P01	a	1
00000001	P01	b	3
00000002	P01	b	1207

Table: service_agreement

Answer Set

Answer Set 1

agreement_type	product_category_id	agreement_condition
premium	004	cond a
basic	005	cond d
premium	008	cond e
standard	002	cond c
standard	001	cond f
basic	012	cond b
basic	006	cond b
basic	009	cond d
standard	010	cond c
standard	007	cond f
premium	003	cond e
premium	011	cond a

Table: skill

Answer Set

Answer Set 1

	skill_name	technician_id
	R	00000009
	SQL	00000004
	SQL	00000007
	java	00000003
	C	00000012
	R	00000007
	R	00000012
	SQL	00000011
	C++	00000001
	SQL	00000010
	Java	00000011
	SQL	00000009
	R	00000003
	javascript	00000011
	R	00000011
	R	00000008
	C#	00000001
	SQL	00000001
	R	00000010
	SQL	00000008
	Javascript	00000009
	C++	00000012
	R	00000001
	python	00000002
	C#	00000007
	SQL	00000012
	R	00000004

Table: sold_product

Answer Set

Answer Set 1

product_id	standard_price	product_name	start_date	length_date	repair_date	repair_amount	product_category_id	technician_id
P01	300	phone	01/17/17	0	09/17/17	100	001	00000001
P02	50	car	01/30/17	40	09/17/17	100	001	00000001
P05	1200	shoes	01/09/17	120	09/17/17	100	005	00000001
P08	5	knife	01/10/17	1000	09/17/17	100	005	00000001
P03	35	pen	01/01/17	0	09/17/17	100	003	00000001
P06	101	keys	01/10/17	1000	09/17/17	100	005	00000001
P07	10000000	gold keys	01/10/17	0	09/17/17	100	005	00000002
P04	400	laptop	01/05/17	100	09/17/17	100	001	00000001
P09	980	gold knife	01/10/17	0	09/17/17	100	005	00000002

Table: technician

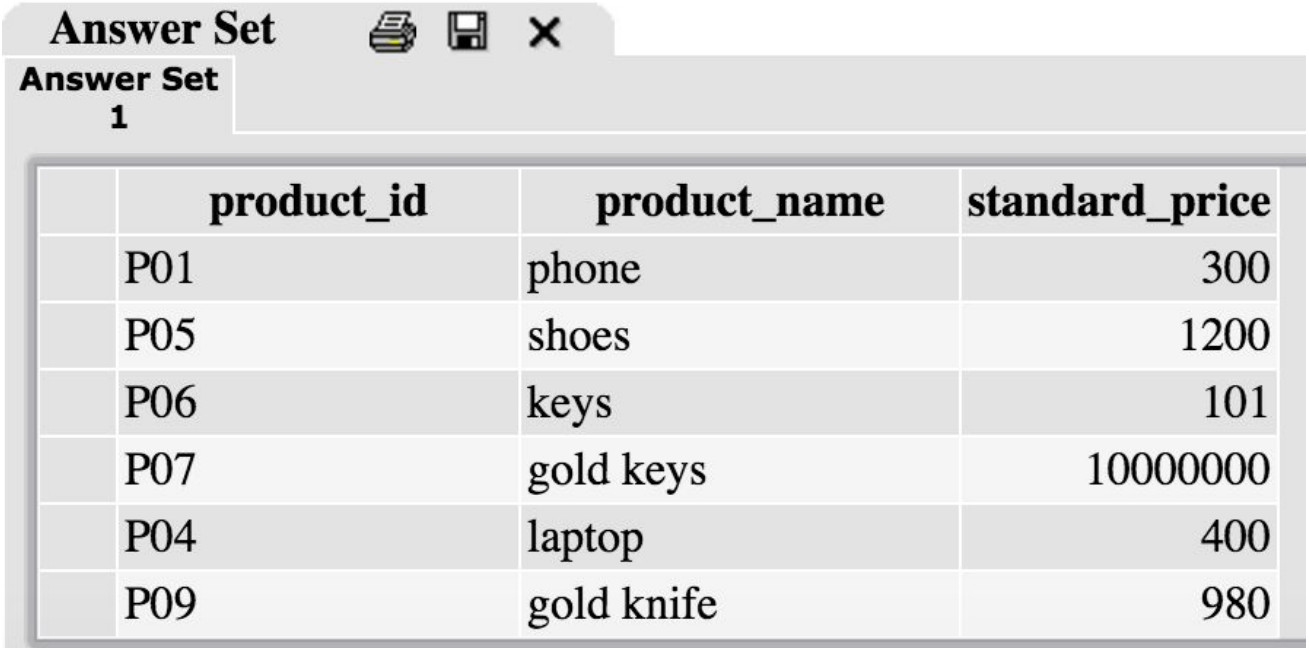
Answer Set

Answer Set 1

technician_name	unit	technician_id
Kiwi	Computer Science	00000011
Bill	Data Science	00000002
Dan	Data Science	00000007
Joe	Data Science	00000001
Austin	Computer Science	00000005
Elis	Computer Science	00000003
Shaq	Computer Science	00000009
Kawei	Data Science	00000010
Kobe	Data Science	00000008
Ben	Data Science	00000004
DaQuan	Data Science	00000006
Jack	Data Science	00000012

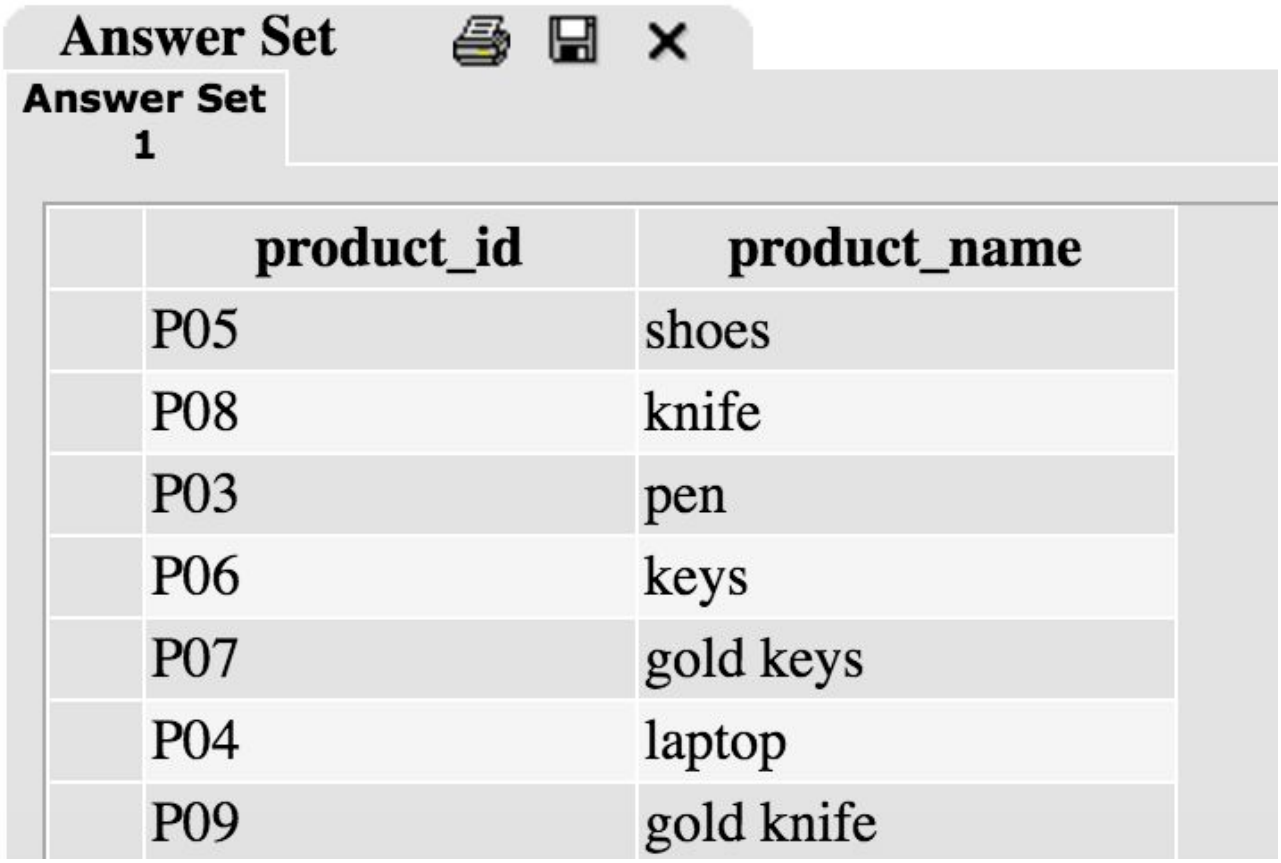
Part 3: SQL query text and the data answering the query:

```
/* List all sold products (product ID, product name, and standard
price) where the standard
price is at least $100. */

SELECT s.product_id, s.product_name, s.standard_price
FROM hornbd.sold_product s
WHERE s.standard_price >= 100;
```



	product_id	product_name	standard_price
	P01	phone	300
	P05	shoes	1200
	P06	keys	101
	P07	gold keys	10000000
	P04	laptop	400
	P09	gold knife	980

```
/* List all products (product ID and name) for sold products that
have never been purchased by any customer. */

SELECT s.product_id, s.product_name
FROM hornbd.sold_product s
WHERE s.product_id not in (
    SELECT product_id
    FROM hornbd.sells);
```

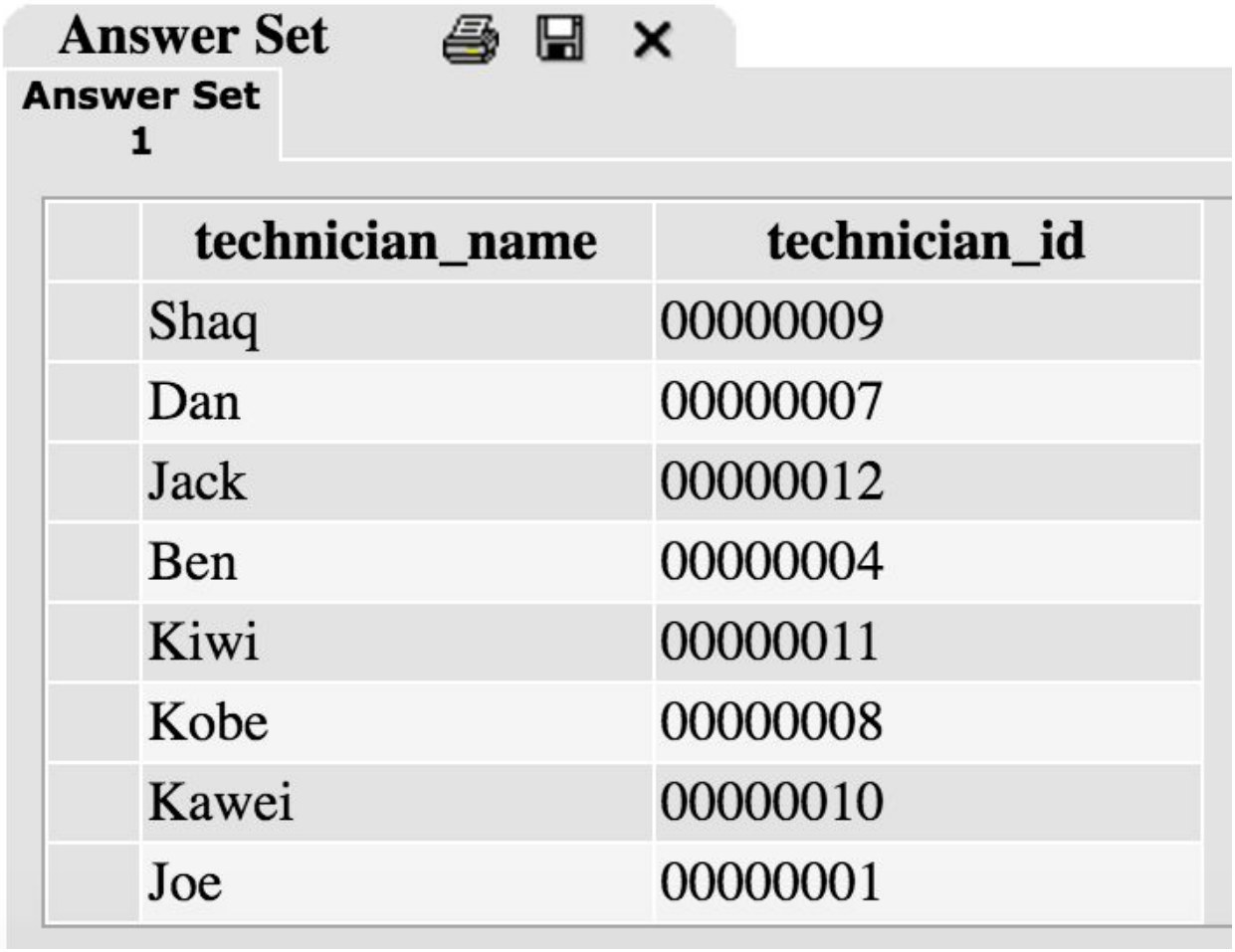


Answer Set

Answer Set 1

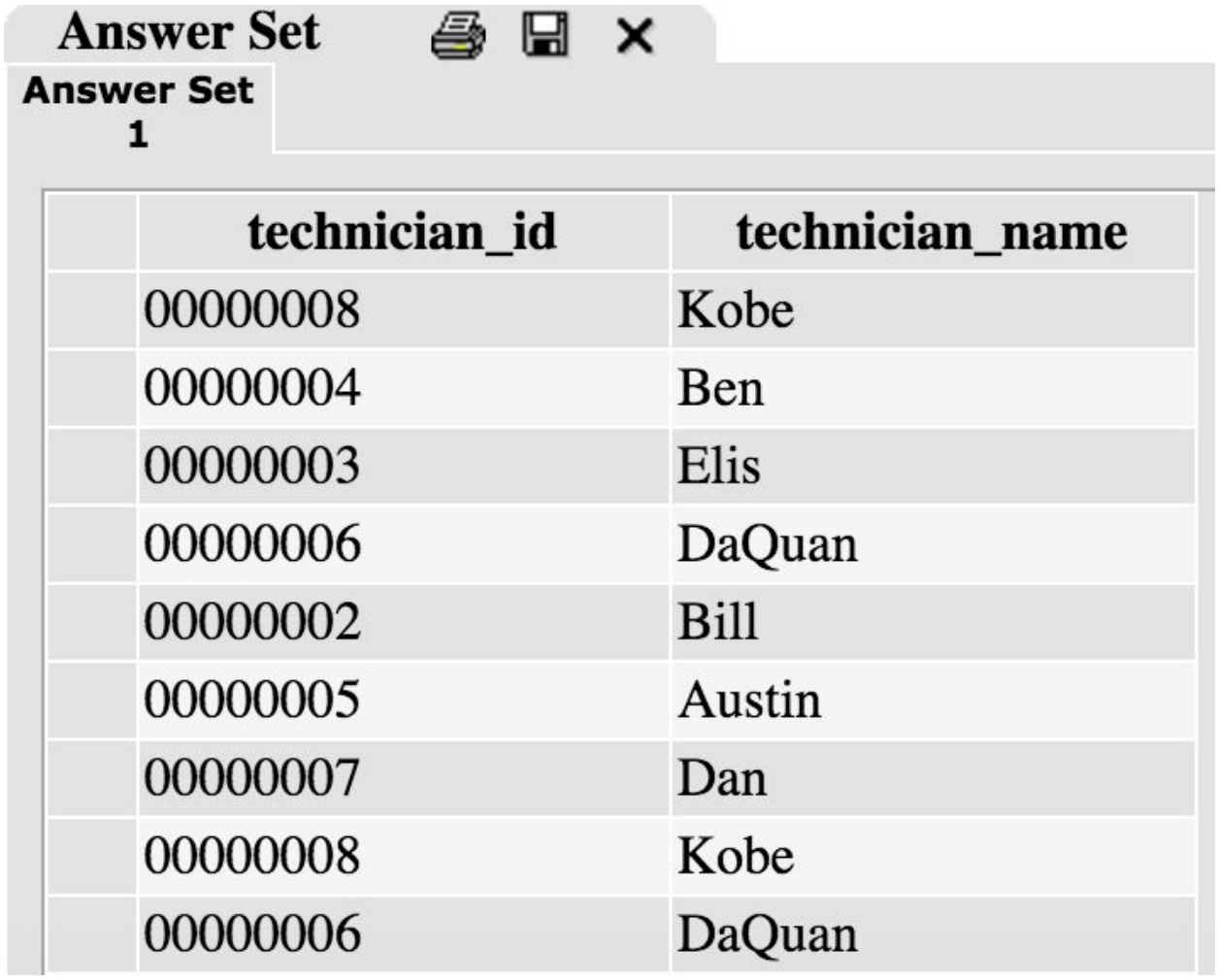
	product_id	product_name
	P05	shoes
	P08	knife
	P03	pen
	P06	keys
	P07	gold keys
	P04	laptop
	P09	gold knife

```
/* List name and ID for technicians in the Data Science unit who have
SQL and R programming as skills. */

SELECT t.technician_name, t.technician_id
FROM hornbd.technician t, hornbd.skill s
WHERE t.technician_id = s.technician_id AND s.skill_name = 'SQL' AND
t.technician_id in(
    SELECT t.technician_id
    FROM hornbd.technician t, hornbd.skill s
    WHERE t.technician_id = s.technician_id AND s.skill_name = 'R');
```



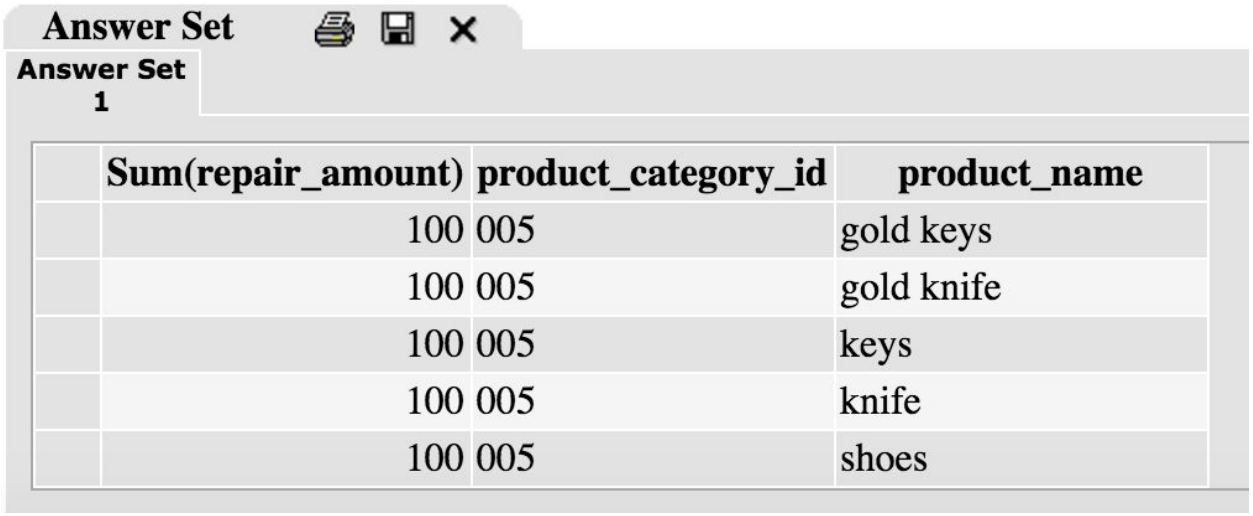
	technician_name	technician_id
	Shaq	00000009
	Dan	00000007
	Jack	00000012
	Ben	00000004
	Kiwi	00000011
	Kobe	00000008
	Kawei	00000010
	Joe	00000001

```
/* List the technicians (identifier and name) who can repair a
product that they have also
sold for a cost greater than $1000. */

SELECT t.technician_id, t.technician_name
FROM hornbd.technician t, hornbd.can_repair r, hornbd.sells s
WHERE t.technician_id = r.technician_id AND t.technician_id =
s.technician_id AND s.sales_amount > 1000;
```



	technician_id	technician_name
	00000008	Kobe
	00000004	Ben
	00000003	Elis
	00000006	DaQuan
	00000002	Bill
	00000005	Austin
	00000007	Dan
	00000008	Kobe
	00000006	DaQuan

```
/* Give the sum of repair costs by product category and name where
the product category contains at least two products with a warranty
length greater than 1. */

SELECT sum(s.repair_amount), s.product_category_id, s.product_name
FROM hornbd.sold_product s
WHERE product_category_id in( SELECT product_category_id FROM
hornbd.sold_product WHERE length_date > 1 GROUP BY
product_category_id HAVING count(*) > 2)
GROUP BY s.product_category_id, s.product_name
ORDER BY s.product_category_id, s.product_name
```



Answer Set

Answer Set 1

	Sum(repair_amount)	product_category_id	product_name
	100	005	gold keys
	100	005	gold knife
	100	005	keys
	100	005	knife
	100	005	shoes

Part 4: Log

Name	Location/ Time	Activities	Assignments
Benjamin Horn and Elisabeth Bruesewitz	Starbucks at CRC 4/5/2017 12pm - 2pm Duration: 2 Hours	Finishing outline of project goals, requirements, and forward engineering the database tables. Decided to work with Teradata over MySQL Editor	Ben Horn - Create Tables in Teradata and begin to populate tables. Elisabeth Bruesewitz - Pull down shared code and begin to work on the 5 queries for the data.
Benjamin Horn	Rhodes Hall - Engineering Lounge 4/5/2017 3pm - 5pm Duration: 2 Hours	Complete creating tables in SQL based off of forward engineered tables. Completed populating those tables with created data.	Ben Horn - Check to make sure data is populated with at least minimum requirements.
Elisabeth Bruesewitz	Rhodes Hall - Engineering Lounge 4/5/2017 5pm - 6pm Duration: 1 Hours	Completed writing the queries to be ran on the data.	Elisabeth Bruesewitz - Make sure queries return minimum output and double check correctness of queries.
Benjamin Horn and Elisabeth Bruesewitz	Old Chem - German Lounge 4/12/2017 12pm - 2pm Duration: 2 Hours	Completed and checked queries for correctness. Checked all requirements were met. Completed final report.	Ben Horn - Submit and Print Elisabeth Bruesewitz - Submit and Print

Benjamin Horn: 6 Hours
Elisabeth Bruesewitz: 5 Hours
Total Time: 11 Hours