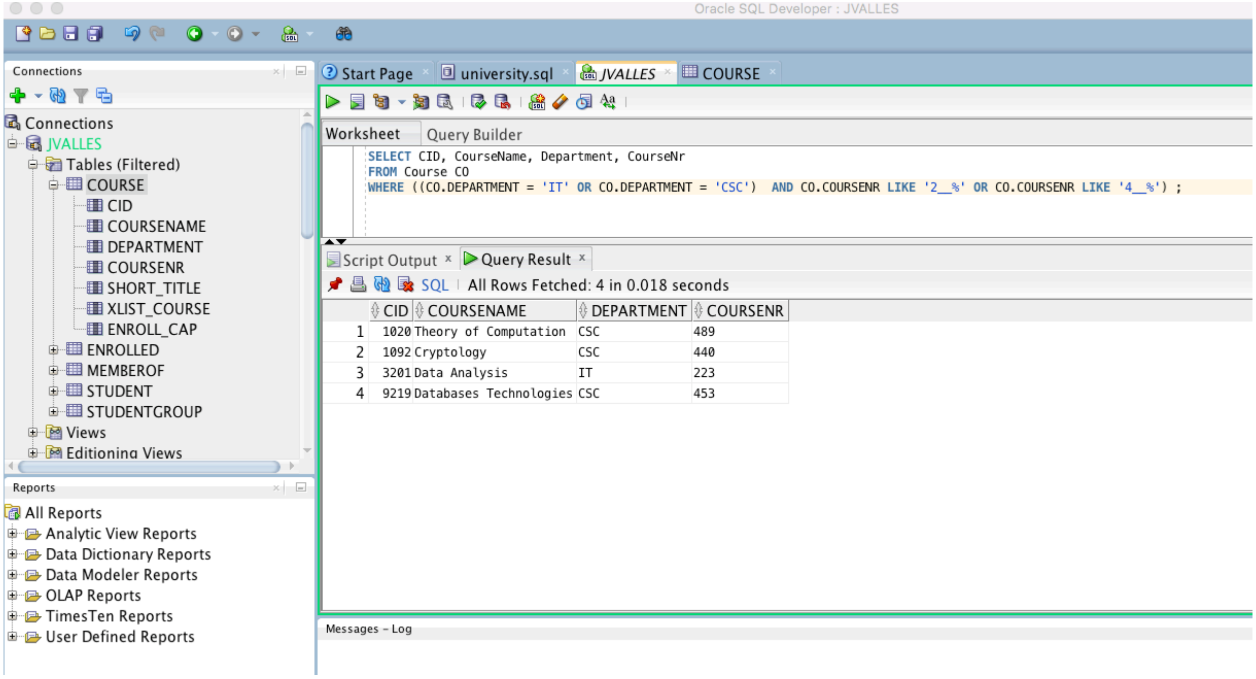
James Valles
CSC 453
Assignment #2

1. Reading done.

2.
a.
Listing all CSC/IT courses at the 200 and 400 level.

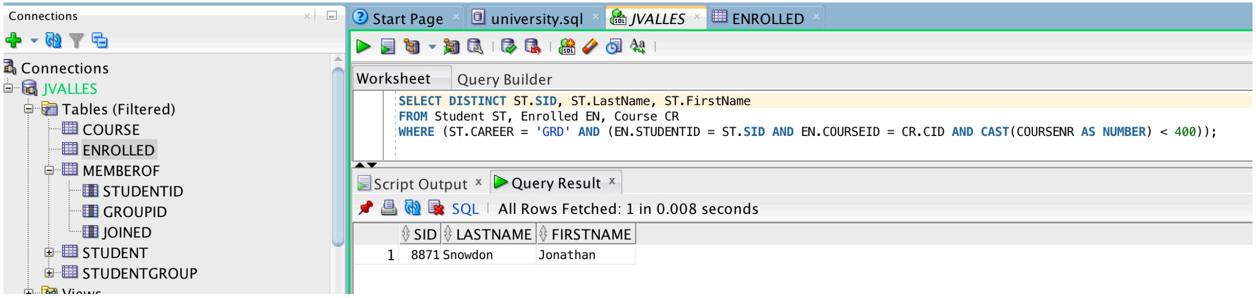


```
SELECT CID, CourseName, Department, CourseNr
FROM Course CO
WHERE ((CO.DEPARTMENT = 'IT' OR CO.DEPARTMENT = 'CSC')  AND CO.COURSENR LIKE '2__%' OR CO.COURSENR LIKE '4__%') ;
```

All Rows Fetched: 4 in 0.018 seconds

	CID	COURSENAME	DEPARTMENT	COURSENR
1	1020	Theory of Computation	CSC	489
2	1092	Cryptology	CSC	440
3	3201	Data Analysis	IT	223
4	9219	Databases Technologies	CSC	453

b.
Listing all graduate students enrolled in an undergraduate course (coursenr < 400).



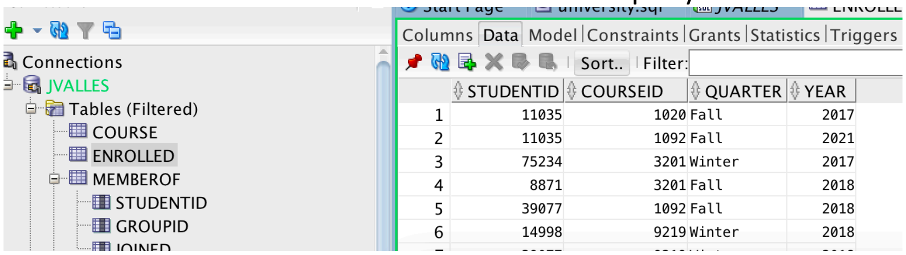
```
SELECT DISTINCT ST.SID, ST.LastName, ST.FirstName
FROM Student ST, Enrolled EN, Course CR
WHERE (ST.CAREER = 'GRD' AND (EN.STUDENTID = ST.SID AND EN.COURSEID = CR.CID AND CAST(COURSENR AS NUMBER) < 400));
```

All Rows Fetched: 1 in 0.008 seconds

	SID	LASTNAME	FIRSTNAME
1	8871	Snowdon	Jonathan

SELECT DISTINCT ST.SID, ST.LastName, ST.FirstName
FROM Student ST, Enrolled EN, Course CR
WHERE (ST.CAREER = 'GRD' AND (EN.STUDENTID = ST.SID AND EN.COURSEID = CR.CID AND CAST(COURSENR AS NUMBER) < 400));

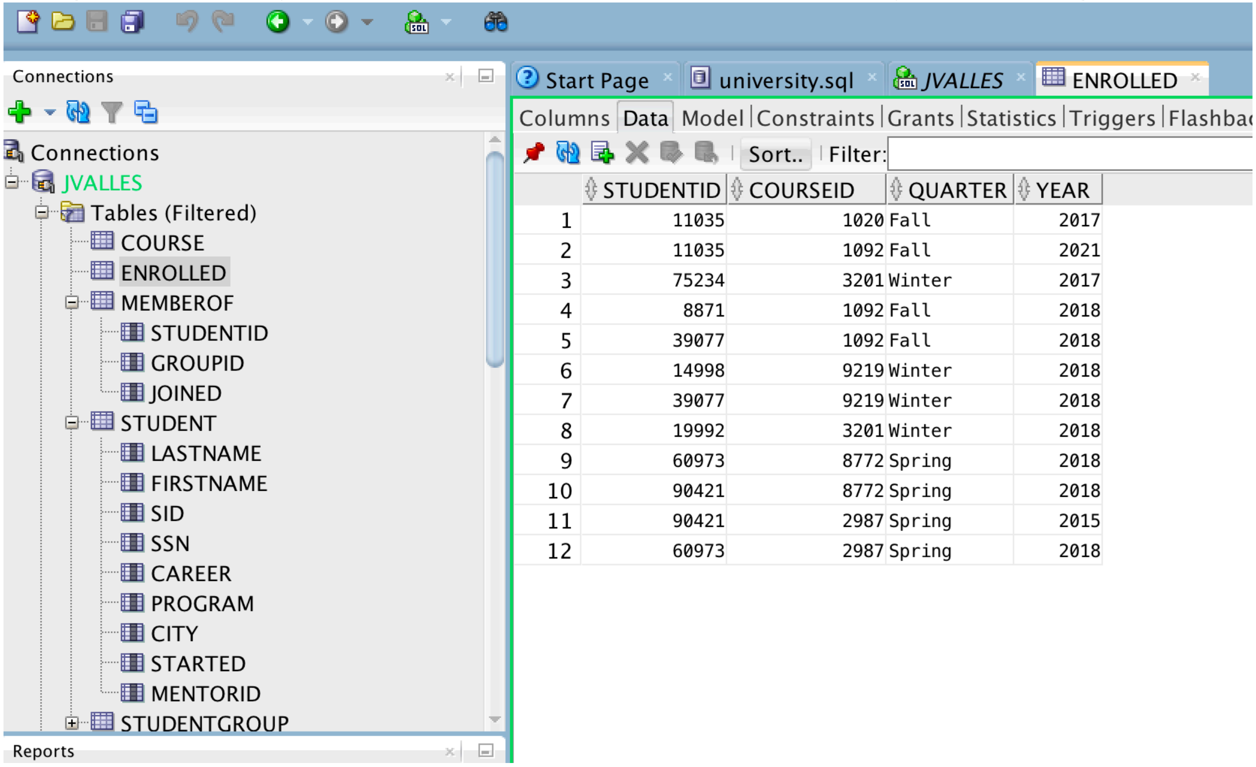
I added course id 3201 for student 8871 to test query above.



	STUDENTID	COURSEID	QUARTER	YEAR
1	11035	1020	Fall	2017
2	11035	1092	Fall	2021
3	75234	3201	Winter	2017
4	8871	3201	Fall	2018
5	39077	1092	Fall	2018
6	14998	9219	Winter	2018

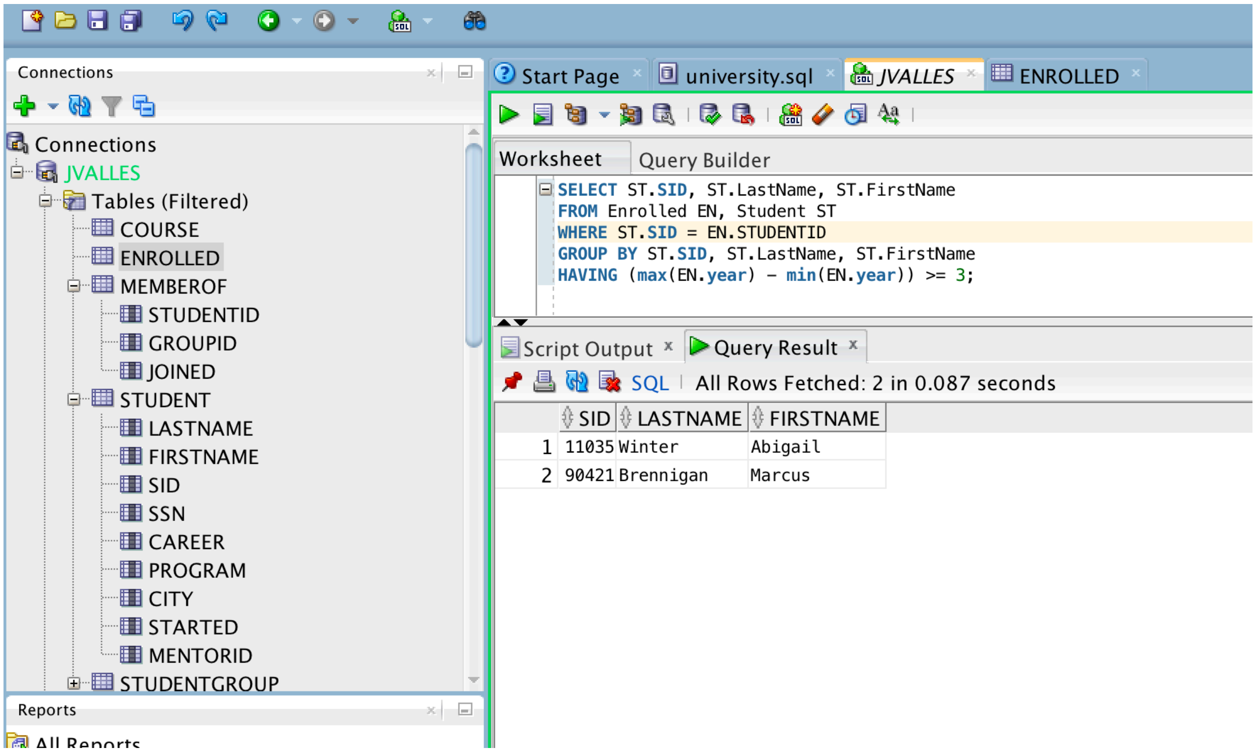
c.

Changed enrollment year for 11035 to 2012 and 90421 to 2015 for ‘positive testing’.



	STUDENTID	COURSEID	QUARTER	YEAR
1	11035	1020	Fall	2017
2	11035	1092	Fall	2021
3	75234	3201	Winter	2017
4	8871	1092	Fall	2018
5	39077	1092	Fall	2018
6	14998	9219	Winter	2018
7	39077	9219	Winter	2018
8	19992	3201	Winter	2018
9	60973	8772	Spring	2018
10	90421	8772	Spring	2018
11	90421	2987	Spring	2015
12	60973	2987	Spring	2018

Based on query, there were two long-term students. Had to calculate diff between max, min years for each student. Used GROUP BY and HAVING.



```
SELECT ST.SID, ST.LastName, ST.FirstName
FROM Enrolled EN, Student ST
WHERE ST.SID = EN.STUDENTID
GROUP BY ST.SID, ST.LastName, ST.FirstName
HAVING (max(EN.year) - min(EN.year)) >= 3;
```

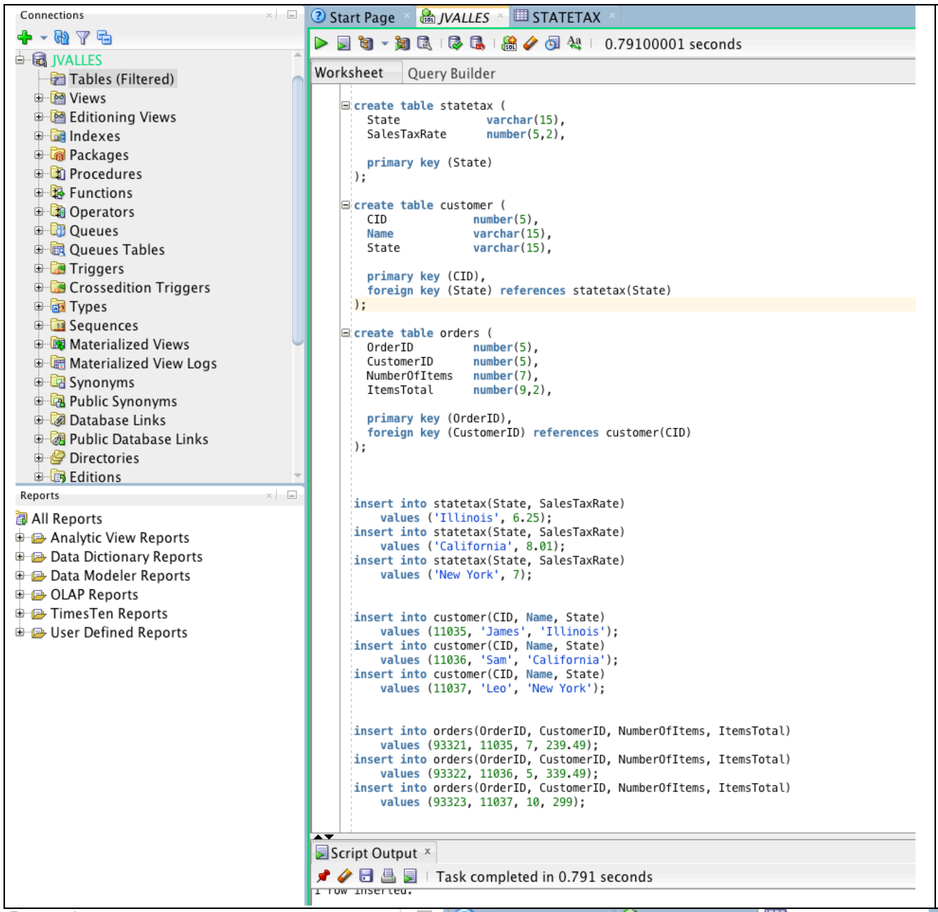
All Rows Fetched: 2 in 0.087 seconds

	SID	LASTNAME	FIRSTNAME
1	11035	Winter	Abigail
2	90421	Brennigan	Marcus

3.

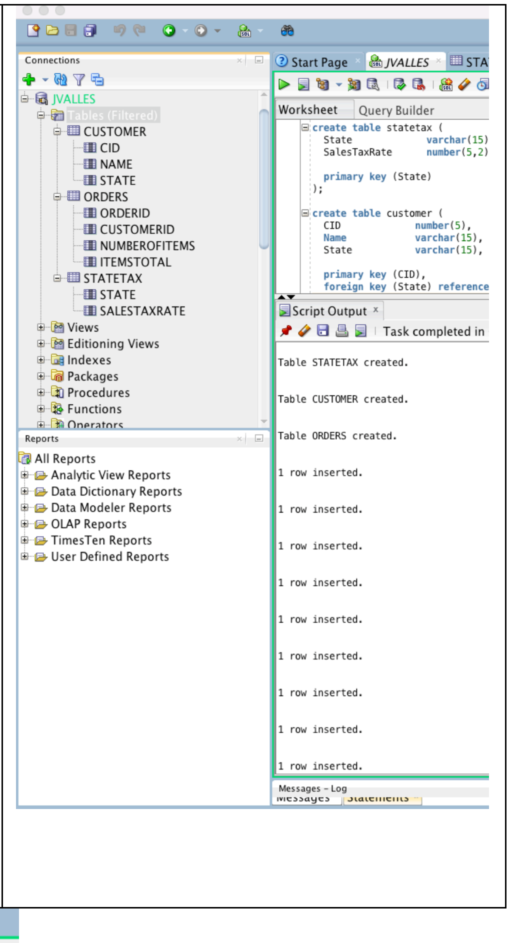
Create tables for Orders, Customer, StateTax. And populated tables with data.

a.

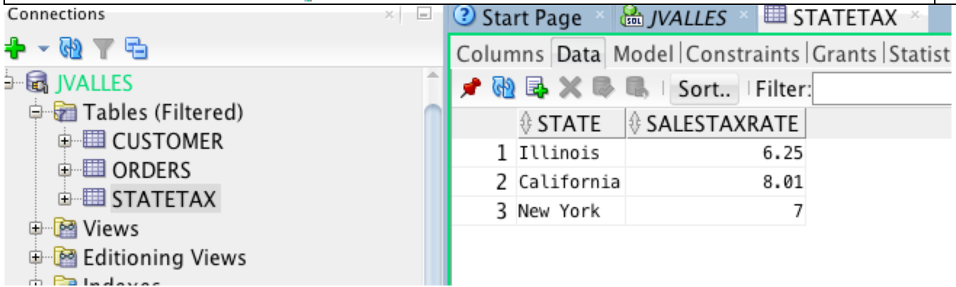


```
create table statetax (
  State           varchar(15),
  SalesTaxRate    number(5,2),

  primary key (State)
);

create table customer (
  CID           number(5),
  Name          varchar(15),
  State         varchar(15),

  primary key (CID),
  foreign key (State) references statetax(State)
);

create table orders (
  OrderID       number(5),
  CustomerID    number(5),
  NumberOfItems number(7),
  ItemsTotal    number(9,2),

  primary key (OrderID),
  foreign key (CustomerID) references customer(CID)
);


insert into statetax(State, SalesTaxRate)
    values ('Illinois', 6.25);
insert into statetax(State, SalesTaxRate)
    values ('California', 8.01);
insert into statetax(State, SalesTaxRate)
    values ('New York', 7);


insert into customer(CID, Name, State)
    values (11035, 'James', 'Illinois');
insert into customer(CID, Name, State)
    values (11036, 'Sam', 'California');
insert into customer(CID, Name, State)
    values (11037, 'Leo', 'New York');


insert into orders(OrderID, CustomerID, NumberOfItems, ItemsTotal)
    values (93321, 11035, 7, 239.49);
insert into orders(OrderID, CustomerID, NumberOfItems, ItemsTotal)
    values (93322, 11036, 5, 339.49);
insert into orders(OrderID, CustomerID, NumberOfItems, ItemsTotal)
    values (93323, 11037, 10, 299);
```

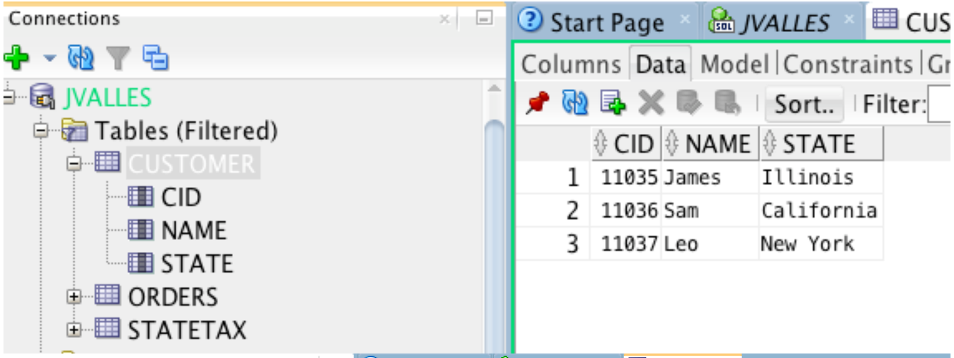
Task completed in 0.791 seconds



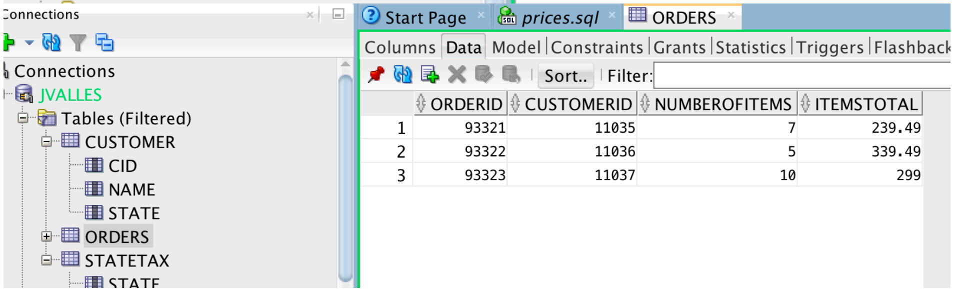
```
Table STATETAX created.

Table CUSTOMER created.

Table ORDERS created.

1 row inserted.

1 row inserted.

1 row inserted.

1 row inserted.

1 row inserted.

1 row inserted.

1 row inserted.

1 row inserted.

1 row inserted.
```



	STATE	SALESTAXRATE
1	Illinois	6.25
2	California	8.01
3	New York	7



	CID	NAME	STATE
1	11035	James	Illinois
2	11036	Sam	California
3	11037	Leo	New York

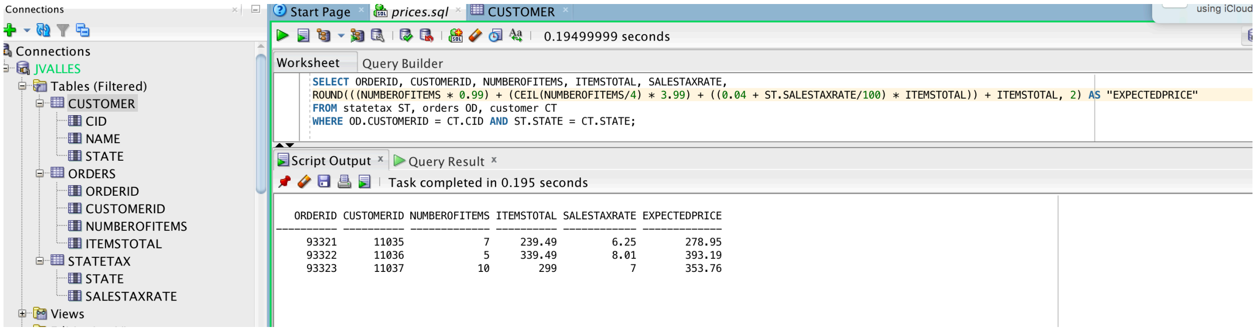


	ORDERID	CUSTOMERID	NUMBEROFITEMS	ITEMSTOTAL
1	93321	11035	7	239.49
2	93322	11036	5	339.49
3	93323	11037	10	299

b.

List all orders and the expected price the customer has to pay. Expected price calculated according to rules. Used Ceil to calculate bundle shipment charge.

SELECT ORDERID, CUSTOMERID, NUMBEROFITEMS, ITEMSTOTAL, SALESTAXRATE, ROUND(((NUMBEROFITEMS * 0.99) + (CEIL(NUMBEROFITEMS/4) * 3.99) + ((0.04 + ST.SALESTAXRATE/100) * ITEMSTOTAL)) + ITEMSTOTAL, 2) AS "EXPECTEDPRICE"
FROM statetax ST, orders OD, customer CT
WHERE OD.CUSTOMERID = CT.CID AND ST.STATE = CT.STATE;



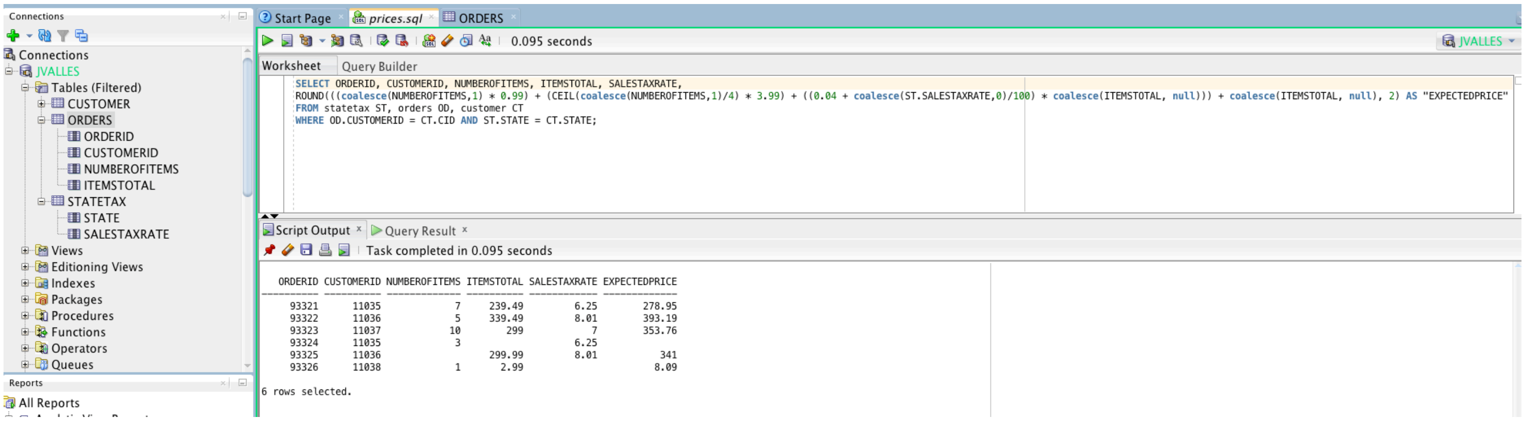
```
SELECT ORDERID, CUSTOMERID, NUMBEROFITEMS, ITEMSTOTAL, SALESTAXRATE,
ROUND(((NUMBEROFITEMS * 0.99) + (CEIL(NUMBEROFITEMS/4) * 3.99) + ((0.04 + ST.SALESTAXRATE/100) * ITEMSTOTAL)) + ITEMSTOTAL, 2) AS "EXPECTEDPRICE"
FROM statetax ST, orders OD, customer CT
WHERE OD.CUSTOMERID = CT.CID AND ST.STATE = CT.STATE;
```

```
   ORDERID CUSTOMERID NUMBEROFITEMS ITEMSTOTAL SALESTAXRATE EXPECTEDPRICE
---------- ---------- ------------- ---------- ------------ -------------
     93321      11035             7     239.49         6.25        278.95
     93322      11036             5     339.49         8.01        393.19
     93323      11037            10        299            7        353.76
```

c.

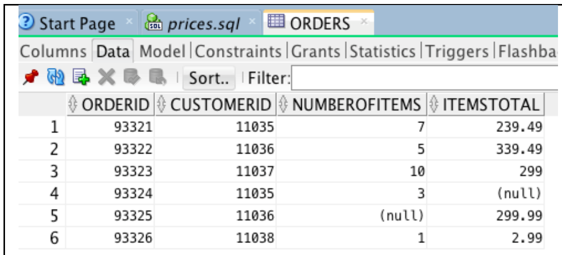
Added coalesce function to input default values should for null values.

SELECT ORDERID, CUSTOMERID, NUMBEROFITEMS, ITEMSTOTAL, SALESTAXRATE, ROUND(((coalesce(NUMBEROFITEMS,1) * 0.99) + (CEIL(coalesce(NUMBEROFITEMS,1)/4) * 3.99) + ((0.04 + coalesce(ST.SALESTAXRATE,0)/100) * coalesce(ITEMSTOTAL, null))) + coalesce(ITEMSTOTAL, null), 2) AS "EXPECTEDPRICE"
FROM statetax ST, orders OD, customer CT
WHERE OD.CUSTOMERID = CT.CID AND ST.STATE = CT.STATE;

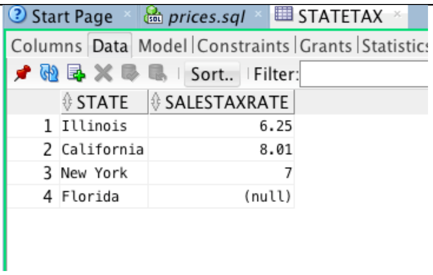


```
SELECT ORDERID, CUSTOMERID, NUMBEROFITEMS, ITEMSTOTAL, SALESTAXRATE,
ROUND(((coalesce(NUMBEROFITEMS,1) * 0.99) + (CEIL(coalesce(NUMBEROFITEMS,1)/4) * 3.99) + ((0.04 + coalesce(ST.SALESTAXRATE,0)/100) * coalesce(ITEMSTOTAL, null))) + coalesce(ITEMSTOTAL, null), 2) AS "EXPECTEDPRICE"
FROM statetax ST, orders OD, customer CT
WHERE OD.CUSTOMERID = CT.CID AND ST.STATE = CT.STATE;
```

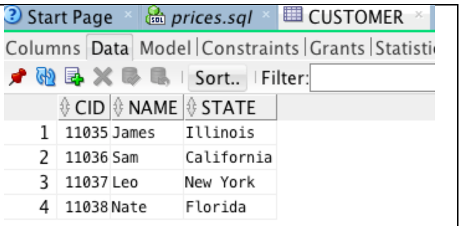
```
   ORDERID CUSTOMERID NUMBEROFITEMS ITEMSTOTAL SALESTAXRATE EXPECTEDPRICE
---------- ---------- ------------- ---------- ------------ -------------
     93321      11035             7     239.49         6.25        278.95
     93322      11036             5     339.49         8.01        393.19
     93323      11037            10        299            7        353.76
     93324      11035             3                    6.25
     93325      11036                   299.99         8.01           341
     93326      11038             1       2.99                       8.09

6 rows selected.
```



	ORDERID	CUSTOMERID	NUMBEROFITEMS	ITEMSTOTAL
1	93321	11035	7	239.49
2	93322	11036	5	339.49
3	93323	11037	10	299
4	93324	11035	3	(null)
5	93325	11036	(null)	299.99
6	93326	11038	1	2.99



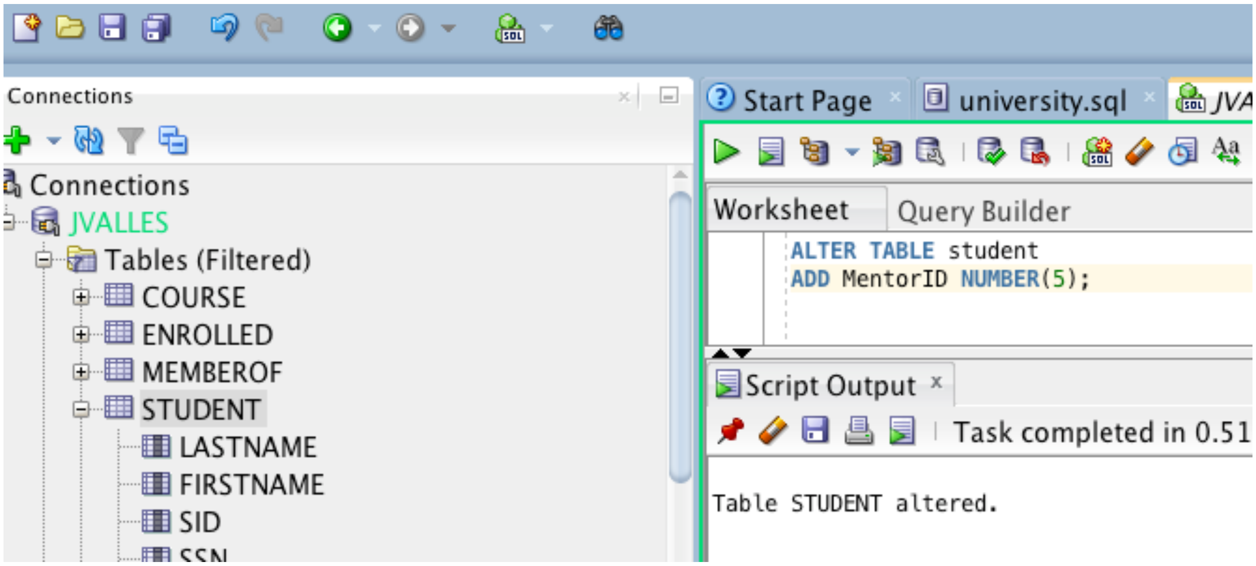
	STATE	SALESTAXRATE
1	Illinois	6.25
2	California	8.01
3	New York	7
4	Florida	(null)



	CID	NAME	STATE
1	11035	James	Illinois
2	11036	Sam	California
3	11037	Leo	New York
4	11038	Nate	Florida

4.

a. Added mentorID field.

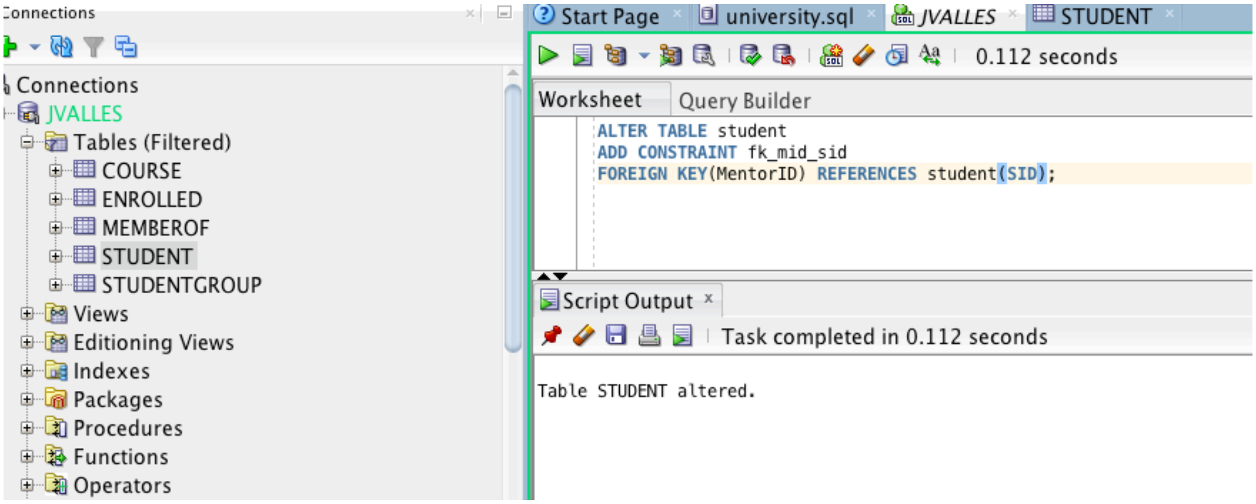


```sql
ALTER TABLE student
ADD MentorID NUMBER(5);
```

Task completed in 0.51

```
Table STUDENT altered.
```

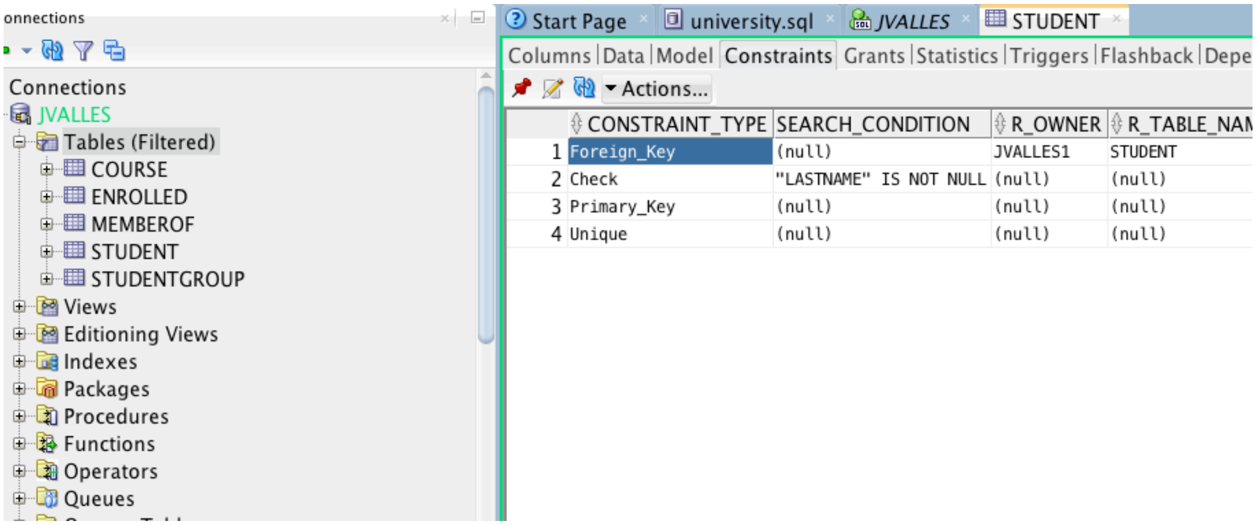
Also set up foreign key (MentorID) constraint referencing Student(SID).



```sql
ALTER TABLE student
ADD CONSTRAINT fk_mid_sid
FOREIGN KEY(MentorID) REFERENCES student(SID);
```

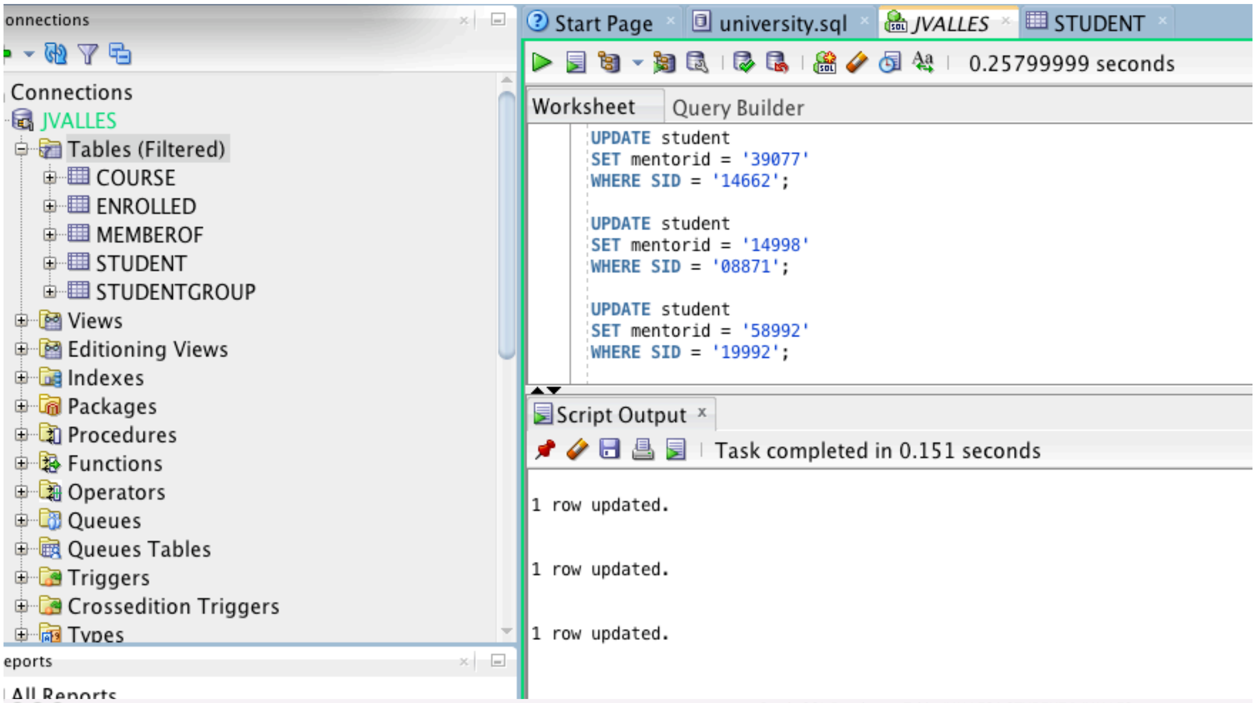
Task completed in 0.112 seconds

```
Table STUDENT altered.
```



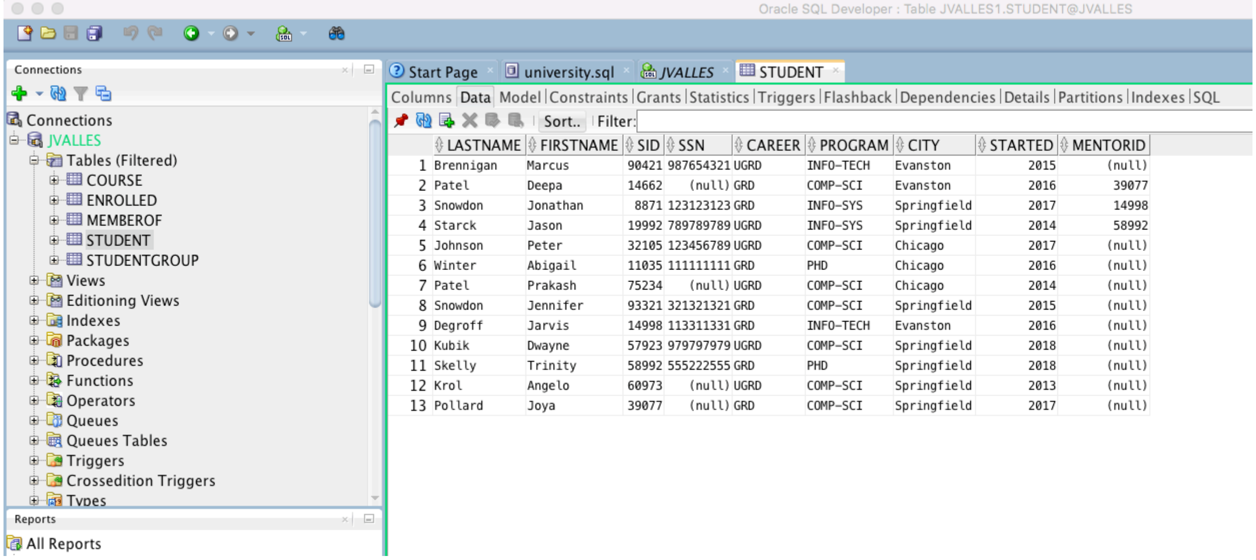
	CONSTRAINT_TYPE	SEARCH_CONDITION	R_OWNER	R_TABLE_NAM
1	Foreign_Key	(null)	JVALLES1	STUDENT
2	Check	"LASTNAME" IS NOT NULL	(null)	(null)
3	Primary_Key	(null)	(null)	(null)
4	Unique	(null)	(null)	(null)

Assigning mentors to some(not all) of the students.



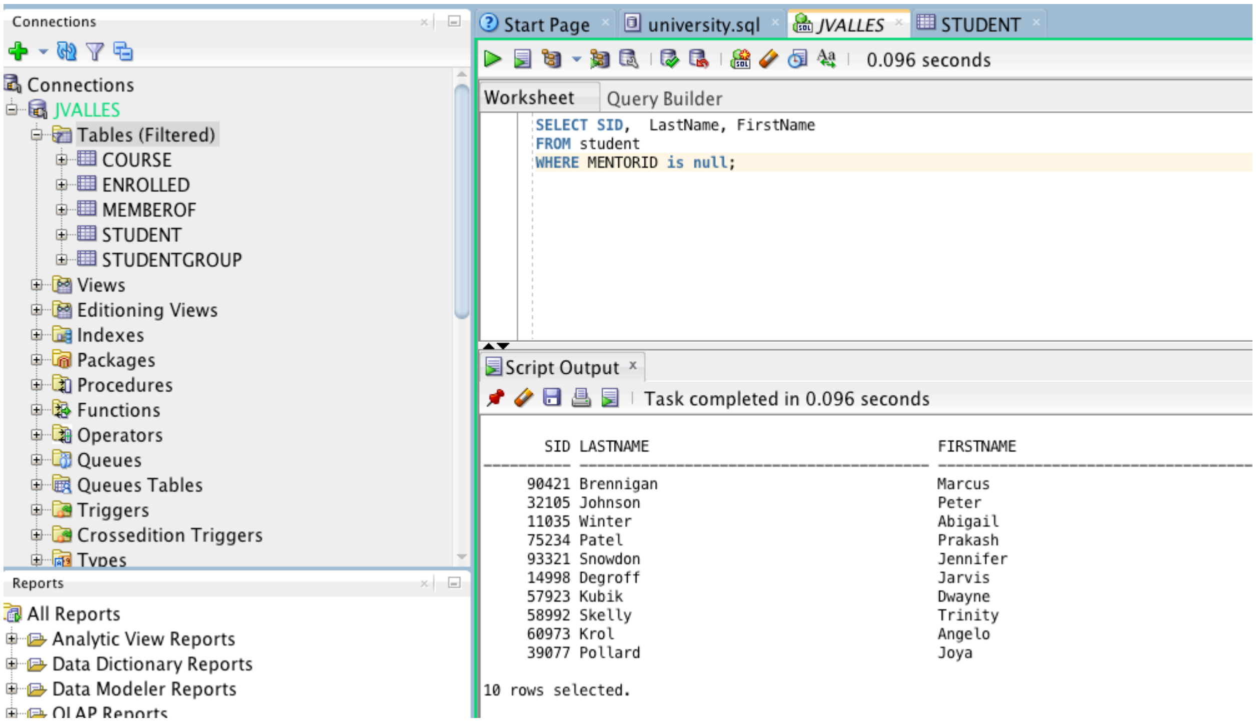
```
UPDATE student
SET mentorid = '39077'
WHERE SID = '14662';

UPDATE student
SET mentorid = '14998'
WHERE SID = '08871';

UPDATE student
SET mentorid = '58992'
WHERE SID = '19992';
```

```
1 row updated.


1 row updated.


1 row updated.
```



	LASTNAME	FIRSTNAME	SID	SSN	CAREER	PROGRAM	CITY	STARTED	MENTORID
1	Brennigan	Marcus	90421	987654321	UGRD	INFO-TECH	Evanston	2015	(null)
2	Patel	Deepa	14662	(null)	GRD	COMP-SCI	Evanston	2016	39077
3	Snowdon	Jonathan	8871	123123123	GRD	INFO-SYS	Springfield	2017	14998
4	Starck	Jason	19992	789789789	UGRD	INFO-SYS	Springfield	2014	58992
5	Johnson	Peter	32105	123456789	UGRD	COMP-SCI	Chicago	2017	(null)
6	Winter	Abigail	11035	111111111	GRD	PHD	Chicago	2016	(null)
7	Patel	Prakash	75234	(null)	UGRD	COMP-SCI	Chicago	2014	(null)
8	Snowdon	Jennifer	93321	321321321	GRD	COMP-SCI	Springfield	2015	(null)
9	Degroff	Jarvis	14998	113311331	GRD	INFO-TECH	Evanston	2016	(null)
10	Kubik	Dwayne	57923	979797979	UGRD	COMP-SCI	Springfield	2018	(null)
11	Skelly	Trinity	58992	555222555	GRD	PHD	Springfield	2018	(null)
12	Krol	Angelo	60973	(null)	UGRD	COMP-SCI	Springfield	2013	(null)
13	Pollard	Joya	39077	(null)	GRD	COMP-SCI	Springfield	2017	(null)

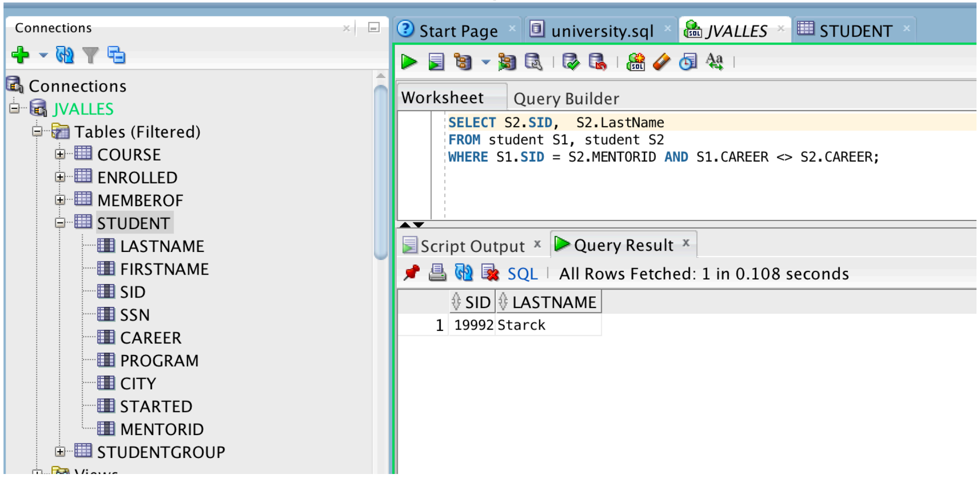
b.
Query to list all students which has not been assigned a mentor.



```sql
SELECT SID,  LastName, FirstName
FROM student
WHERE MENTORID is null;
```

```
       SID LASTNAME                                 FIRSTNAME
---------- ---------------------------------------- ----------------------------------------
     90421 Brennigan                                Marcus
     32105 Johnson                                  Peter
     11035 Winter                                   Abigail
     75234 Patel                                    Prakash
     93321 Snowdon                                  Jennifer
     14998 Degroff                                  Jarvis
     57923 Kubik                                    Dwayne
     58992 Skelly                                   Trinity
     60973 Krol                                     Angelo
     39077 Pollard                                  Joya

10 rows selected.
```

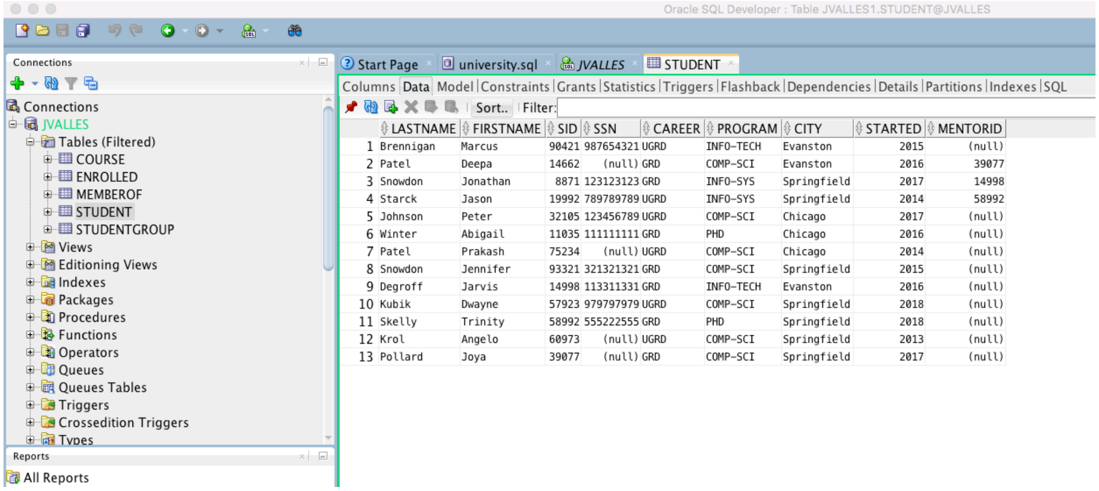
c.
List all mentees which have been assigned a mentor that do not have same careers.



```sql
SELECT S2.SID,  S2.LastName
FROM student S1, student S2
WHERE S1.SID = S2.MENTORID AND S1.CAREER <> S2.CAREER;
```

	SID	LASTNAME
1	19992	Starck

Returned student whose last name is Starck using data set below.



	LASTNAME	FIRSTNAME	SID	SSN	CAREER	PROGRAM	CITY	STARTED	MENTORID
1	Brennigan	Marcus	90421	987654321	UGRD	INFO-TECH	Evanston	2015	(null)
2	Patel	Deepa	14662	(null)	GRD	COMP-SCI	Evanston	2016	39077
3	Snowdon	Jonathan	8871	123123123	GRD	INFO-SYS	Springfield	2017	14998
4	Starck	Jason	19992	789789789	UGRD	INFO-SYS	Springfield	2014	58992
5	Johnson	Peter	32105	123456789	UGRD	COMP-SCI	Chicago	2017	(null)
6	Winter	Abigail	11035	111111111	GRD	PHD	Chicago	2016	(null)
7	Patel	Prakash	75234	(null)	UGRD	COMP-SCI	Chicago	2014	(null)
8	Snowdon	Jennifer	93321	321321321	GRD	COMP-SCI	Springfield	2015	(null)
9	Degroff	Jarvis	14998	113311331	GRD	INFO-TECH	Evanston	2016	(null)
10	Kubik	Dwayne	57923	979797979	UGRD	COMP-SCI	Springfield	2018	(null)
11	Skelly	Trinity	58992	555222555	GRD	PHD	Springfield	2018	(null)
12	Krol	Angelo	60973	(null)	UGRD	COMP-SCI	Springfield	2013	(null)
13	Pollard	Joya	39077	(null)	GRD	COMP-SCI	Springfield	2017	(null)