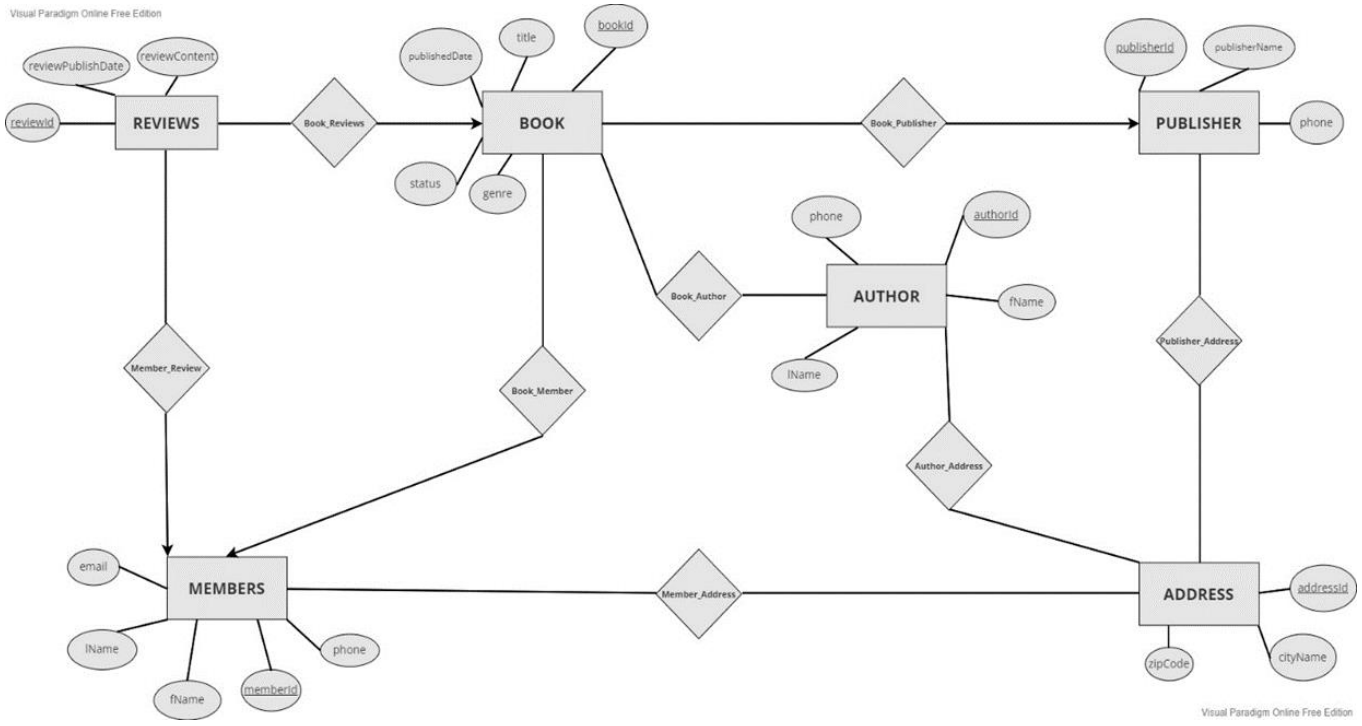
Library Management System

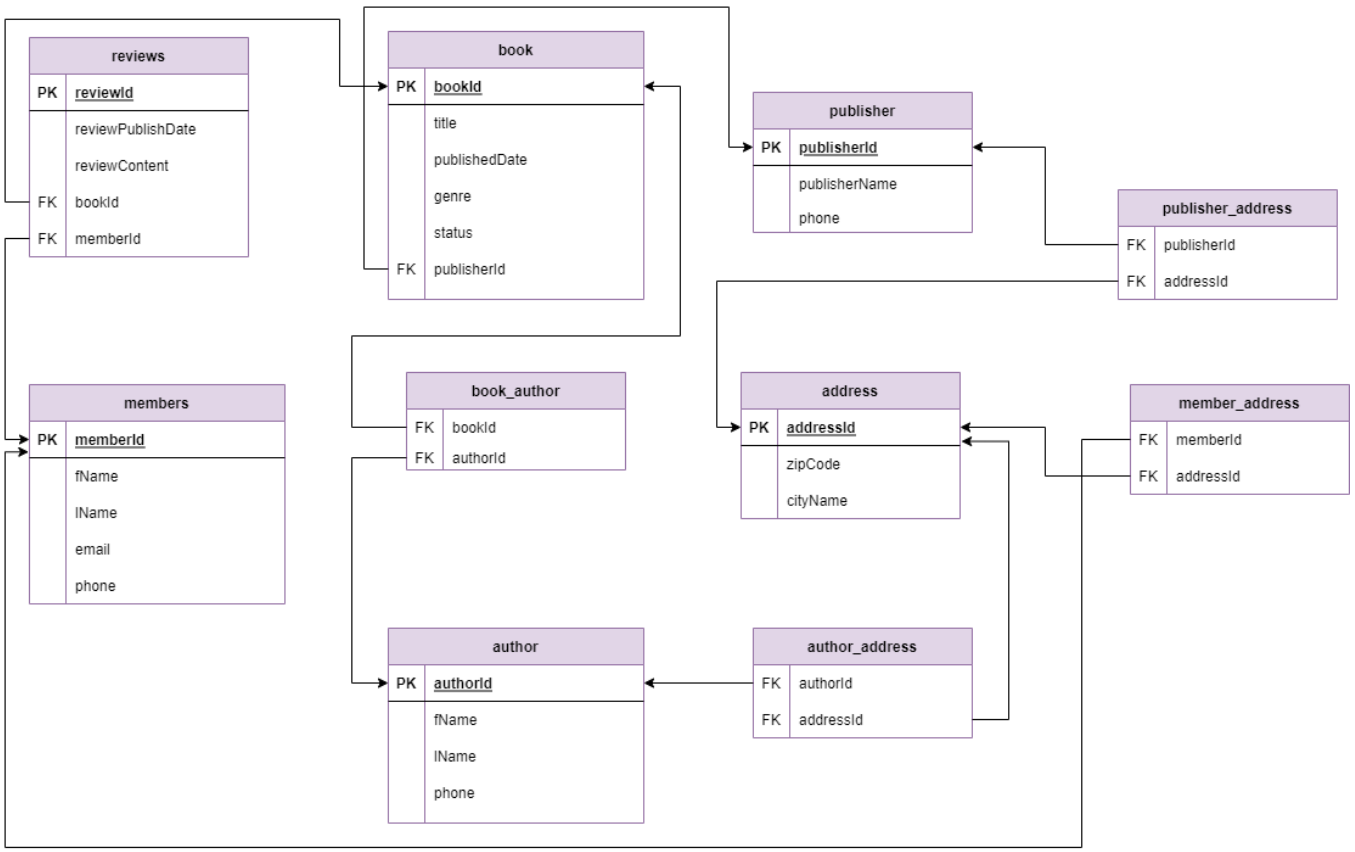
a. Topic and member-task responsibilites

In this project we designed a database management system that will be used in the library. Library Management System is a credible, efficient system for handling large amounts and multiple types of data which provides quick access to safe information. Library Management System provides smooth and organized working environment for the library management organization.

b. E-R Diagram



c. Database Schema



d. Create Table Statements

```
CREATE TABLE ADDRESS(
   addressId NUMBER(4) PRIMARY KEY NOT NULL,
   cityName VARCHAR2(20),
   zipCode NUMBER(8)
);

CREATE TABLE PUBLISHER(
   publisherId NUMBER(4) PRIMARY KEY NOT NULL,
   name VARCHAR2(20),
   phone NUMBER(20)
);

CREATE TABLE BOOK(
```

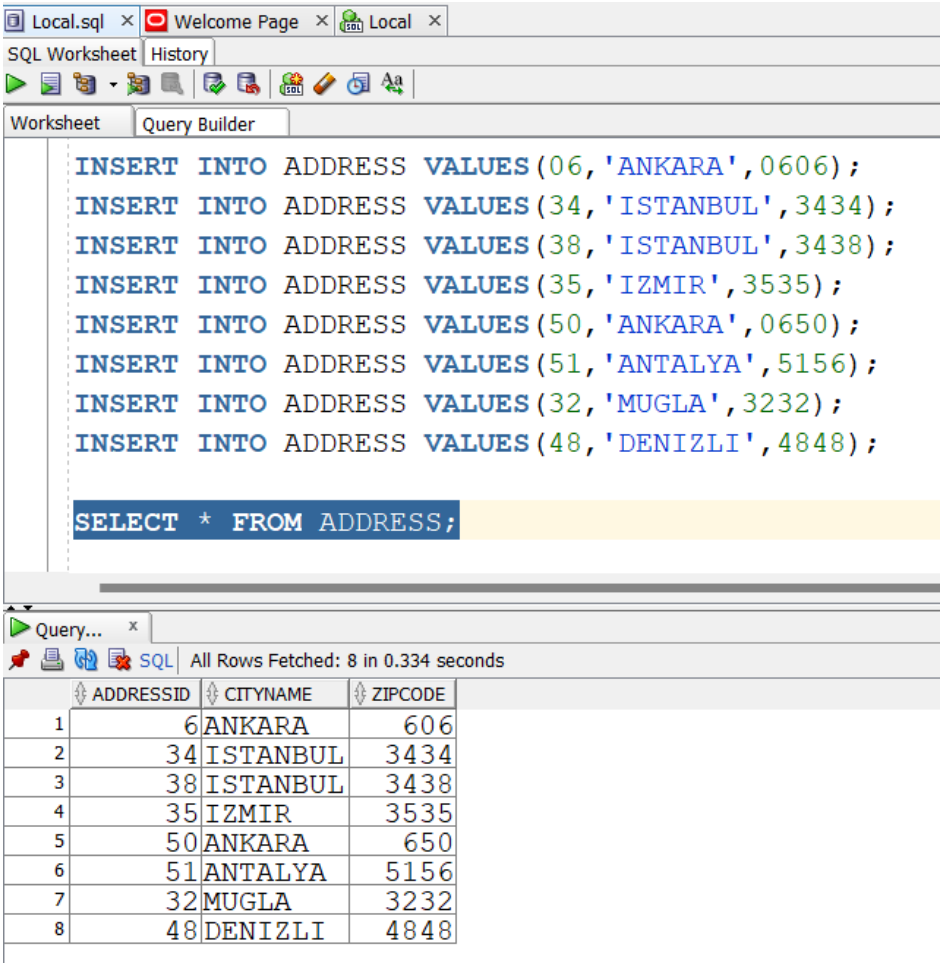
```
    bookId NUMBER(4) PRIMARY KEY NOT NULL,
    title VARCHAR2(20),
    publishingDate DATE,
    status VARCHAR2(20),
    genra VARCHAR2(20),
    publisherId NUMBER(4) REFERENCES PUBLISHER(publisherId)
);

CREATE TABLE AUTHORS(
    authorId NUMBER(4) PRIMARY KEY NOT NULL,
    fName VARCHAR2(20),
    lName VARCHAR2(20),
    phone NUMBER(20)
);

CREATE TABLE MEMBERS(
    memberId NUMBER(4) PRIMARY KEY NOT NULL,
    fName VARCHAR2(20),
    lName VARCHAR2(20),
    phone NUMBER(20),
    email VARCHAR2(50),
    age NUMBER(2)
);

CREATE TABLE REVIEWS(
    reviewId NUMBER(4) PRIMARY KEY,
    reviewContent VARCHAR2(180),
    reviewDate DATE,
    bookId NUMBER(4) REFERENCES BOOK(bookId),
    memberId NUMBER(4) REFERENCES MEMBERS(memberId)
);
```

```
CREATE TABLE BOOK_AUTHOR(
        bookId NUMBER(4) REFERENCES BOOK(bookId),
        authorId NUMBER(4) REFERENCES AUTHORS(authorId),
        CONSTRAINT a_pk PRIMARY KEY ( bookId , authorId)
);
CREATE TABLE MEMBER_ADDRESS(
        addressId NUMBER(4) REFERENCES ADDRESS(addressId),
        memberId NUMBER(4) REFERENCES MEMBERS(memberId),
        CONSTRAINT b_pk PRIMARY KEY ( addressId , memberId)
);
CREATE TABLE PUBLISHER_ADDRESS(
        addressId NUMBER(4) REFERENCES ADDRESS(addressId),
        publisherId NUMBER(4) REFERENCES PUBLISHER(publisherId),
        CONSTRAINT c_pk PRIMARY KEY ( addressId , publisherId)
);
CREATE TABLE AUTHOR_ADDRESS(
        addressId NUMBER(4) REFERENCES ADDRESS(addressId),
        authorId NUMBER(4) REFERENCES AUTHORS(authorId),
        CONSTRAINT d_pk PRIMARY KEY ( addressId , authorId)
);
```

e. Insert Into Statements

1)Inserting for ADDRESS

```
INSERT INTO ADDRESS VALUES(06,'ANKARA',0606);
INSERT INTO ADDRESS VALUES(34,'ISTANBUL',3434);
INSERT INTO ADDRESS VALUES(38,'ISTANBUL',3438);
INSERT INTO ADDRESS VALUES(35,'IZMIR',3535);
INSERT INTO ADDRESS VALUES(50,'ANKARA',0650);
INSERT INTO ADDRESS VALUES(51,'ANTALYA',5156);
INSERT INTO ADDRESS VALUES(32,'MUGLA',3232);
INSERT INTO ADDRESS VALUES(48,'DENIZLI',4848);
```



2)Inserting for PUBLISHER

INSERT INTO PUBLISHER VALUES(1001,'KRONIK', 2522855001);

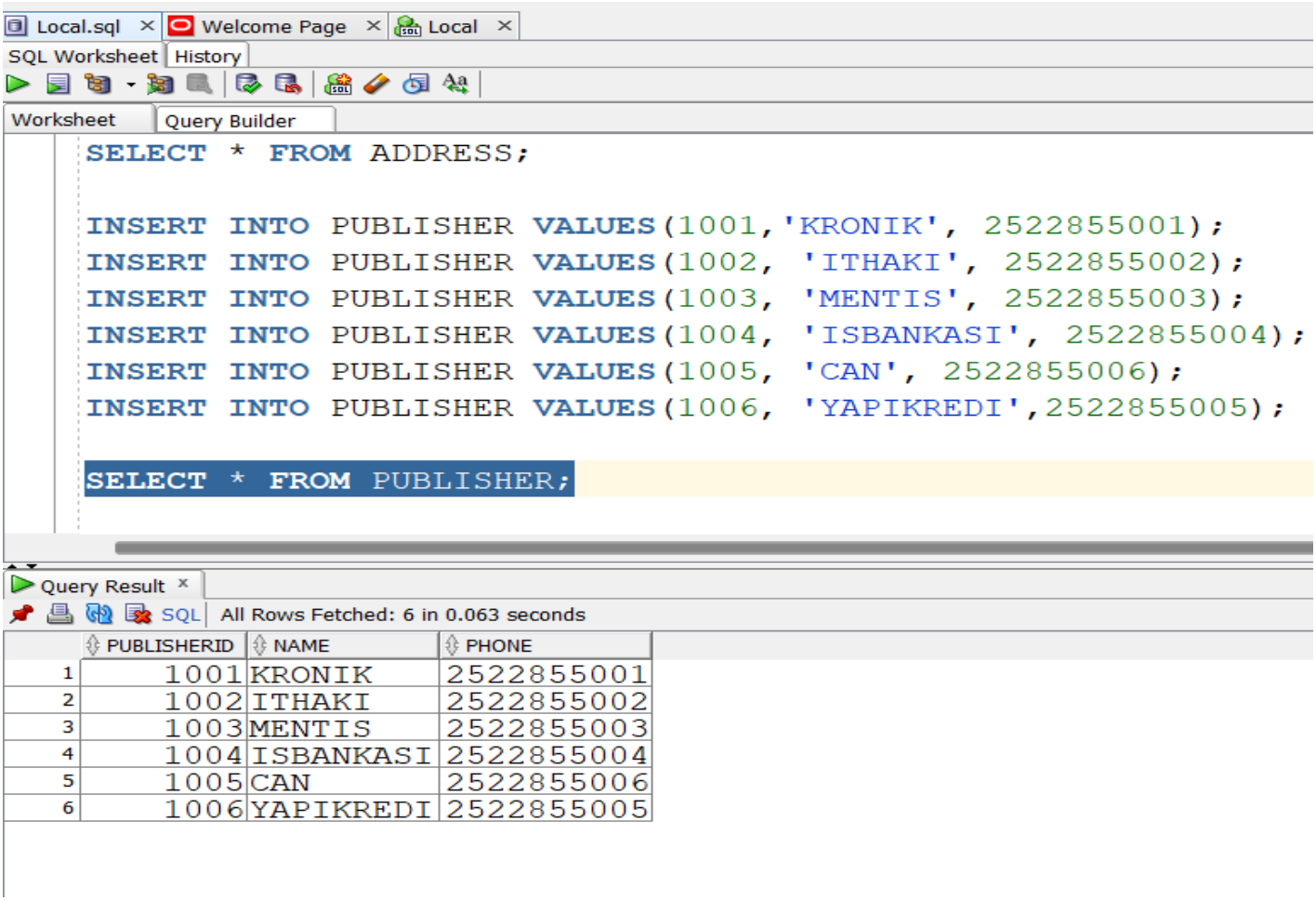
INSERT INTO PUBLISHER VALUES(1002, 'ITHAKI', 2522855002);

INSERT INTO PUBLISHER VALUES(1003, 'MENTIS', 2522855003);

INSERT INTO PUBLISHER VALUES(1004, 'ISBANKASI', 2522855004);

INSERT INTO PUBLISHER VALUES(1005, 'CAN', 2522855006);

INSERT INTO PUBLISHER VALUES(1006, 'YAPIKREDI',2522855005);



3)Inserting for BOOK

INSERT INTO BOOK VALUES (1111,'KASAGI' ,
TO_DATE('09/01/2000','DD/MM/YYYY'),'AVAILABLE','HORROR', 1001);

INSERT INTO BOOK VALUES (1211,'HACI KOMUNIST' ,
TO_DATE('20/12/2001','DD/MM/YYYY'),'AVAILABLE','COMEDY', 1002);

INSERT INTO BOOK VALUES (3534,'ABDÜLHARIS PASA' ,
TO_DATE('11/02/2015','DD/MM/YYYY'),'BORROWED','FANTASY',1003);

INSERT INTO BOOK VALUES (8954,'DUNE' ,
TO_DATE('02/03/1958','DD/MM/YYYY'),'AVAILABLE','SCI-FI', 1002);

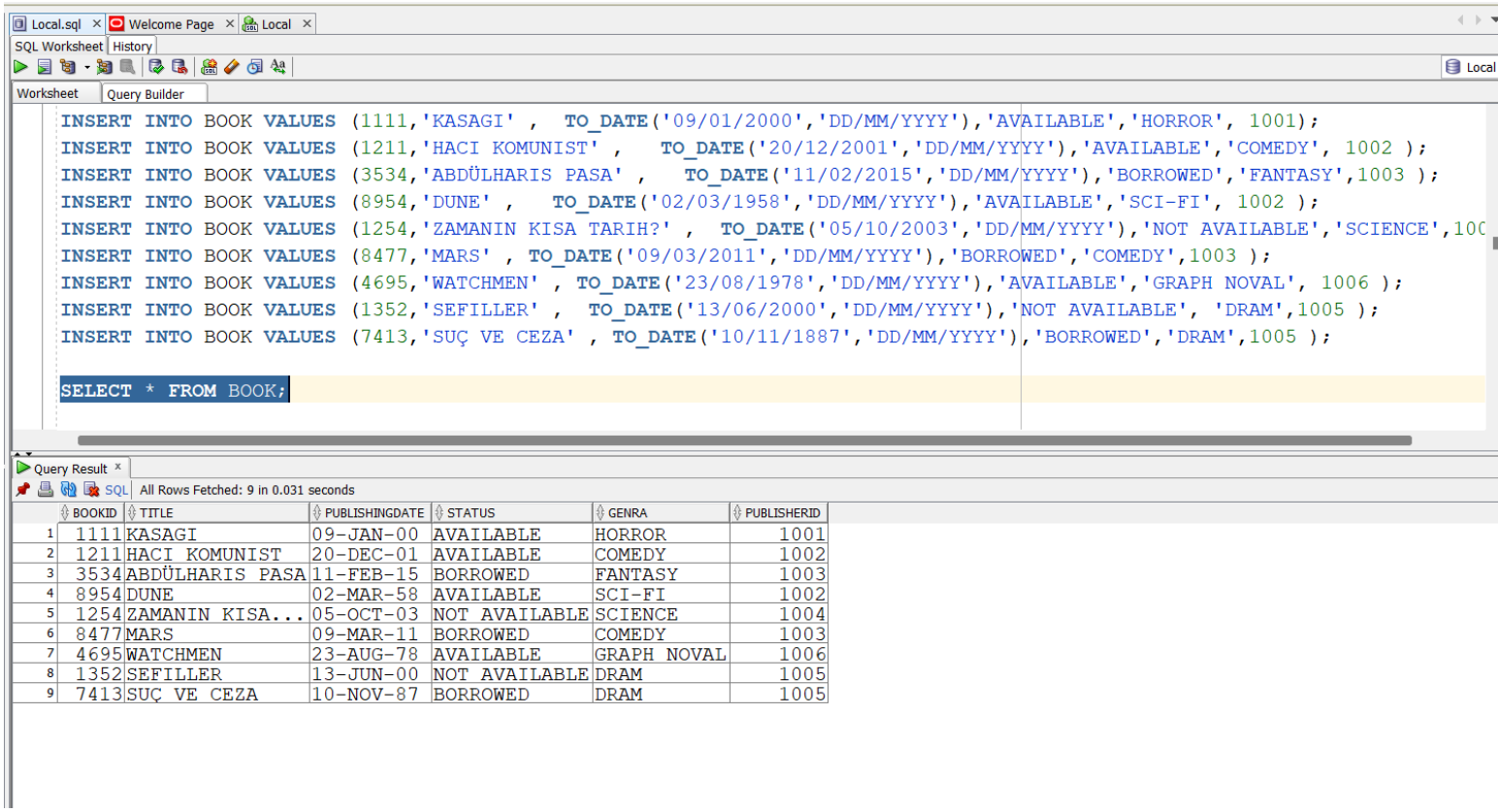
INSERT INTO BOOK VALUES (1254,'ZAMANIN KISA TARIH?' ,
TO_DATE('05/10/2003','DD/MM/YYYY'),'NOT AVAILABLE','SCIENCE',1004);

INSERT INTO BOOK VALUES (8477,'MARS' ,
TO_DATE('09/03/2011','DD/MM/YYYY'),'BORROWED','COMEDY',1003);

INSERT INTO BOOK VALUES (4695,'WATCHMEN' ,
TO_DATE('23/08/1978','DD/MM/YYYY'),'AVAILABLE','GRAPH NOVAL', 1006);

INSERT INTO BOOK VALUES (1352,'SEFILLER' , TO_DATE('13/06/2000','DD/MM/YYYY'),'NOT AVAILABLE', 'DRAM',1005);

INSERT INTO BOOK VALUES (7413,'SUÇ VE CEZA' ,
TO_DATE('10/11/1887','DD/MM/YYYY'),'BORROWED','DRAM',1005);



	BOOKID	TITLE	PUBLISHINGDATE	STATUS	GENRA	PUBLISHERID
1	1111	KASAGI	09-JAN-00	AVAILABLE	HORROR	1001
2	1211	HACI KOMUNIST	20-DEC-01	AVAILABLE	COMEDY	1002
3	3534	ABDÜLHARIS PASA	11-FEB-15	BORROWED	FANTASY	1003
4	8954	DUNE	02-MAR-58	AVAILABLE	SCI-FI	1002
5	1254	ZAMANIN KISA...	05-OCT-03	NOT AVAILABLE	SCIENCE	1004
6	8477	MARS	09-MAR-11	BORROWED	COMEDY	1003
7	4695	WATCHMEN	23-AUG-78	AVAILABLE	GRAPH NOVAL	1006
8	1352	SEFILLER	13-JUN-00	NOT AVAILABLE	DRAM	1005
9	7413	SUÇ VE CEZA	10-NOV-87	BORROWED	DRAM	1005

4)Inserting for AUTHORS

INSERT INTO AUTHORS VALUES(001,'OMER', 'SEYFETT?N',5523403131);

INSERT INTO AUTHORS VALUES(002,'FERHAN', 'SENSOY',5523403132);

INSERT INTO AUTHORS VALUES(003,'MEHMET','YALTIRIK',5523403133);

INSERT INTO AUTHORS VALUES(004,'FRANK','HERBERT',5523403141);

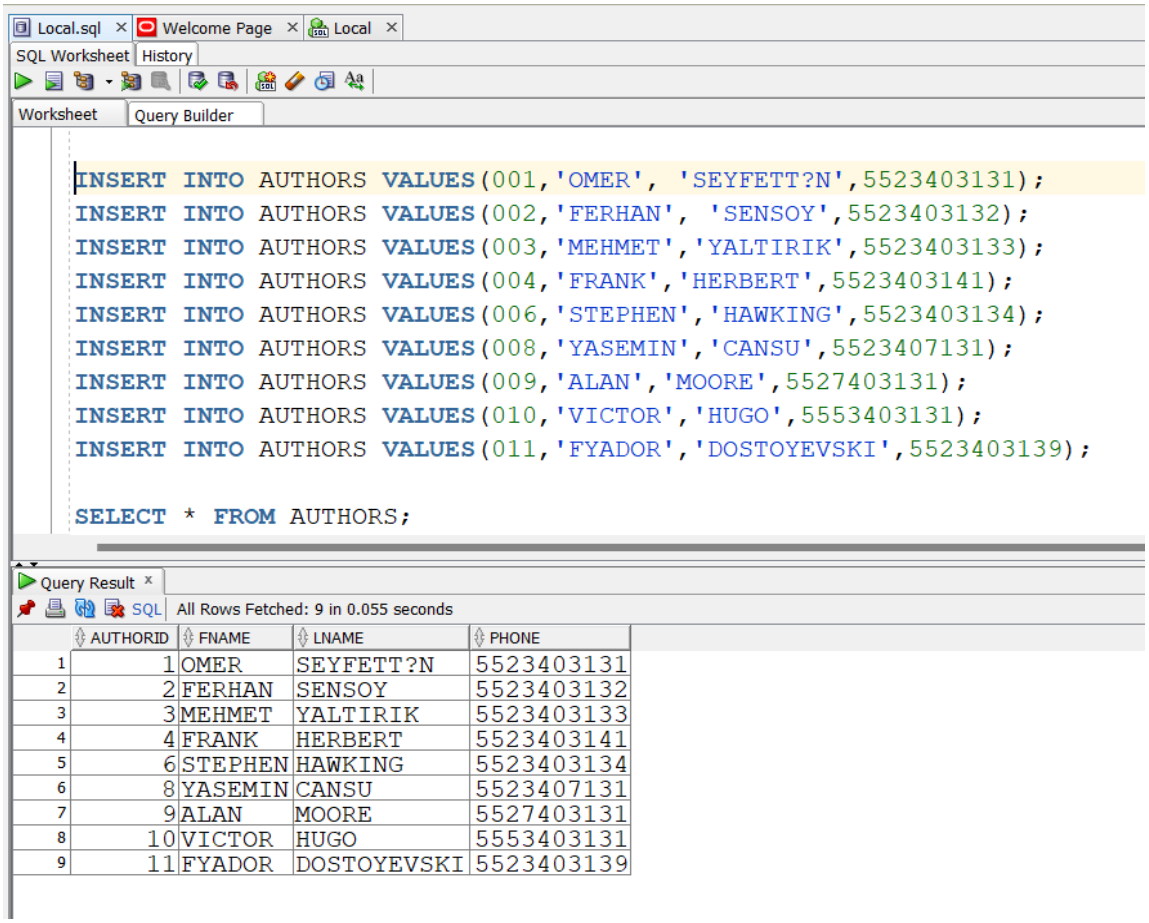
INSERT INTO AUTHORS VALUES(006,'STEPHEN','HAWKING',5523403134);

INSERT INTO AUTHORS VALUES(008,'YASEMIN','CANSU',5523407131);

INSERT INTO AUTHORS VALUES(009,'ALAN','MOORE',5527403131);

INSERT INTO AUTHORS VALUES(010,'VICTOR','HUGO',5553403131);

INSERT INTO AUTHORS VALUES(011,'FYADOR','DOSTOYEVSKI',5523403139);



5)Inserting for MEMBERS

INSERT INTO MEMBERS VALUES(01, 'KAGAN' ,'GENCER', 0123456789,'kagan.gencer@bahcesehir.edu.tr',21);

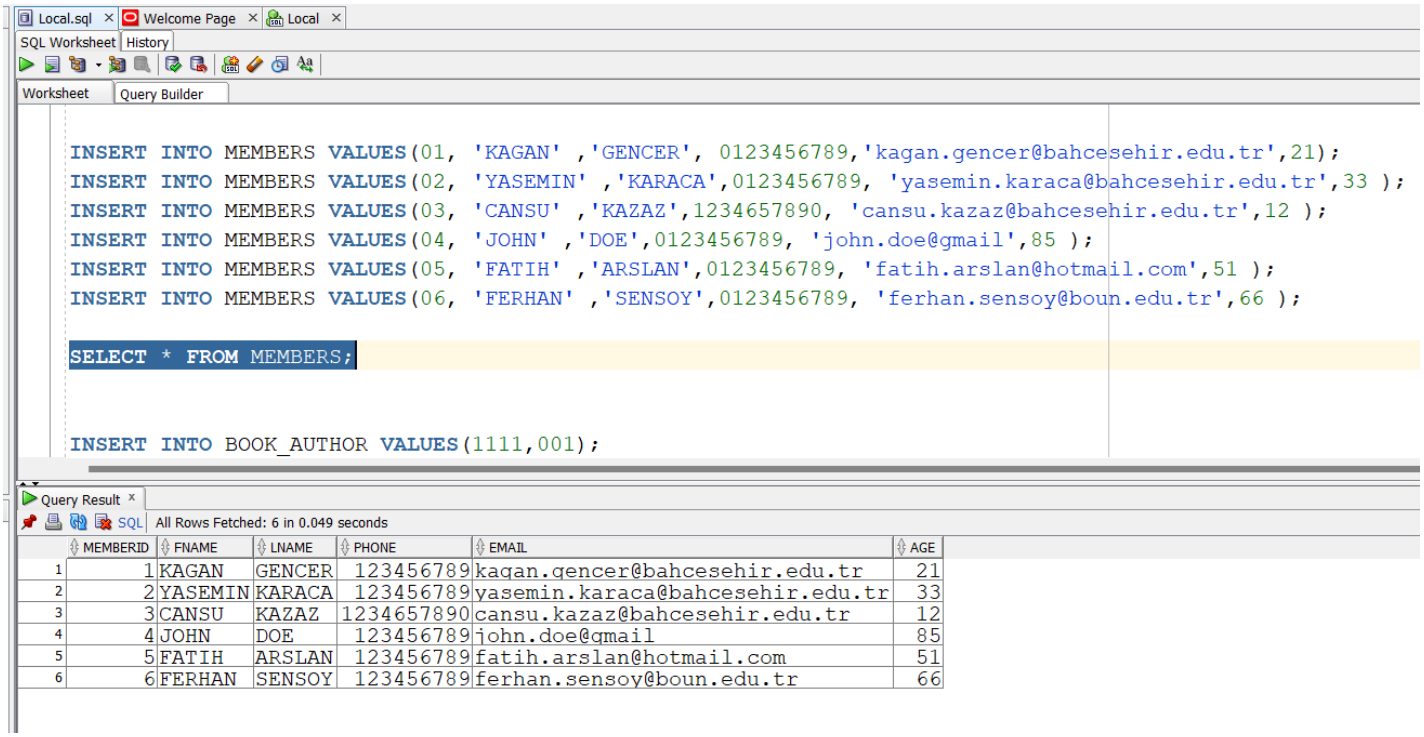
INSERT INTO MEMBERS VALUES(02, 'YASEMIN' ,'KARACA',0123456789, 'yasemin.karaca@bahcesehir.edu.tr',33);

INSERT INTO MEMBERS VALUES(03, 'CANSU' ,'KAZAZ',1234657890, 'cansu.kazaz@bahcesehir.edu.tr',12);

INSERT INTO MEMBERS VALUES(04, 'JOHN' ,'DOE',0123456789, 'john.doe@gmail',85);

INSERT INTO MEMBERS VALUES(05, 'FATIH' ,'ARSLAN',0123456789, 'fatih.arslan@hotmail.com',51);

INSERT INTO MEMBERS VALUES(06, 'FERHAN' ,'SENSOY',0123456789, 'ferhan.sensoy@boun.edu.tr',66);



6)Inserting for BOOK_AUTHOR

INSERT INTO BOOK_AUTHOR VALUES(1111,001);

INSERT INTO BOOK_AUTHOR VALUES(1211,002);

INSERT INTO BOOK_AUTHOR VALUES(3534,003);

INSERT INTO BOOK_AUTHOR VALUES(8954,004);

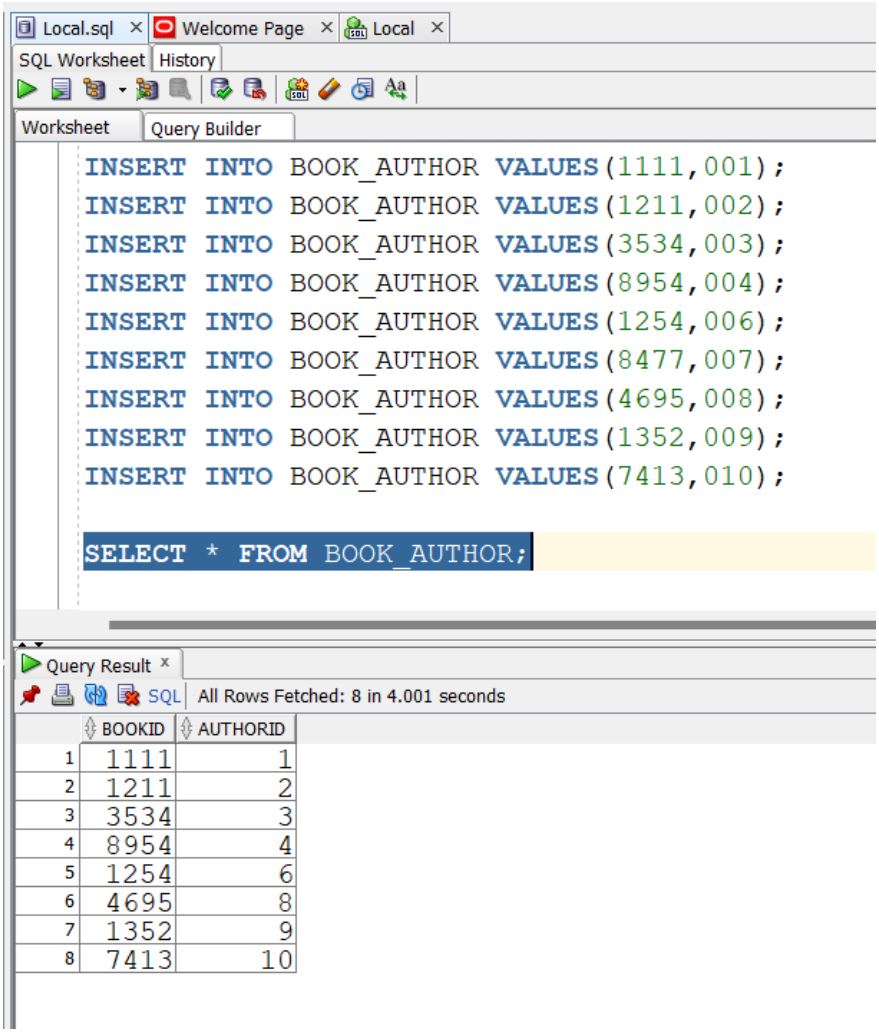
INSERT INTO BOOK_AUTHOR VALUES(1254,006);

INSERT INTO BOOK_AUTHOR VALUES(8477,007);

INSERT INTO BOOK_AUTHOR VALUES(4695,008);

INSERT INTO BOOK_AUTHOR VALUES(1352,009);

INSERT INTO BOOK_AUTHOR VALUES(7413,010);



7)Inserting for AUTHOR_ADDRESS

INSERT INTO AUTHOR_ADDRESS VALUES(35,001);

INSERT INTO AUTHOR_ADDRESS VALUES(34,002);

INSERT INTO AUTHOR_ADDRESS VALUES(38,003);

INSERT INTO AUTHOR_ADDRESS VALUES(06,004);

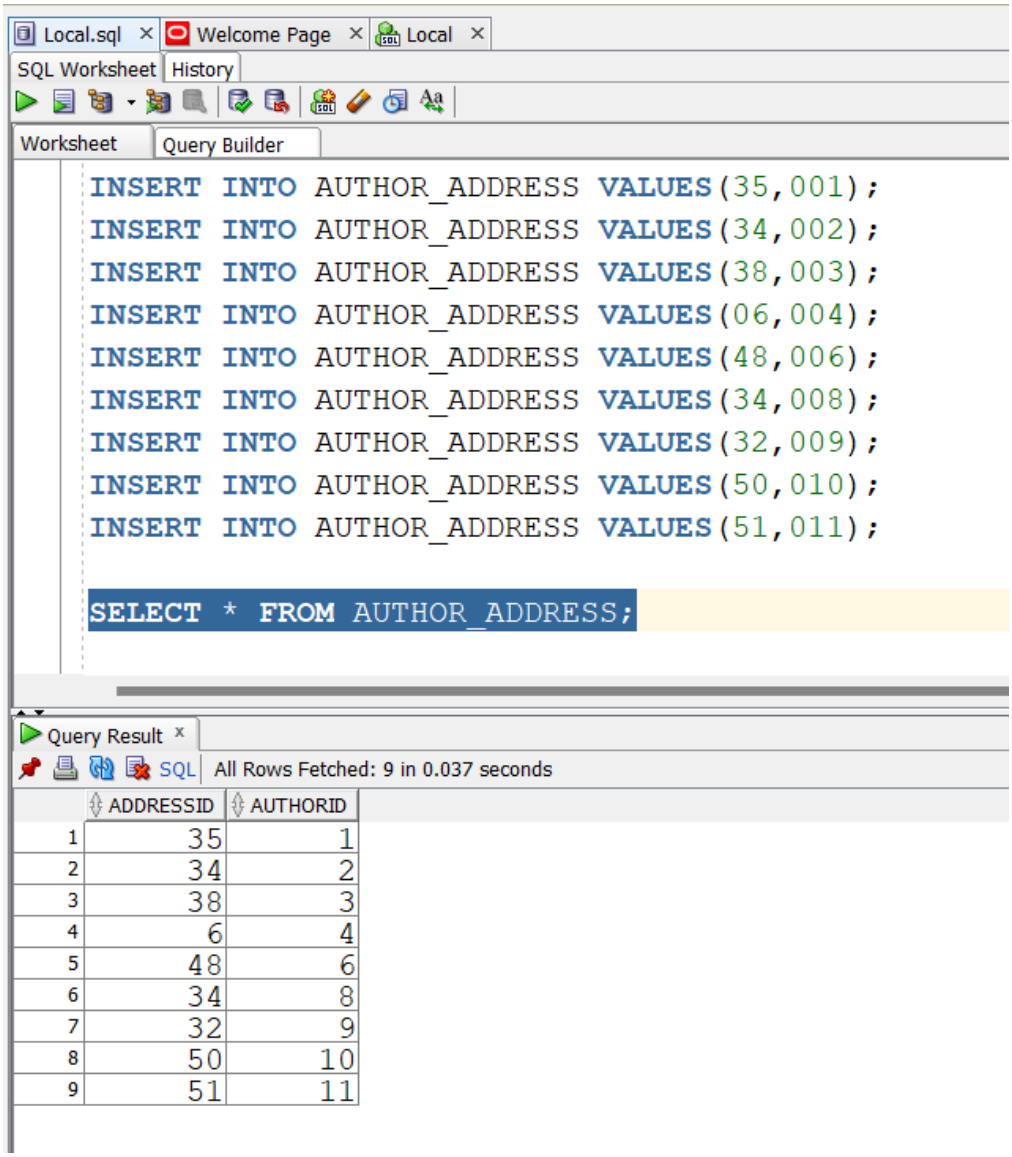
INSERT INTO AUTHOR_ADDRESS VALUES(48,006);

INSERT INTO AUTHOR_ADDRESS VALUES(34,008);

INSERT INTO AUTHOR_ADDRESS VALUES(32,009);

INSERT INTO AUTHOR_ADDRESS VALUES(50,010);

INSERT INTO AUTHOR_ADDRESS VALUES(51,011);



8)Inserting for MEMBER_ADDRESS

INSERT INTO MEMBER_ADDRESS VALUES(34,001);

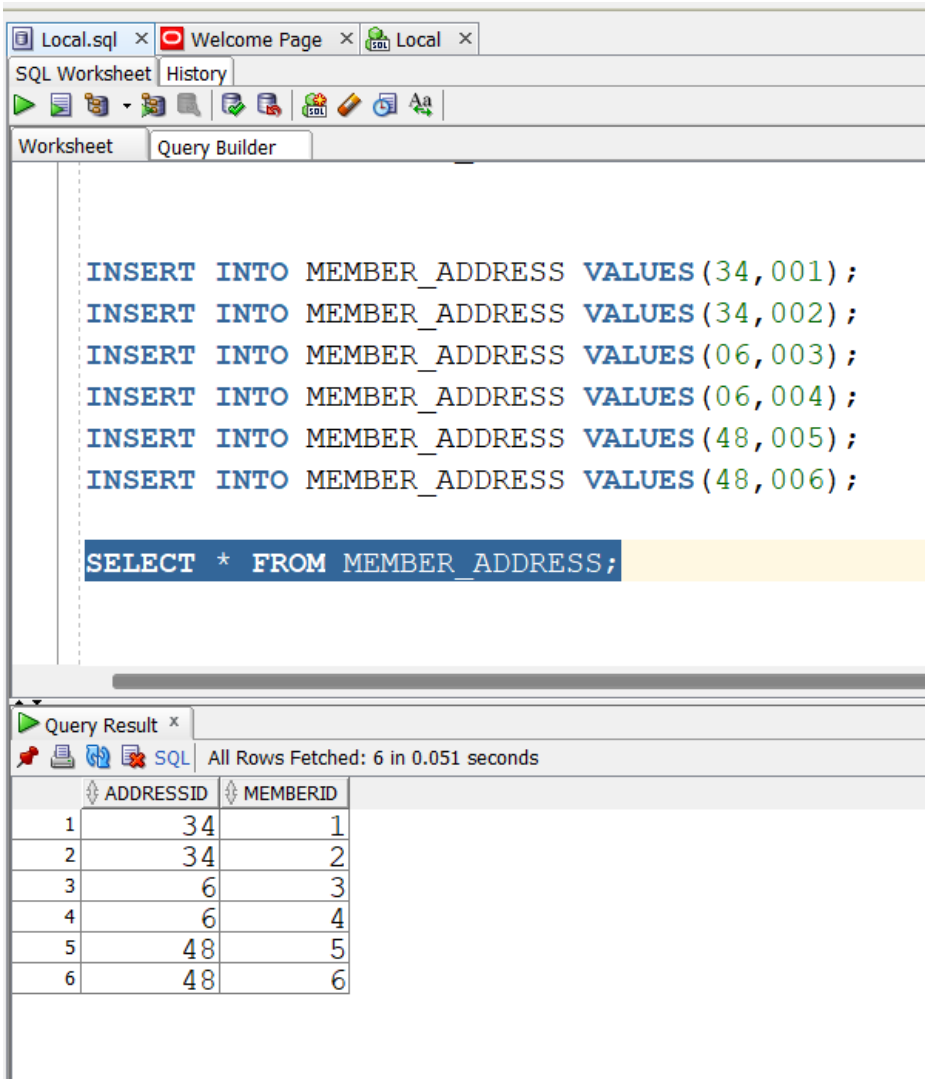
INSERT INTO MEMBER_ADDRESS VALUES(34,002);

INSERT INTO MEMBER_ADDRESS VALUES(06,003);

INSERT INTO MEMBER_ADDRESS VALUES(06,004);

INSERT INTO MEMBER_ADDRESS VALUES(48,005);

INSERT INTO MEMBER_ADDRESS VALUES(48,006);



9)Inserting for PUBLISHER_ADDRESS

INSERT INTO PUBLISHER_ADDRESS VALUES(34,1001);

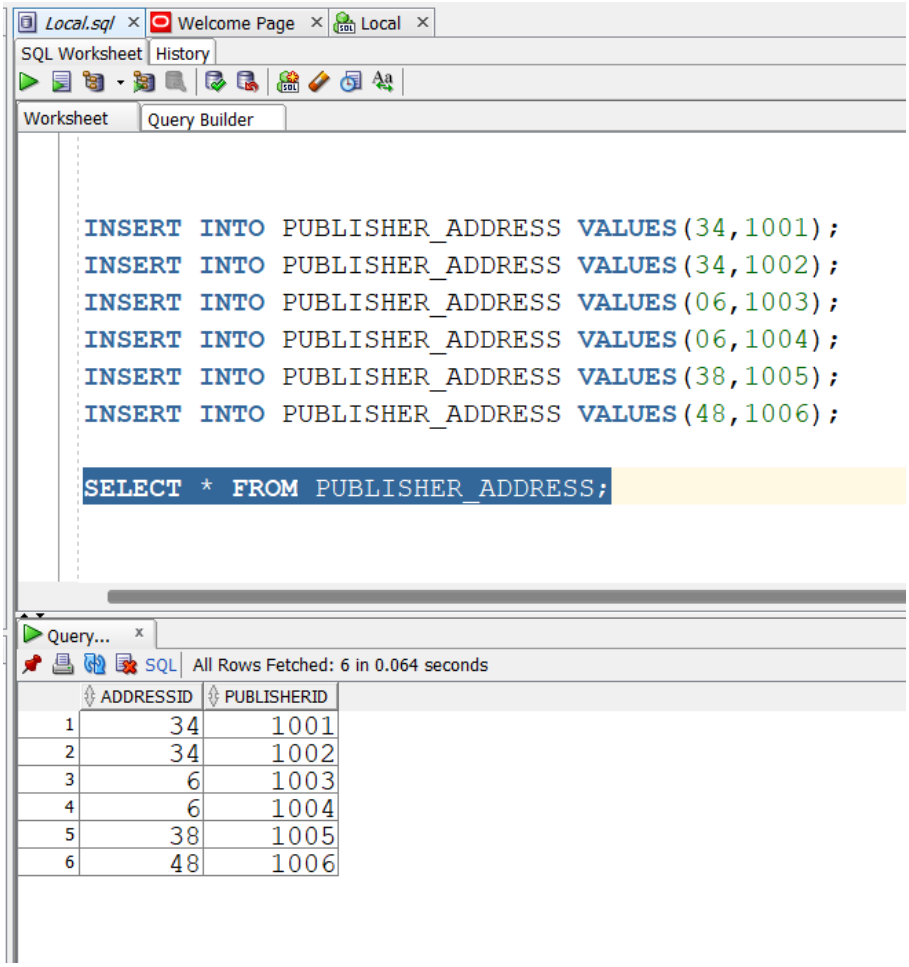
INSERT INTO PUBLISHER_ADDRESS VALUES(34,1002);

INSERT INTO PUBLISHER_ADDRESS VALUES(06,1003);

INSERT INTO PUBLISHER_ADDRESS VALUES(06,1004);

INSERT INTO PUBLISHER_ADDRESS VALUES(38,1005);

INSERT INTO PUBLISHER_ADDRESS VALUES(48,1006);



10) Inserting for REVIEWS

INSERT INTO REVIEWS VALUES(1001,'it is epic book ever in the history',TO_DATE('06/11/2000','DD/MM/YYYY'),1111,0001);

INSERT INTO REVIEWS VALUES(1002, 'I love it so much', TO_DATE('11/02/2001','DD/MM/YYYY'),1111,0002);

INSERT INTO REVIEWS VALUES(1003, 'I hate this.', TO_DATE('11/02/2011','DD/MM/YYYY') ,1254,0002);

INSERT INTO REVIEWS VALUES(1004, 'it was hillirous',TO_DATE('08/08/2008','DD/MM/YYYY'),7413,0003);

INSERT INTO REVIEWS VALUES(1005, 'I cried a lot',TO_DATE('01/01/2001','DD/MM/YYYY'), 1352,0004);

INSERT INTO REVIEWS VALUES(1006, 'who watch the WATCHMEN',TO_DATE('02/04/1999','DD/MM/YYYY'),4695,0004);

INSERT INTO REVIEWS VALUES(1007, 'Everyone should read this mate!!!',TO_DATE('02/05/1999','DD/MM/YYYY'),4695,0005);

```
INSERT INTO REVIEWS VALUES(1001,'it is epic book ever in the history',TO_DATE('06/11/2000','DD/MM/YYYY'),1111,0001);
INSERT INTO REVIEWS VALUES(1002, 'I love it so much', TO_DATE('11/02/2001','DD/MM/YYYY'),1111,0002);
INSERT INTO REVIEWS VALUES(1003, 'I hate this.', TO_DATE('11/02/2011','DD/MM/YYYY') ,1254,0002);
INSERT INTO REVIEWS VALUES(1004, 'it was hillirous',TO_DATE('08/08/2008','DD/MM/YYYY'),7413,0003);
INSERT INTO REVIEWS VALUES(1005, 'I cried a lot',TO_DATE('01/01/2001','DD/MM/YYYY'), 1352,0004);
INSERT INTO REVIEWS VALUES(1006, 'who watch the WATCHMEN',TO_DATE('02/04/1999','DD/MM/YYYY'),4695,0004);
INSERT INTO REVIEWS VALUES(1007, 'Everyone should read this mate!!!',TO_DATE('02/05/1999','DD/MM/YYYY'),4695,0005);

SELECT * FROM REVIEWS;
```

All Rows Fetched: 7 in 0.039 seconds

	REVIEWID	REVIEWCONTENT	REVIEWDATE	BOOKID	MEMBERID
1	1001	it is epic book ever in the history	06-NOV-00	1111	1
2	1002	I love it so much	11-FEB-01	1111	2
3	1003	I hate this.	11-FEB-11	1254	2
4	1004	it was hillirous	08-AUG-08	7413	3
5	1005	I cried a lot	01-JAN-01	1352	4
6	1006	who watch the WATCHMEN	02-APR-99	4695	4
7	1007	Everyone should read this mate!!!	02-MAY-99	4695	5

f. SQL Queries

- 2 Joins (with conditions)

1) Find the title of the books and their publisher's name&ID

SELECT BOOK.publisherId, BOOK.title, PUBLISHER.name

FROM BOOK JOIN PUBLISHER ON BOOK.publisherId=PUBLISHER.publisherId;

```
/*JOINS*/
/*Find the title of books  and publisher name .*/

SELECT BOOK.publisherId, BOOK.title, PUBLISHER.name
FROM BOOK JOIN PUBLISHER ON BOOK.publisherId=PUBLISHER.publisherId;
```

All Rows Fetched: 9 in 0.005 seconds

	PUBLISHERID	TITLE	NAME
1	1001	KASAGI	KRONIK
2	1002	HACI KOMUNIST	ITHAKI
3	1003	ABDÜLHARIS PASA	MENTIS
4	1002	DUNE	ITHAKI
5	1004	ZAMANIN KISA TARIH?	ISBANKASI
6	1003	MARS	MENTIS
7	1006	WATCHMEN	YAPIKREDI
8	1005	SEFILLER	CAN
9	1005	SUÇ VE CEZA	CAN

2) Find the names of the authors who wrote in ‘DRAM’ genre

SELECT AUTHORS.fName, AUTHORS.lName

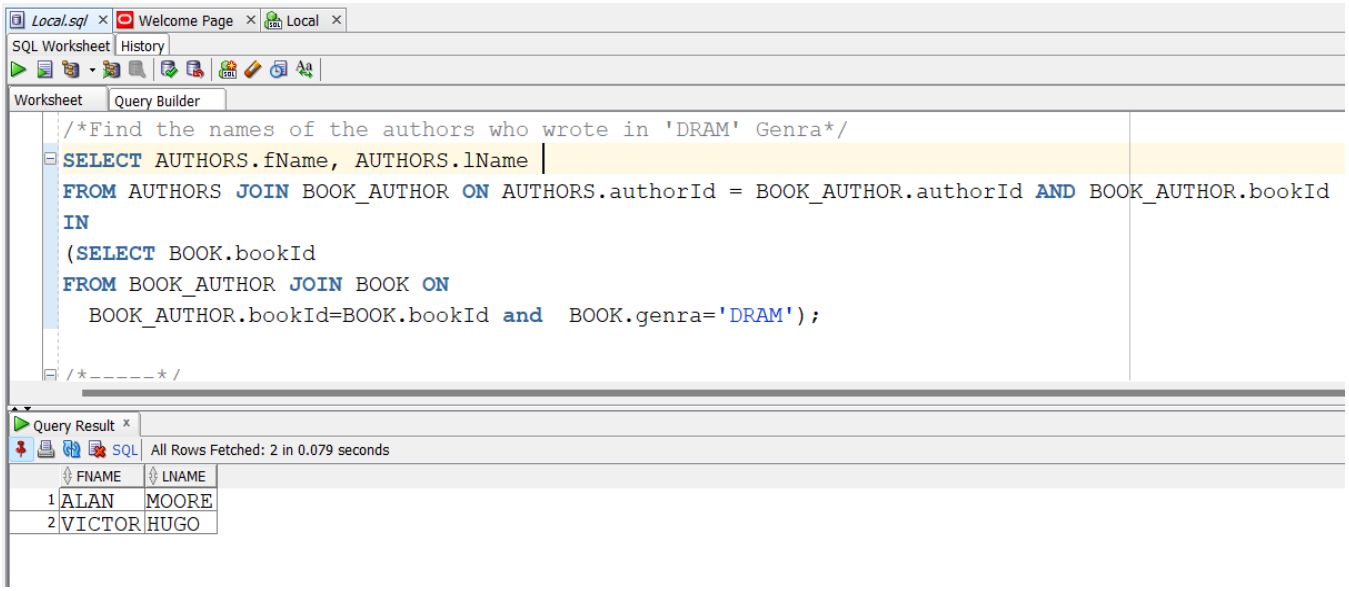
FROM AUTHORS JOIN BOOK_AUTHOR ON AUTHORS.authorId = BOOK_AUTHOR.authorId AND BOOK_AUTHOR.bookId

IN

(SELECT BOOK.bookId

FROM BOOK_AUTHOR JOIN BOOK ON

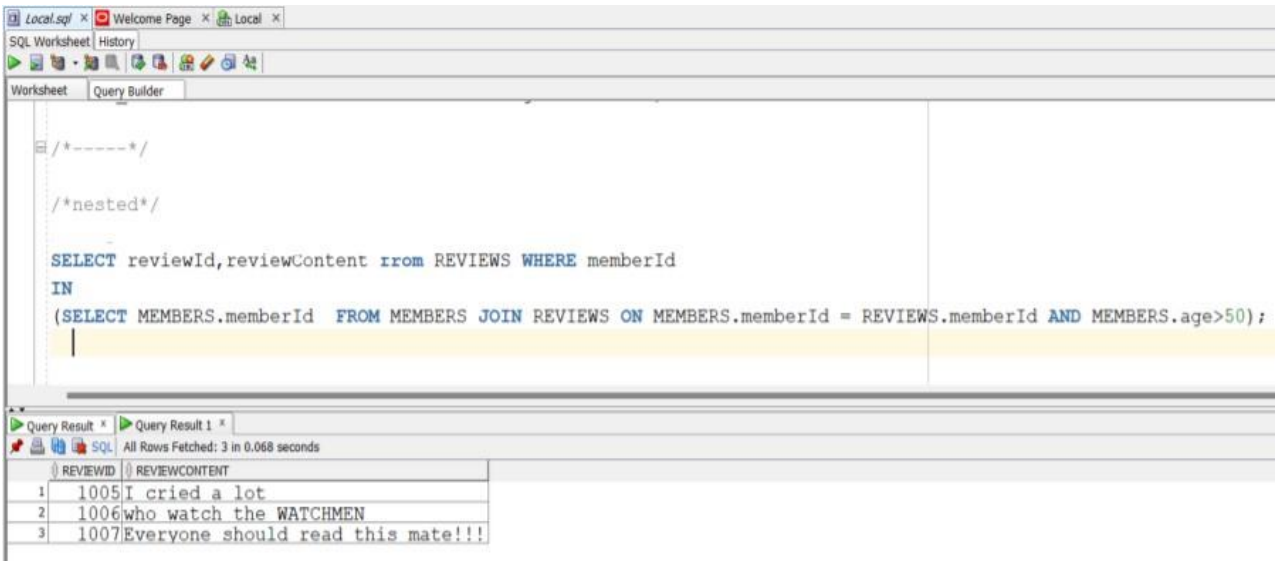
BOOK_AUTHOR.bookId=BOOK.bookId and BOOK.genra='DRAM');



- 2 Nested Queries

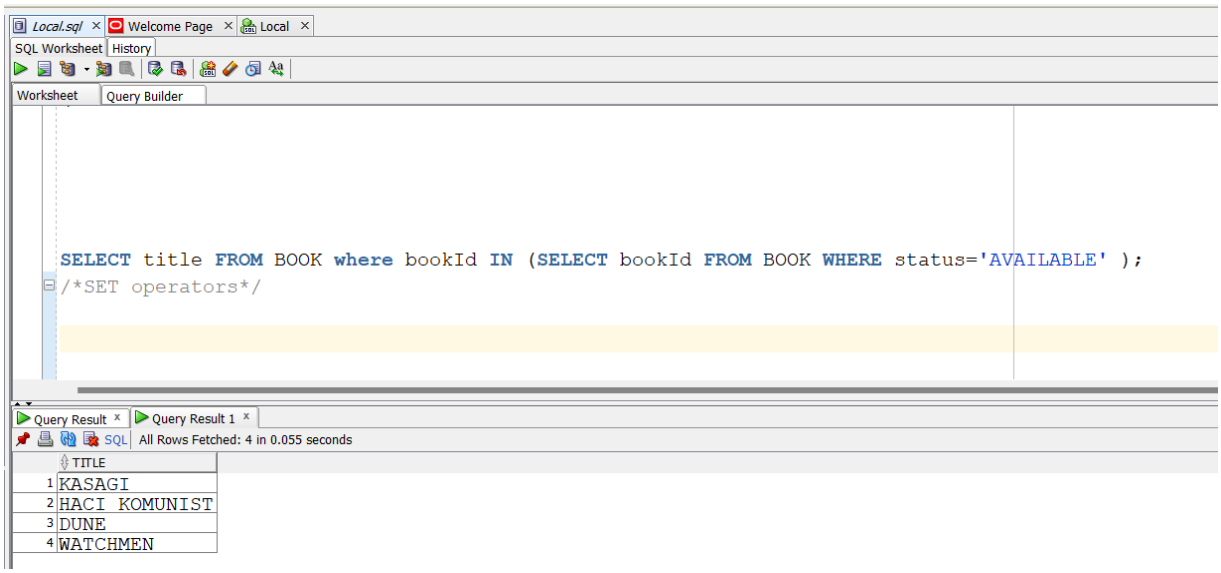
1) Show IDs and reviews of the members who are over 50

```
SELECT reviewId,reviewContent from REVIEWS WHERE memberId
IN
(SELECT MEMBERS.memberId  FROM MEMBERS JOIN REVIEWS
ON
MEMBERS.memberId = REVIEWS.memberId AND MEMBERS.age>50);
```



2) Find the books whose status are ’AVAILABLE’

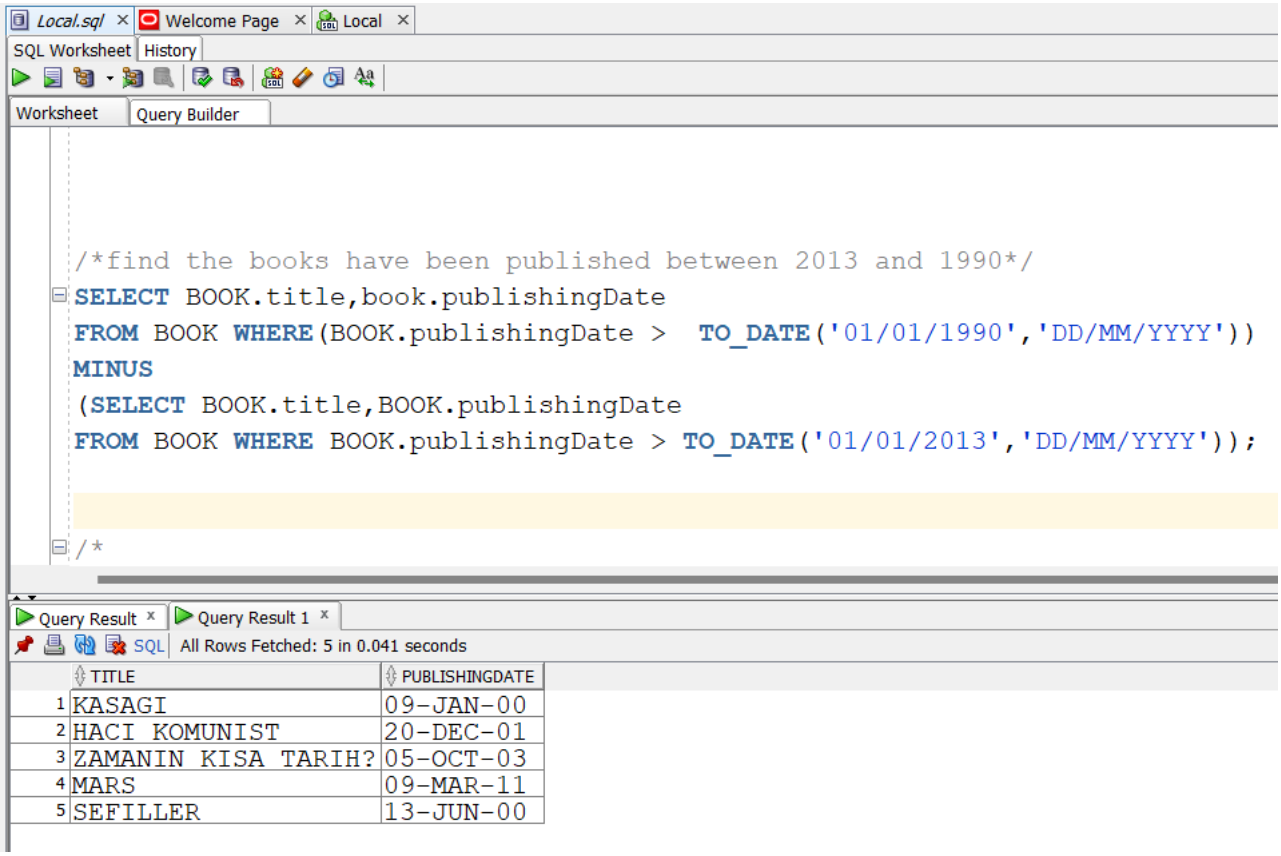
```
SELECT title FROM BOOK WHERE bookId
 IN
(SELECT bookId FROM BOOK WHERE status='AVAILABLE' );
```



- 2 Set Operations

1) Find the books which have been published between 2013 and 1990

```
SELECT BOOK.title,book.publishingDate
FROM BOOK WHERE(BOOK.publishingDate  >  TO_DATE('01/01/1990','DD/MM/YYYY'))
MINUS
(SELECT BOOK.title,BOOK.publishingDate
FROM BOOK WHERE BOOK.publishingDate > TO_DATE('01/01/2013','DD/MM/YYYY'));
```

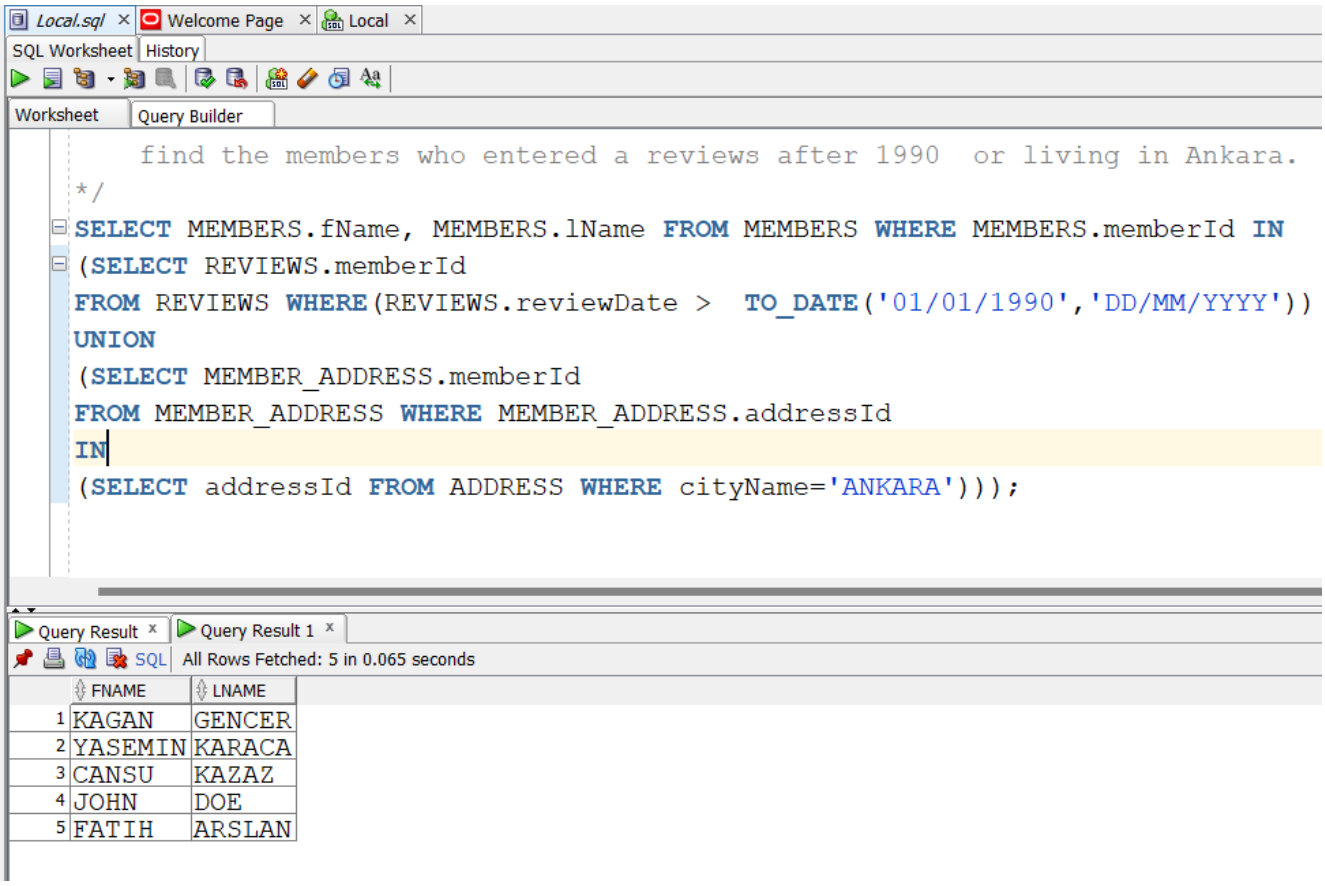


2) Find the members who wrote a review after 1990 or living in Ankara

```
SELECT MEMBERS.fName, MEMBERS.lName FROM MEMBERS WHERE MEMBERS.memberId
 IN
(SELECT REVIEWS.memberId
FROM REVIEWS WHERE(REVIEWS.reviewDate >  TO_DATE('01/01/1990','DD/MM/YYYY'))
UNION
(SELECT MEMBER_ADDRESS.memberId
FROM MEMBER_ADDRESS WHERE MEMBER_ADDRESS.addressId
```

IN

(SELECT addressId FROM ADDRESS WHERE cityName='ANKARA')));



- 2 Aggregate Operations

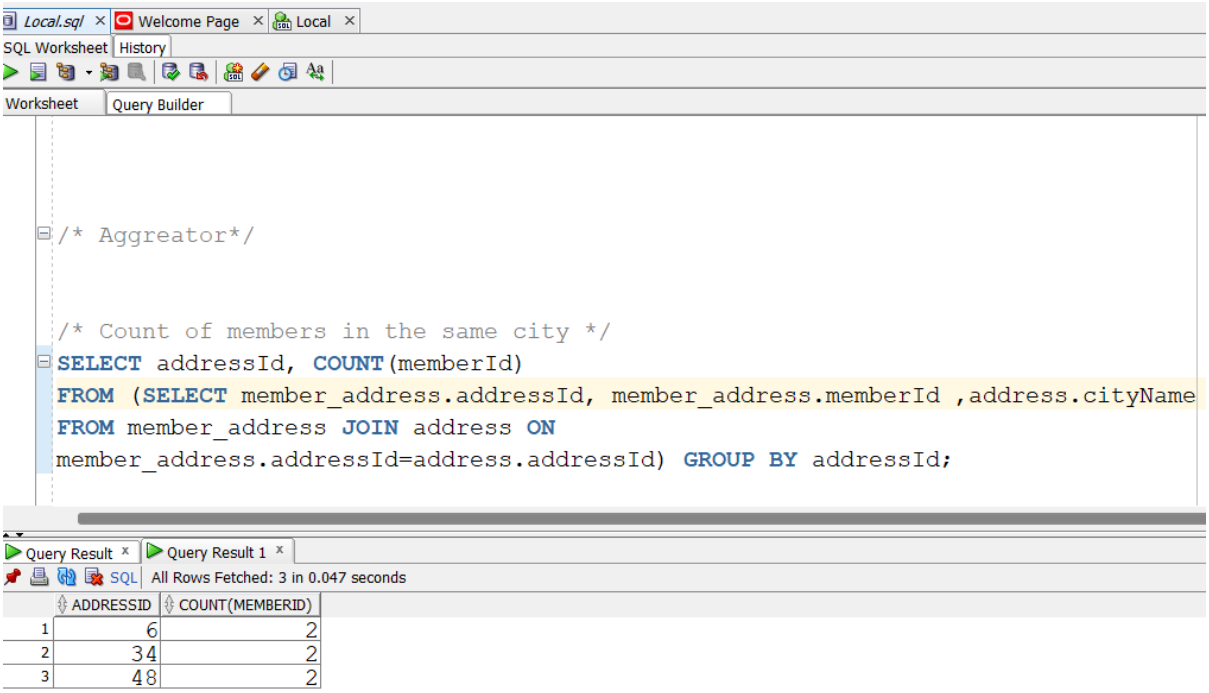
1) Find the number of the members who live in the same city

SELECT addressId, COUNT(memberId)

FROM

(SELECT member_address.addressId, member_address.memberId ,address.cityName

FROM member_address JOIN address ON member_address.addressId=address.addressId)
GROUP BY addressId;



2) Find the average age of the members who wrote a review

SELECT AVG(age) FROM MEMBERS JOIN REVIEWS ON MEMBERS.memberId = REVIEWS.memberId;