Siddharth assignment 1 - Basic SQL Statement and Database

Q1)

a)

1. Concurrent multi-user access - Databases support multiple users accessing and modifying data simultaneously

2. Role-based access control - Allowing control over user access rights based on roles

3. Data normalization for efficient storage - Databases organize data efficiently, reducing redundancy and improving data integrity through normalization

4. Advanced querying with SQL - Databases provide powerful SQL queries for complex data retrieval, analysis, and manipulation

5. Centralized data management - Databases provide a centralized repository for data storage and management

6. Scalability for large datasets - Databases are designed to handle growing amounts of data and users

7.Backup and recovery mechanisms - Provides mechanisms for regular data backups in case of data loss

b)

1) Infrastructure Costs: There is no need to purchase, maintain, or upgrade servers and networking equipment. Cloud providers facilitate the hardware.

2) Scalability: Organizations can dynamically adjust their resources based on actual usage. This reduces underutilization of resources, allocating optimum resources required to save costs.

3) Global Availability: This eliminates the need for companies to maintain and manage physical

data centers as cloud databases can be accessed from any location with an internet connection.

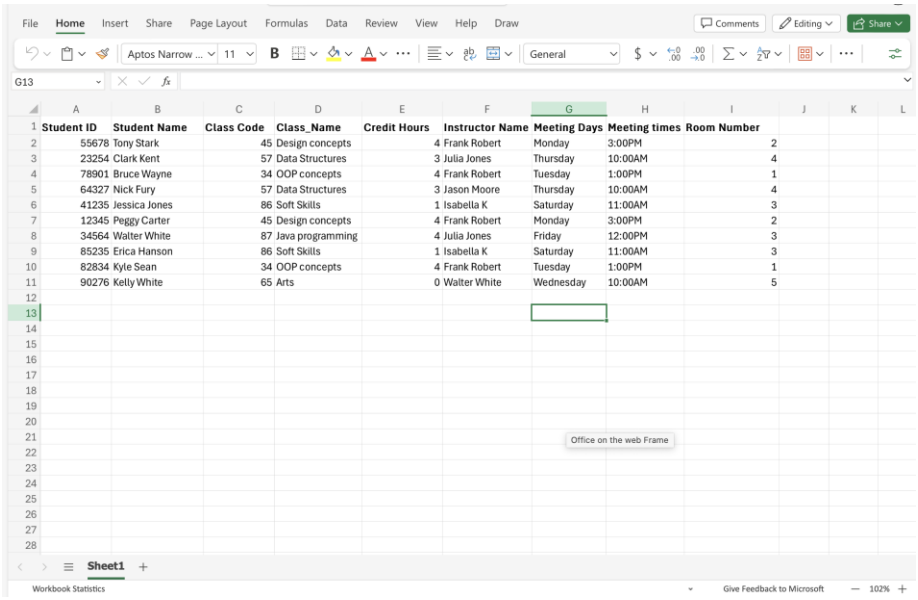
4) Security Infrastructure: Cloud providers invest significantly in security measures, offering robust security features. Overhead cost to keep and run security infrastructure is removed.

5) Pay as per usage: Organizations only pay for the resources they use, which can be more cost-effective than investing in fixed-capacity infrastructure.

6) Updates and maintenance: Cloud providers take care of software updates and maintenance without the need of the organization to hire a trained professional to do the same.

c)

I & II



Student ID	Student Name	Class Code	Class_Name	Credit Hours	Instructor Name	Meeting Days	Meeting times	Room Number
55678	Tony Stark	45	Design concepts	4	Frank Robert	Monday	3:00PM	2
23254	Clark Kent	57	Data Structures	3	Julia Jones	Thursday	10:00AM	4
78901	Bruce Wayne	34	OOP concepts	4	Frank Robert	Tuesday	1:00PM	1
64327	Nick Fury	57	Data Structures	3	Jason Moore	Thursday	10:00AM	4
41235	Jessica Jones	86	Soft Skills	1	Isabella K	Saturday	11:00AM	3
12345	Peggy Carter	45	Design concepts	4	Frank Robert	Monday	3:00PM	2
34564	Walter White	87	Java programming	4	Julia Jones	Friday	12:00PM	3
85235	Erica Hanson	86	Soft Skills	1	Isabella K	Saturday	11:00AM	3
82834	Kyle Sean	34	OOP concepts	4	Frank Robert	Tuesday	1:00PM	1
90276	Kelly White	65	Arts	0	Walter White	Wednesday	10:00AM	5

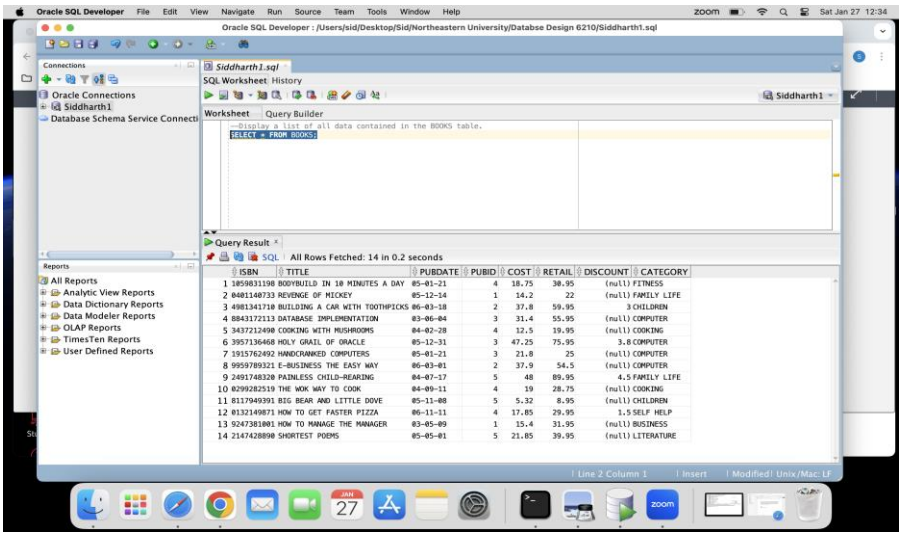
III)
Redudancies - We can consider we have two columns unique; they are Student ID and Student Name. All other columns have redundant data at some point. It implies multiple students have the same class, each entry repeats class information (class code, name, instructor, etc.). We can observe one more thing, the instructor information is repeated or duplicated if the same instructor teaches multiple classes.

Anamolies - From the above screenshot, Instructor Frank Robert teaches two subjects namely design concepts and OOP concepts. I want to change class days for OOP subject taught by Frank. If I query my excel to update Frank Robert classes to a different day, it might change days for both the subjects, whereas the change is desired for only one subject. Similarly, if a student is enrolled in multiple classes with the same instructor, it might be challenging to update the instructor's information without inconsistencies.

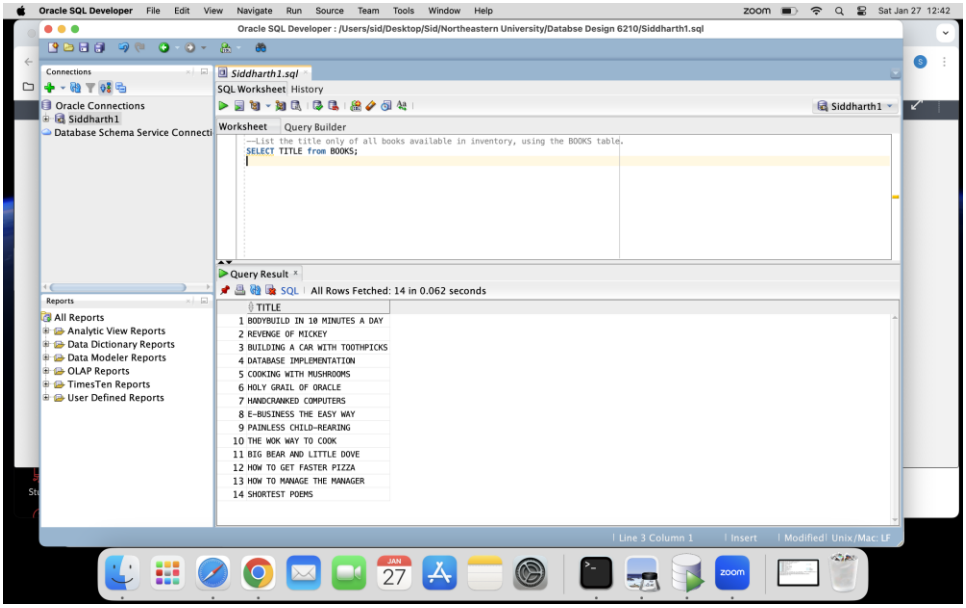
Q2)

PART A)

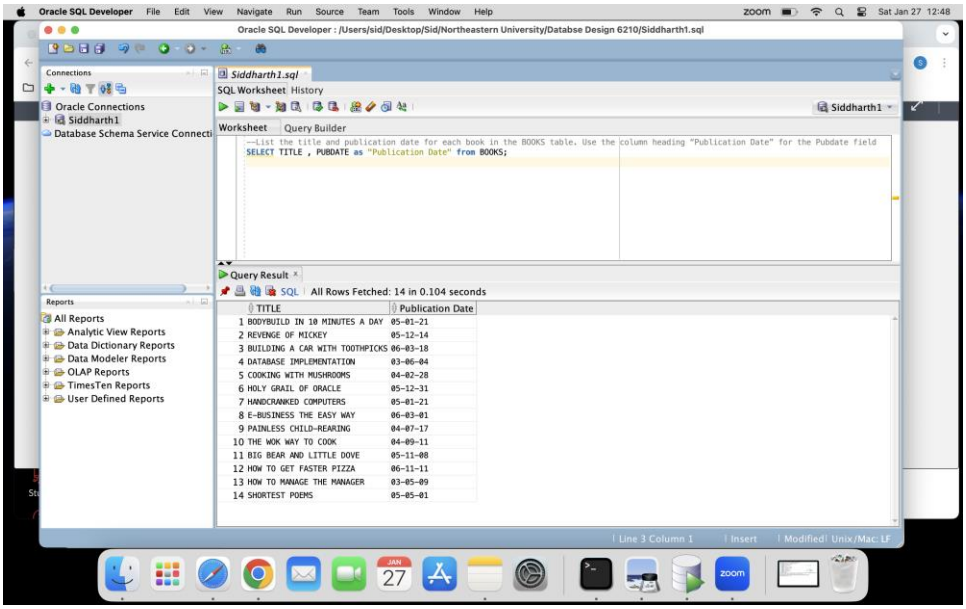
1. SELECT * from BOOKS;



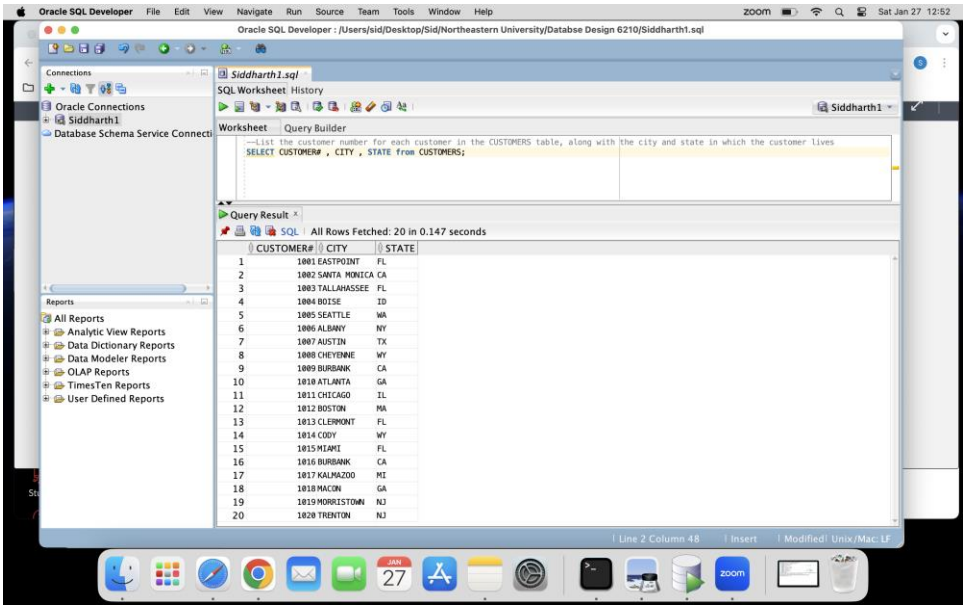
2. SELECT TITLE from BOOKS;



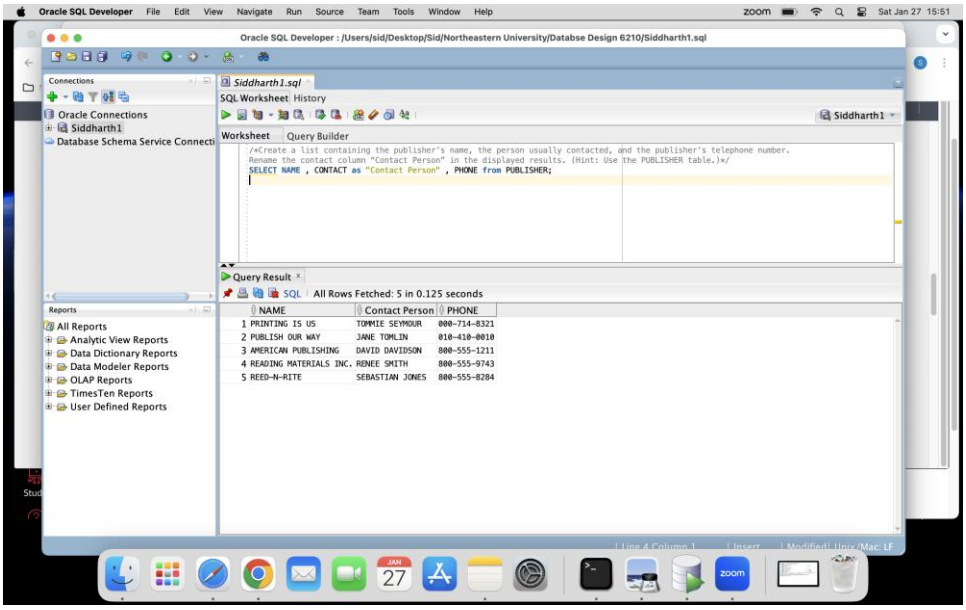
3. SELECT TITLE , PUBDATE as "Publication Date" from BOOKS;



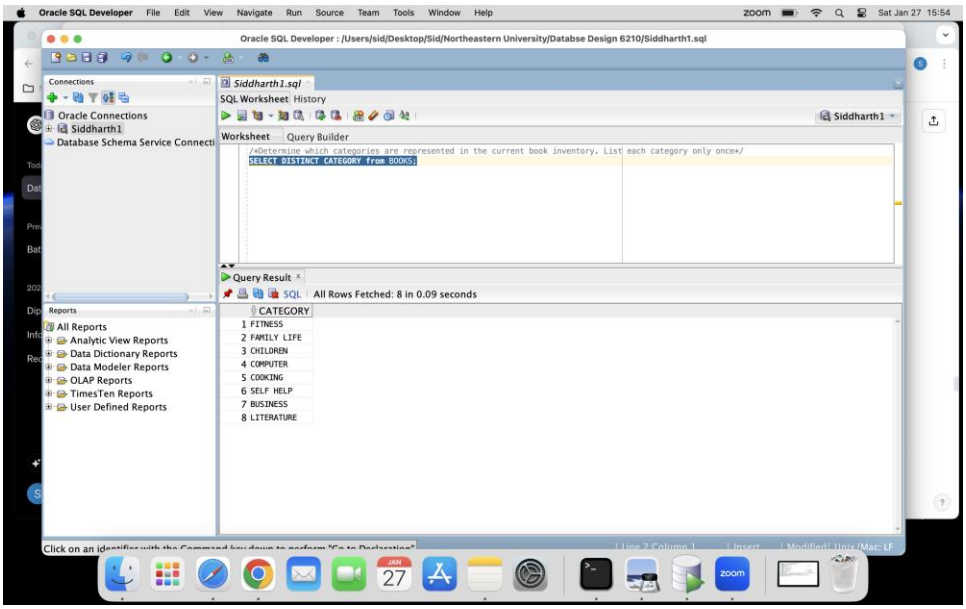
4. SELECT CUSTOMER# , CITY , STATE from CUSTOMERS;



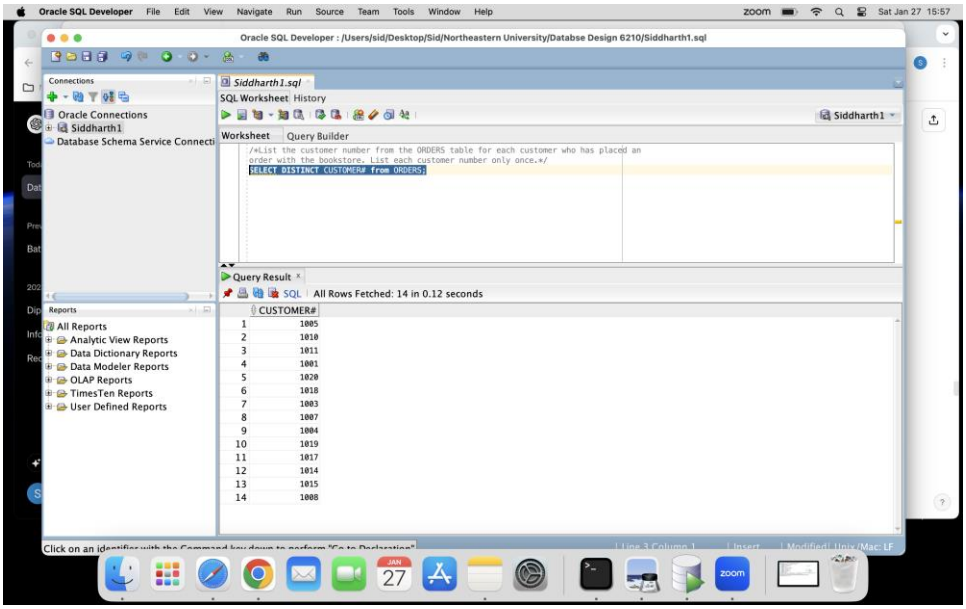
5. SELECT NAME , CONTACT as "Contact Person" , PHONE from PUBLISHER;



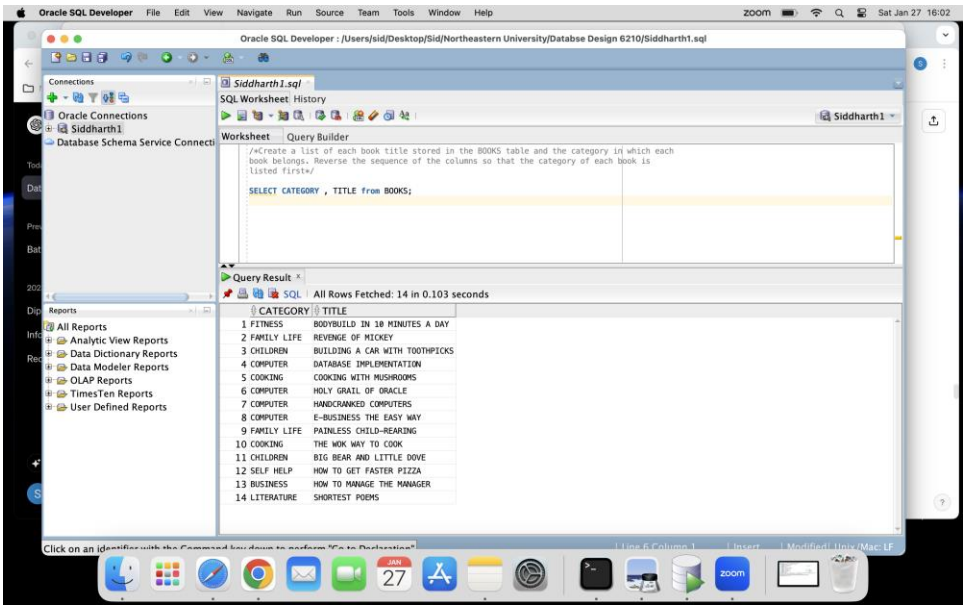
6. SELECT DISTINCT CATEGORY from BOOKS;



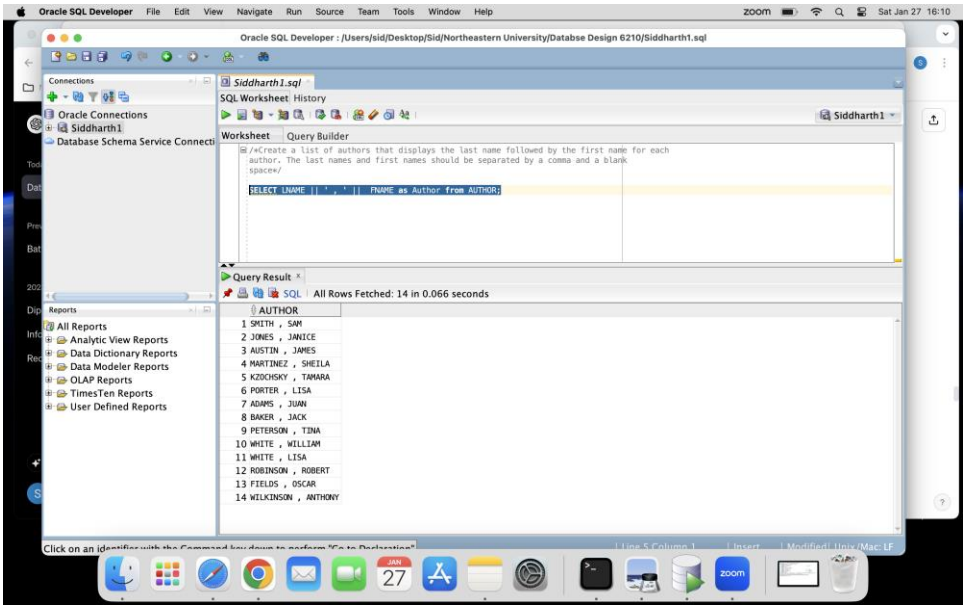
7. SELECT DISTINCT CUSTOMER# from ORDERS;



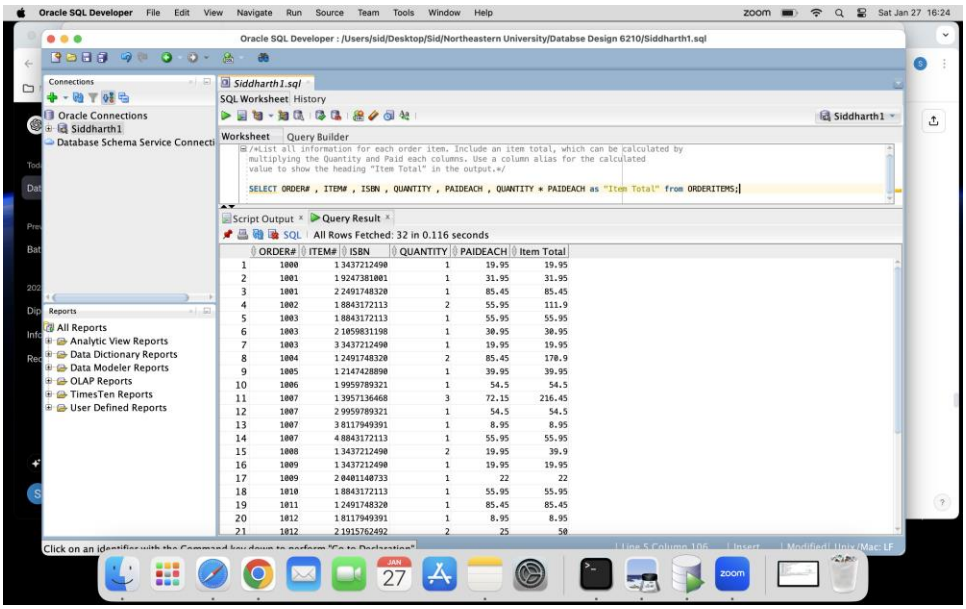
8. SELECT CATEGORY , TITLE from BOOKS;



9. SELECT LNAME || ' , ' || FNAME as Author from AUTHOR;

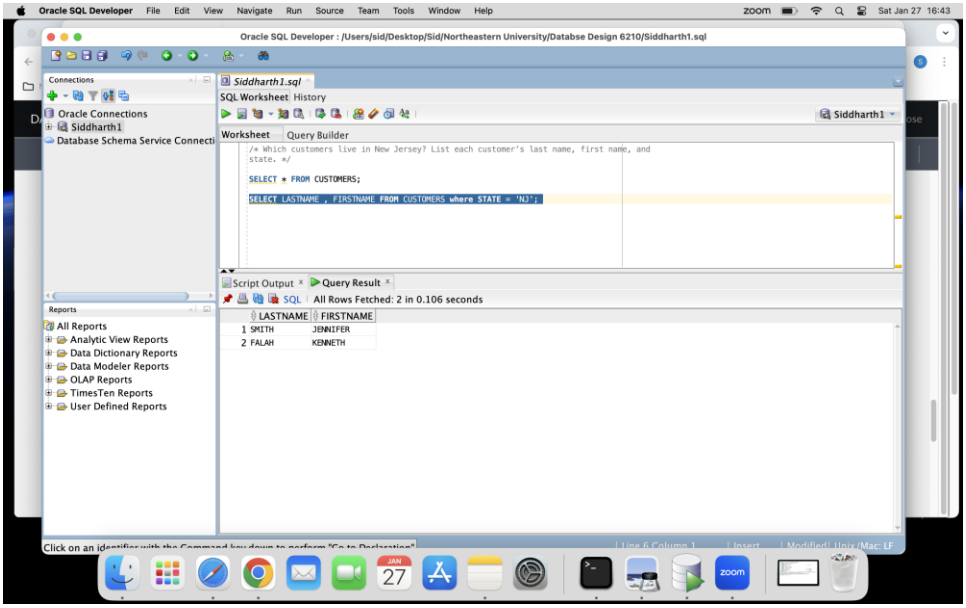


10. SELECT ORDER# , ITEM# , ISBN , QUANTITY , PAIDEACH , QUANTITY * PAIDEACH as "Item Total" from ORDERITEMS;

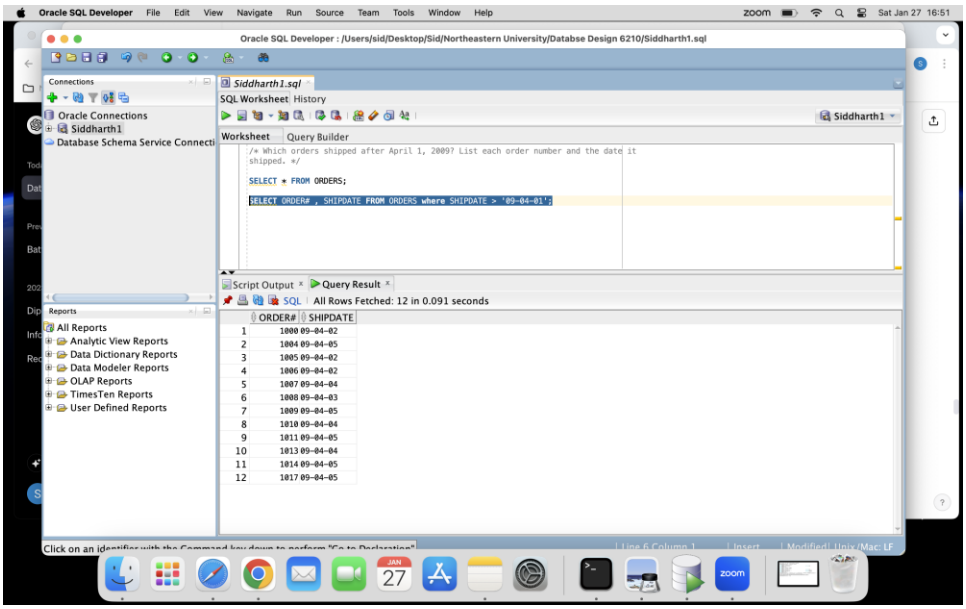


Part B)

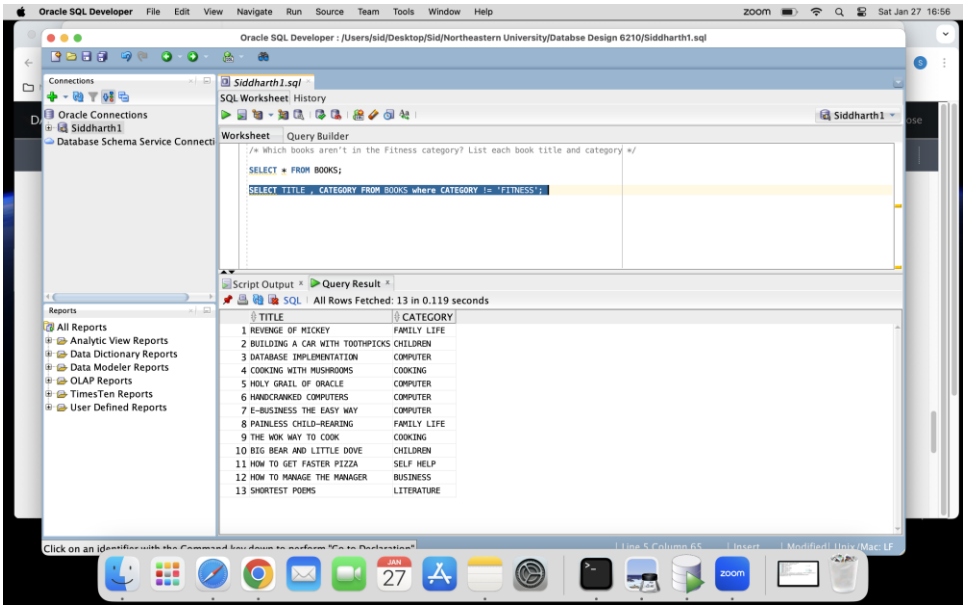
1. SELECT LASTNAME , FIRSTNAME FROM CUSTOMERS where STATE = 'NJ';



2. SELECT ORDER# , SHIPDATE FROM ORDERS where SHIPDATE > '09-04-01';



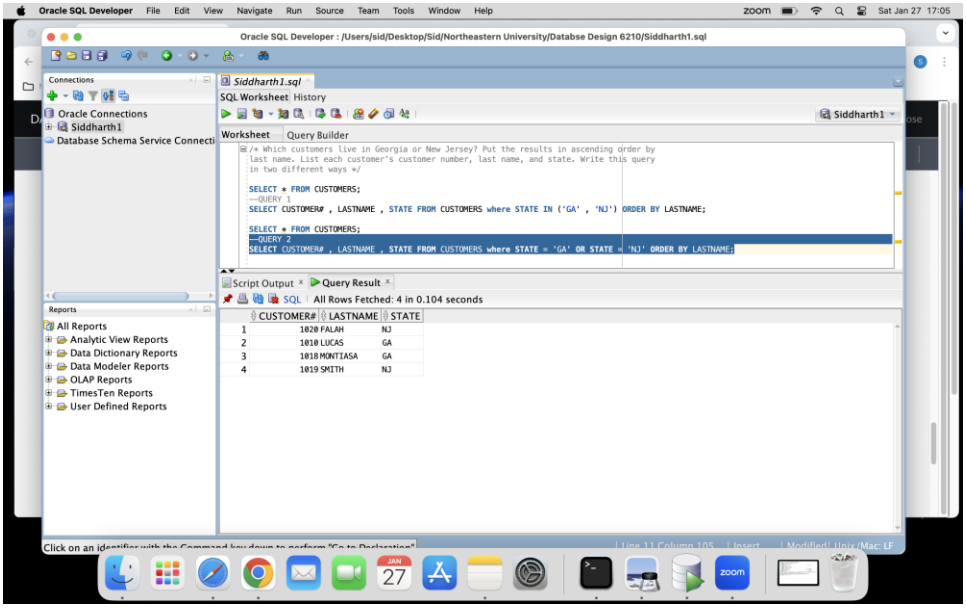
3. SELECT TITLE , CATEGORY FROM BOOKS where CATEGORY != 'FITNESS';



4. --QUERY 1
SELECT CUSTOMER# , LASTNAME , STATE FROM CUSTOMERS where STATE IN

('GA' , 'NJ') ORDER BY LASTNAME;

--QUERY 2
SELECT CUSTOMER# , LASTNAME , STATE FROM CUSTOMERS where STATE = 'GA' OR STATE = 'NJ' ORDER BY LASTNAME;

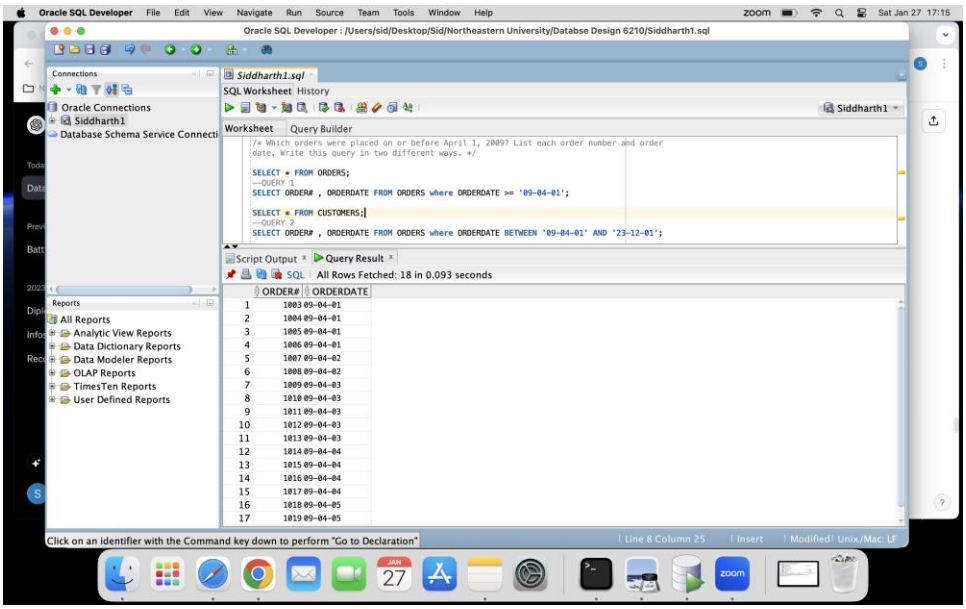


5. --QUERY 1

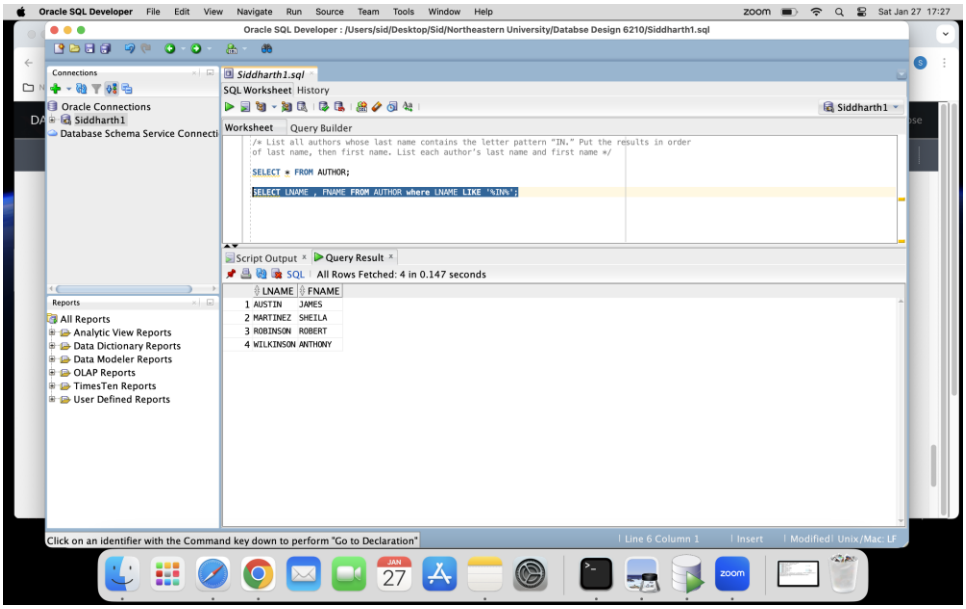
SELECT ORDER# , ORDERDATE FROM ORDERS where ORDERDATE >= '09-04-01';

--QUERY 2

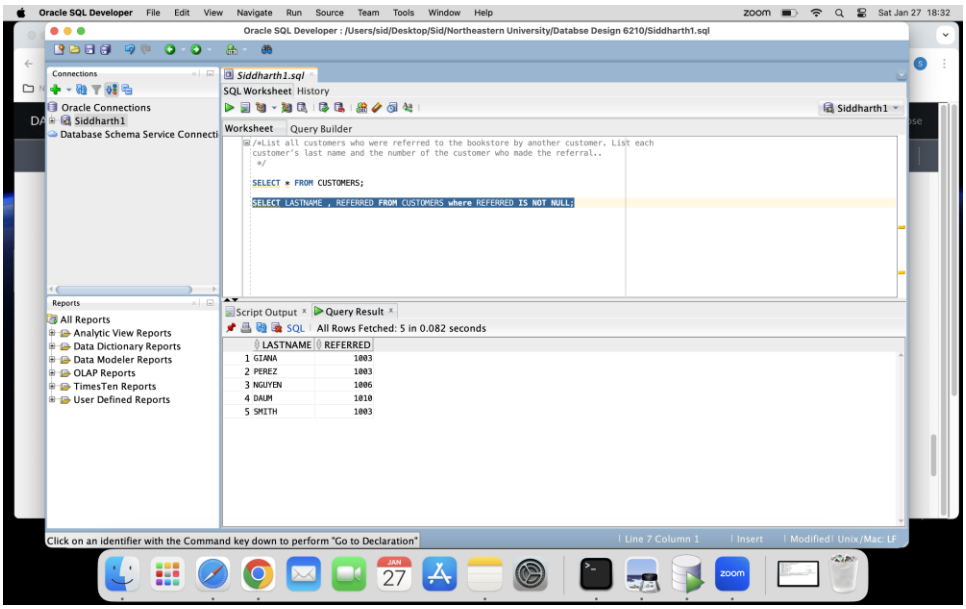
SELECT ORDER# , ORDERDATE FROM ORDERS where ORDERDATE BETWEEN '09-04-01' AND '23-12-01';



6. SELECT LNAME , FNAME FROM AUTHOR where LNAME LIKE '%IN%';



7.
SELECT LASTNAME , REFERRED FROM CUSTOMERS where REFERRED IS NOT NULL;



8.

--Search pattern

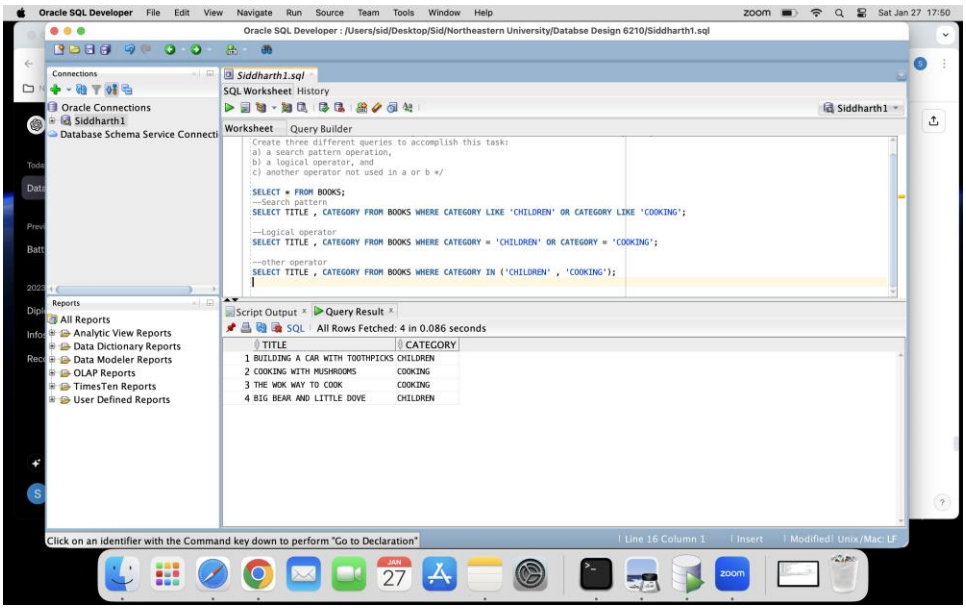
SELECT TITLE , CATEGORY FROM BOOKS WHERE CATEGORY LIKE 'CHILDREN' OR CATEGORY LIKE 'COOKING';

--Logical operator

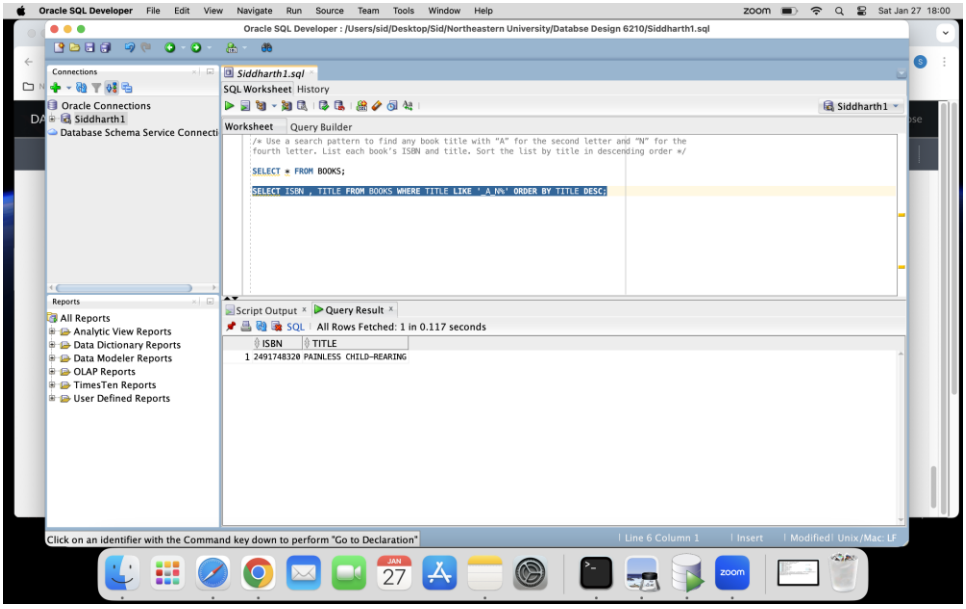
SELECT TITLE , CATEGORY FROM BOOKS WHERE CATEGORY = 'CHILDREN' OR CATEGORY = 'COOKING';

--other operator

SELECT TITLE , CATEGORY FROM BOOKS WHERE CATEGORY IN ('CHILDREN' , 'COOKING');



9. SELECT ISBN , TITLE FROM BOOKS WHERE TITLE LIKE '_A_N%' ORDER BY TITLE DESC;



10. --Query 1
SELECT TITLE , PUBDATE FROM BOOKS WHERE CATEGORY = 'COMPUTER' AND PUBDATE BETWEEN '05-01-01' AND '05-12-31';
--Query 2
SELECT TITLE , PUBDATE FROM BOOKS WHERE CATEGORY = 'COMPUTER' AND PUBDATE >= '05-01-01' AND PUBDATE <= '05-12-31';
--Query 3
SELECT TITLE , PUBDATE FROM BOOKS WHERE CATEGORY = 'COMPUTER' AND PUBDATE LIKE '05%';