

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.

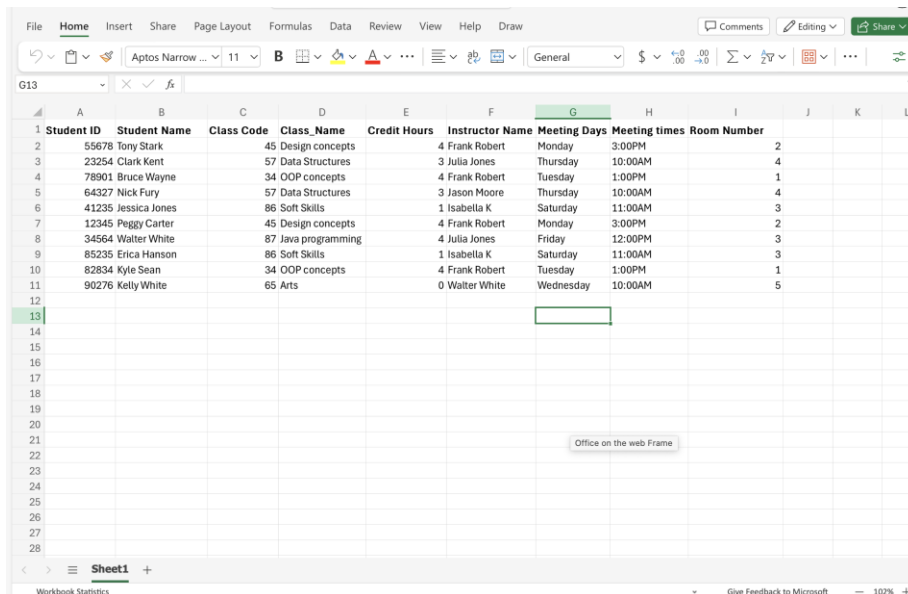
4) Security Infrastructure: Cloud providers invest significantly in security measures, offering robust security features. Overhead cost to keep and run security infrastructure is removed.

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



The screenshot shows a Microsoft Excel spreadsheet with a table containing student and class information. The table has columns for Student ID, Student Name, Class Code, Class Name, Credit Hours, Instructor Name, Meeting Days, Meeting times, and Room Number. The data is organized into rows, with the first row (row 1) serving as the header. The table is displayed in the 'Home' tab of the Excel ribbon, with the 'Aptos Narrow' font selected. The spreadsheet is titled 'Sheet1' and is part of a workbook named 'Workbook Statistics'.

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)

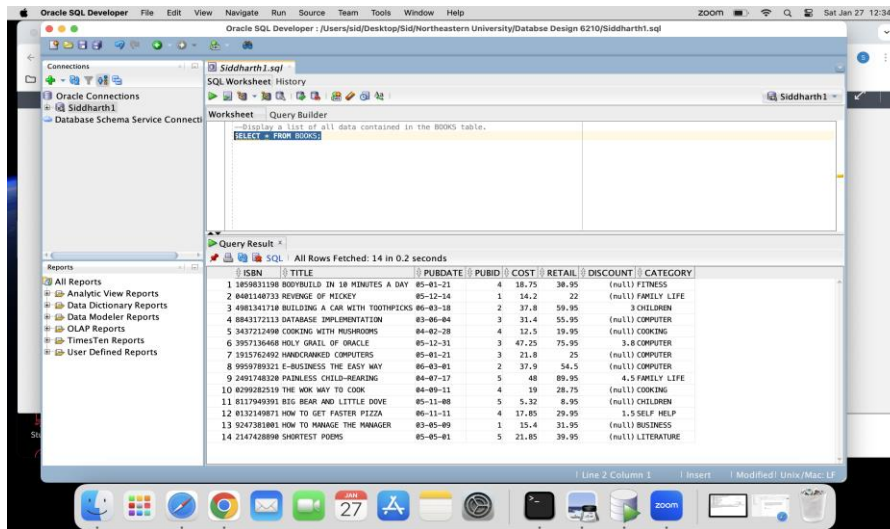
Redundancies - We can consider we have two columns unique; they are Student ID and Student Name. All other columns have redundant data at some point. It implies multiple students have the same class, each entry repeats class information (class code, name, instructor, etc.). We can observe one more thing,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

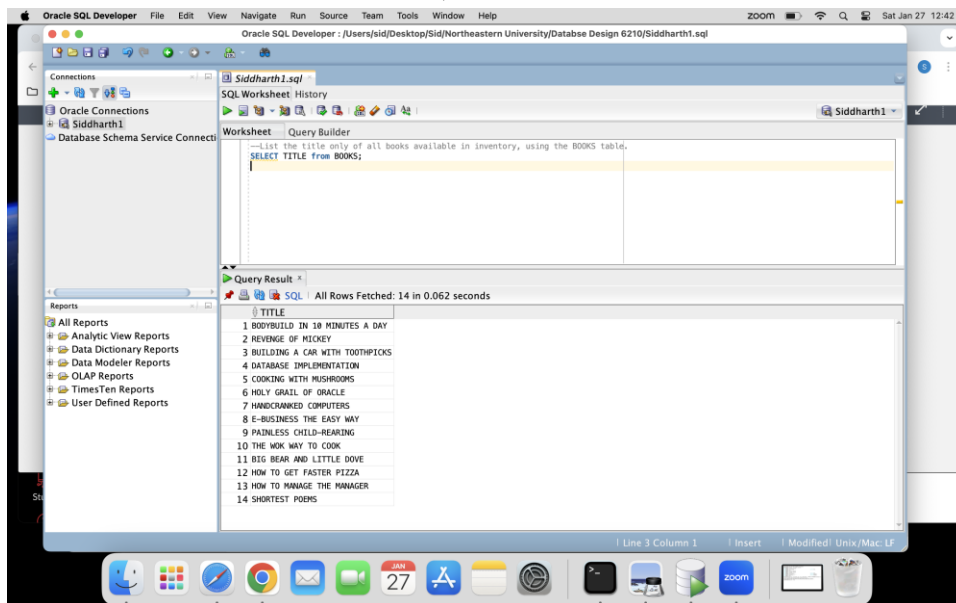
1. SELECT * from BOOKS;



The screenshot shows the Oracle SQL Developer interface. The 'Query Result' window displays the results of the query 'SELECT * FROM BOOKS;'. The results are shown in a table with 14 rows and 10 columns: ISBN, TITLE, PURCHASE DATE, PUBLISHER ID, COST, RETAIL PRICE, DISCOUNT, and CATEGORY. The data is as follows:

ISBN	TITLE	PURCHASE DATE	PUBLISHER ID	COST	RETAIL PRICE	DISCOUNT	CATEGORY
1 3859831198	BODYBUILD IN 18 MINUTES A DAY	05-01-21	4	18.75	38.95	(null)	FITNESS
2 848148733	REVENGE OF MICKY	05-12-14	1	14.2	22	(null)	FAMILY LIFE
3 4983343718	BUILDING A CAR WITH TOOTHPICKS	06-03-18	2	37.8	59.95	(null)	CHILDREN
4 8843172113	DATABASE IMPLEMENTATION	03-06-04	3	31.4	55.95	(null)	COMPUTER
5 3437212498	COOKING WITH MUSHROOMS	04-02-28	4	12.5	19.95	(null)	COOKING
6 3957136468	HOLY GRAIL OF ORACLE	05-12-31	3	47.25	75.95	(null)	COMPUTER
7 1915762492	HANDCRAWNED COMPUTERS	05-01-21	3	21.8	25	(null)	COMPUTER
8 9958789321	E-BUSINESS THE EASY WAY	06-03-01	2	37.9	54.5	(null)	COMPUTER
9 2491748328	PAINLESS CHILD-REARING	04-07-17	5	48	89.95	(null)	4.5 FAMILY LIFE
10 8298282519	THE WOK WAY TO COOK	04-09-11	4	19	28.75	(null)	COOKING
11 8117949391	BIG BEAR AND LITTLE DOVE	05-11-08	5	5.32	8.95	(null)	CHILDREN
12 8132149871	HOW TO GET FASTER PIZZA	06-11-11	4	17.85	29.95	(null)	1.5 SELF HELP
13 9247381881	HOW TO MANAGE THE MANAGER	03-05-09	1	15.4	31.95	(null)	BUSINESS
14 2147428898	SHORTEST POEMS	05-05-01	5	21.85	39.95	(null)	LITERATURE

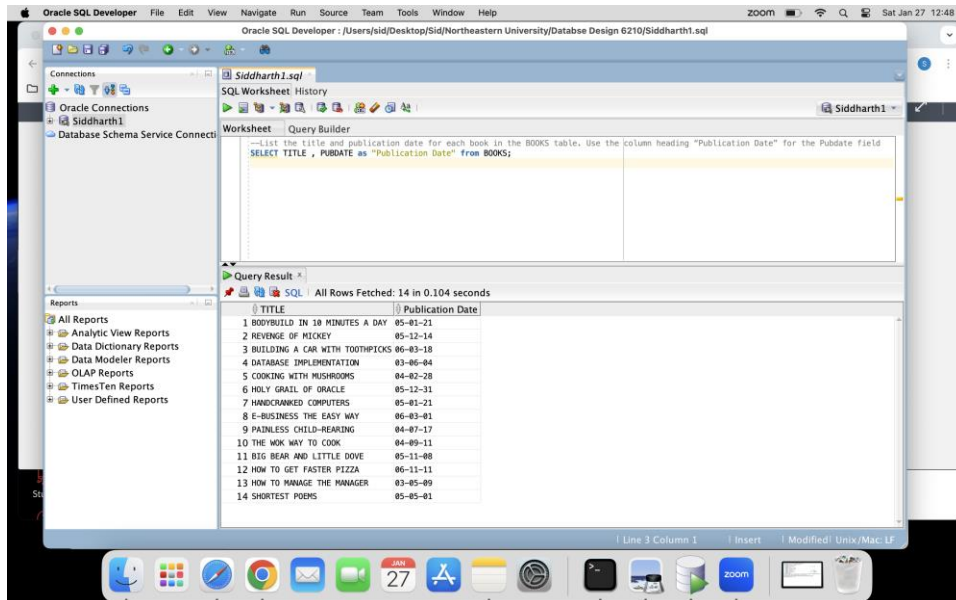
2. SELECT TITLE from BOOKS;



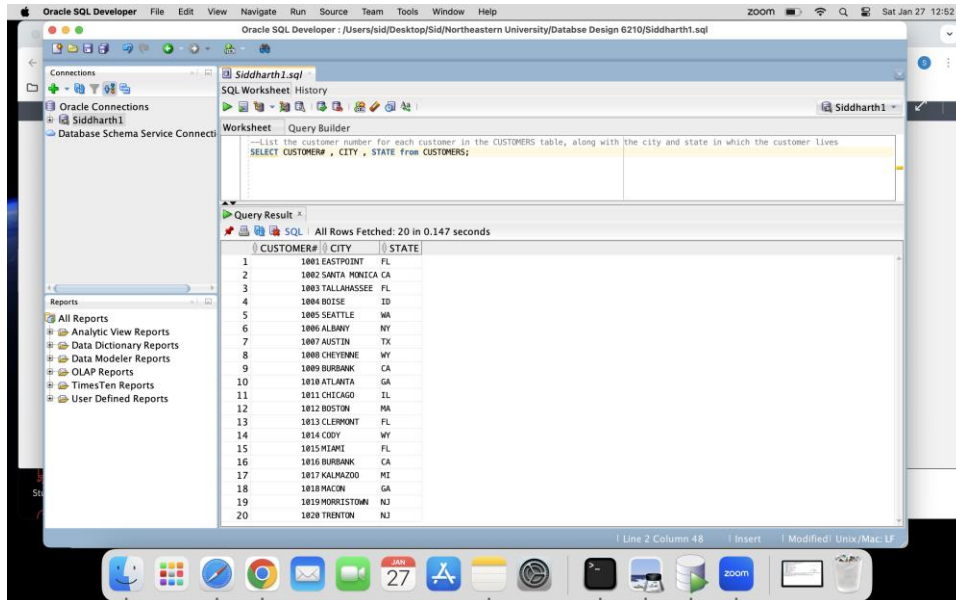
The screenshot shows the Oracle SQL Developer interface. The 'Query Result' window displays the results of the query 'SELECT TITLE from BOOKS;'. The results are shown in a table with 14 rows and 1 column: TITLE. The data is as follows:

TITLE
1 BODYBUILD IN 18 MINUTES A DAY
2 REVENGE OF MICKY
3 BUILDING A CAR WITH TOOTHPICKS
4 DATABASE IMPLEMENTATION
5 COOKING WITH MUSHROOMS
6 HOLY GRAIL OF ORACLE
7 HANDCRAWNED COMPUTERS
8 E-BUSINESS THE EASY WAY
9 PAINLESS CHILD-REARING
10 THE WOK WAY TO COOK
11 BIG BEAR AND LITTLE DOVE
12 HOW TO GET FASTER PIZZA
13 HOW TO MANAGE THE MANAGER
14 SHORTEST POEMS

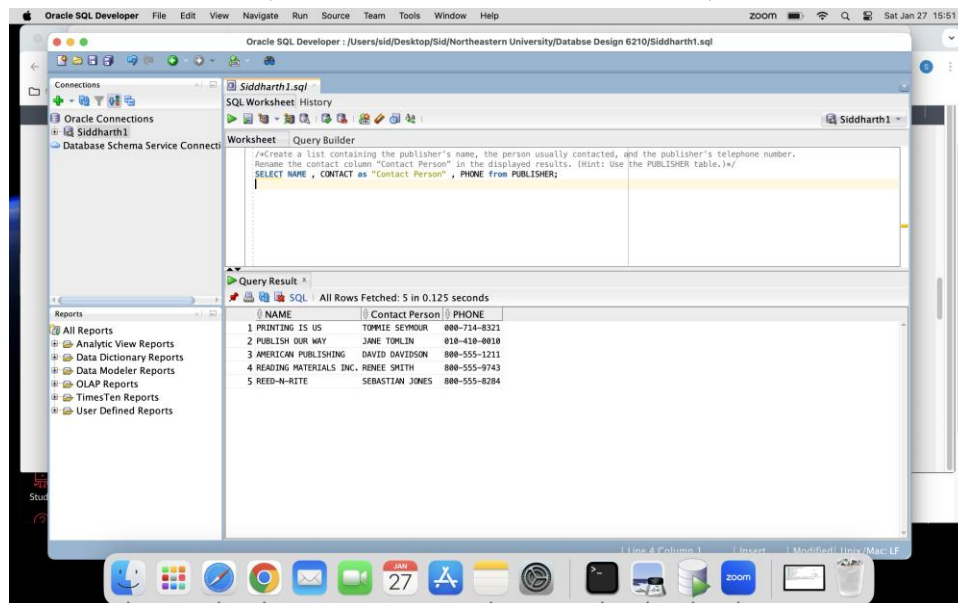
3. SELECT TITLE , PUBDATE as "Publication Date" from BOOKS;



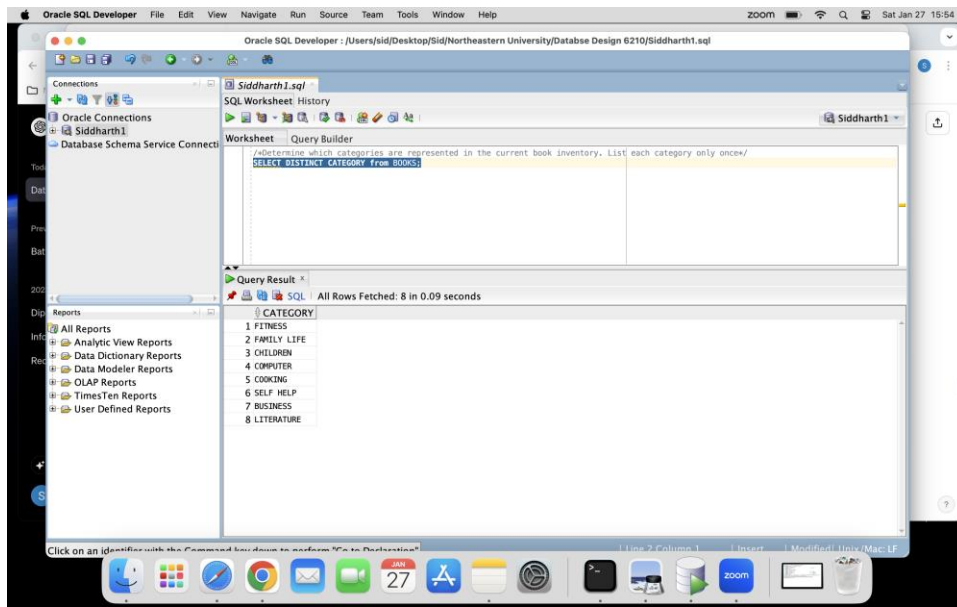
4. SELECT CUSTOMER# , CITY , STATE from CUSTOMERS;



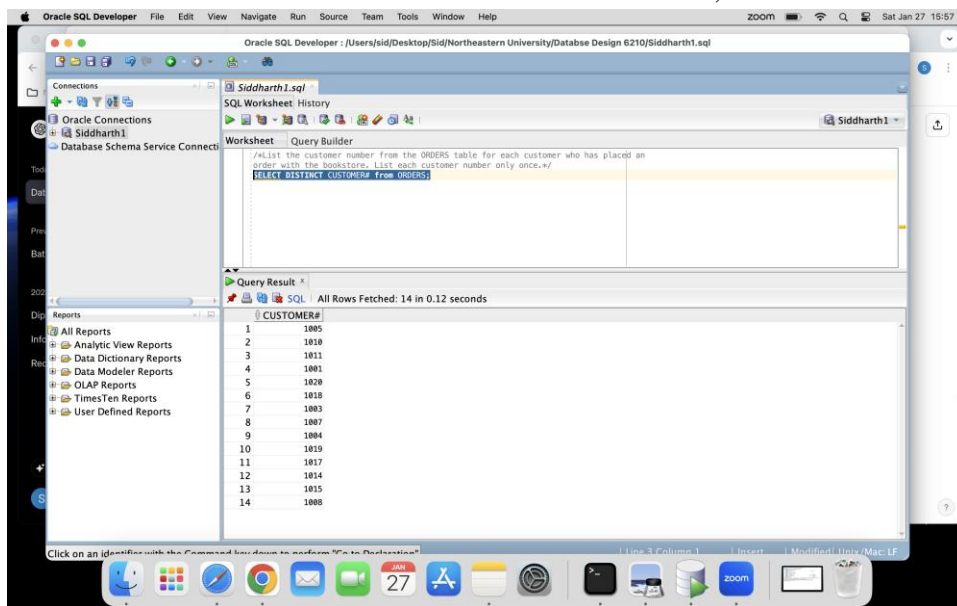
5. SELECT NAME , CONTACT as "Contact Person" , PHONE from PUBLISHER;



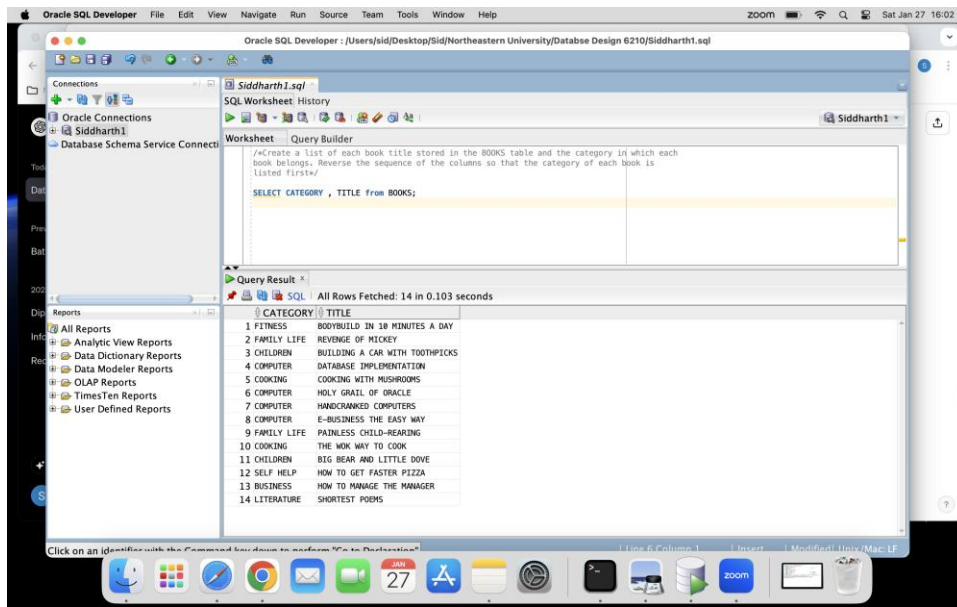
6. SELECT DISTINCT CATEGORY from BOOKS;



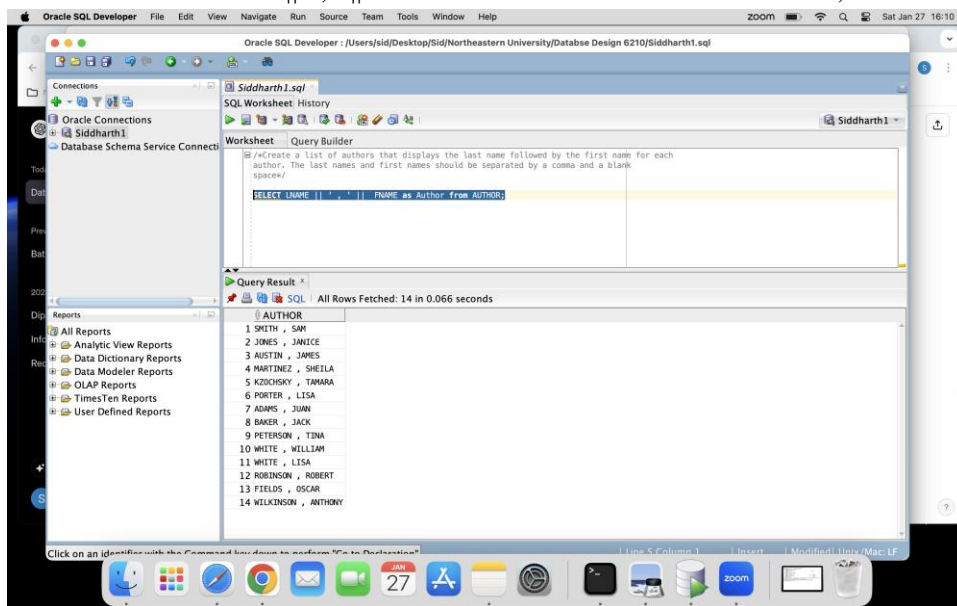
7. SELECT DISTINCT CUSTOMER# from ORDERS;



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;

Oracle SQL Developer: /Users/sid/Desktop/Sid/Northeastern University/Database Design 6210/Siddharth1.sql

Worksheet: Query Builder

SQL Worksheet: History

Script Output: Query Result

SQL: All Rows Fetched: 32 in 0.116 seconds

ORDER#	ITEM#	ISBN	QUANTITY	PAIDEACH	Item Total
1	1000	13437212498	1	19.95	19.95
2	1001	19247381801	1	31.95	31.95
3	1001	22491748328	1	85.45	85.45
4	1002	18843172113	2	55.95	111.9
5	1003	18843172113	1	55.95	55.95
6	1003	21059831198	1	38.95	38.95
7	1003	33437212498	1	19.95	19.95
8	1004	12491748328	2	85.45	170.9
9	1005	12147428898	1	39.95	39.95
10	1006	19959789321	1	54.5	54.5
11	1007	13957136468	3	72.15	216.45
12	1007	29959789321	1	54.5	54.5
13	1007	38117949391	1	8.95	8.95
14	1007	48843172113	1	55.95	55.95
15	1008	13437212498	2	19.95	39.9
16	1009	13437212498	1	19.95	19.95
17	1009	20481140733	1	22	22
18	1010	18843172113	1	55.95	55.95
19	1011	12491748328	1	85.45	85.45
20	1012	18117949391	1	8.95	8.95
21	1012	21915762492	2	25	50

Part B)

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

Oracle SQL Developer: /Users/sid/Desktop/Sid/Northeastern University/Database Design 6210/Siddharth1.sql

Worksheet: Query Builder

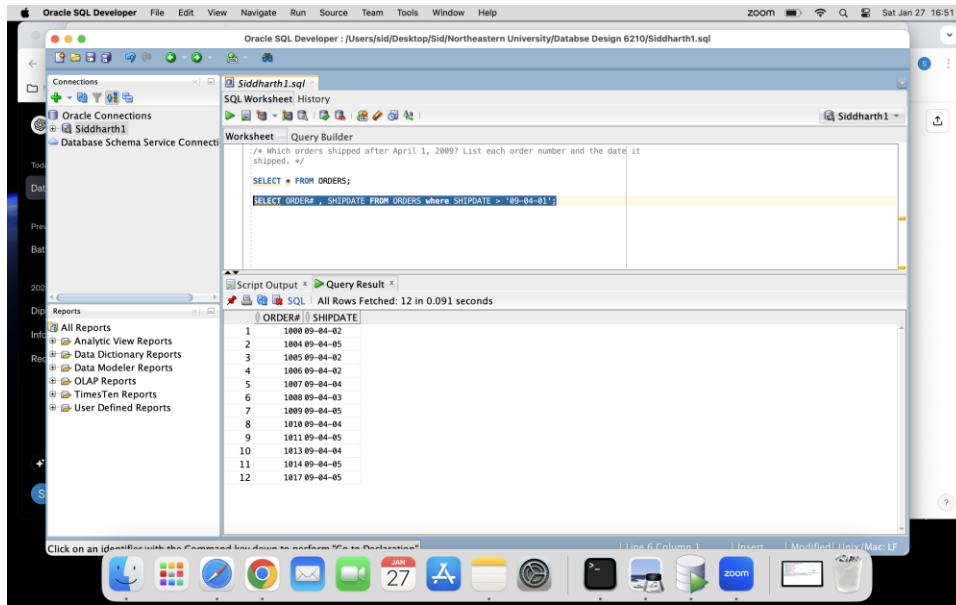
SQL Worksheet: History

Script Output: Query Result

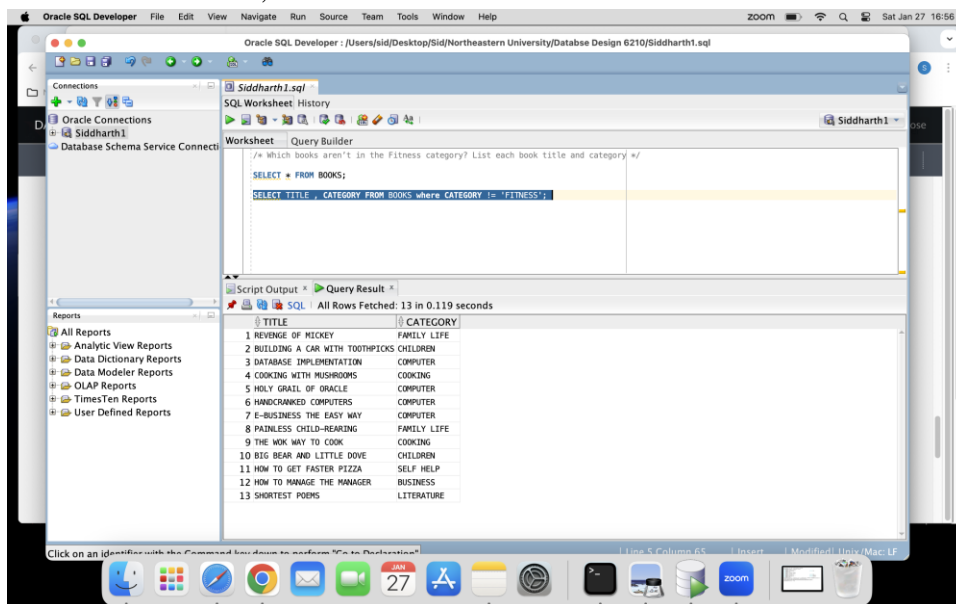
SQL: All Rows Fetched: 2 in 0.106 seconds

LASTNAME	FIRSTNAME
SMITH	JENNIFER
FALAH	KENNETH

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



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



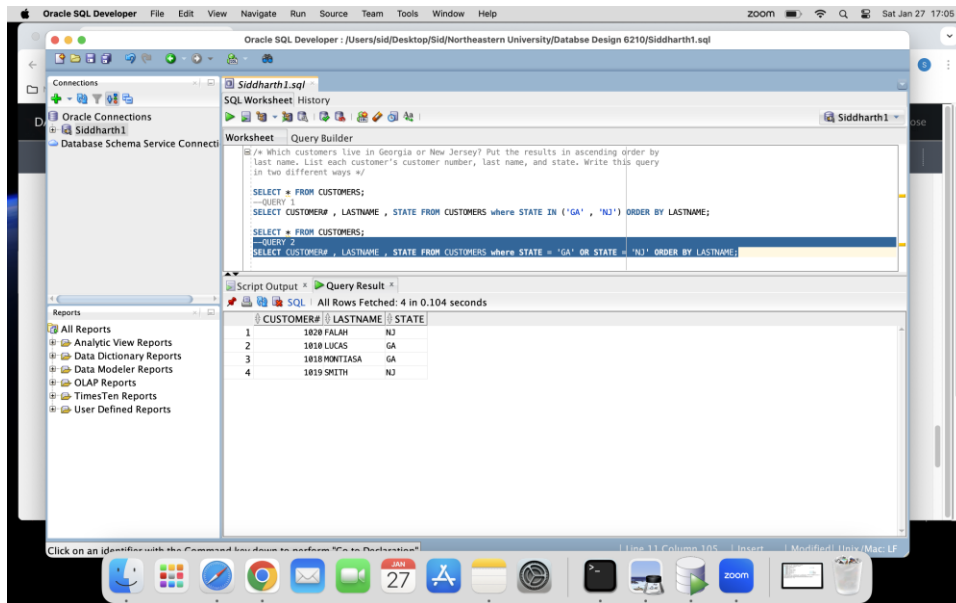
4. --QUERY 1

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;

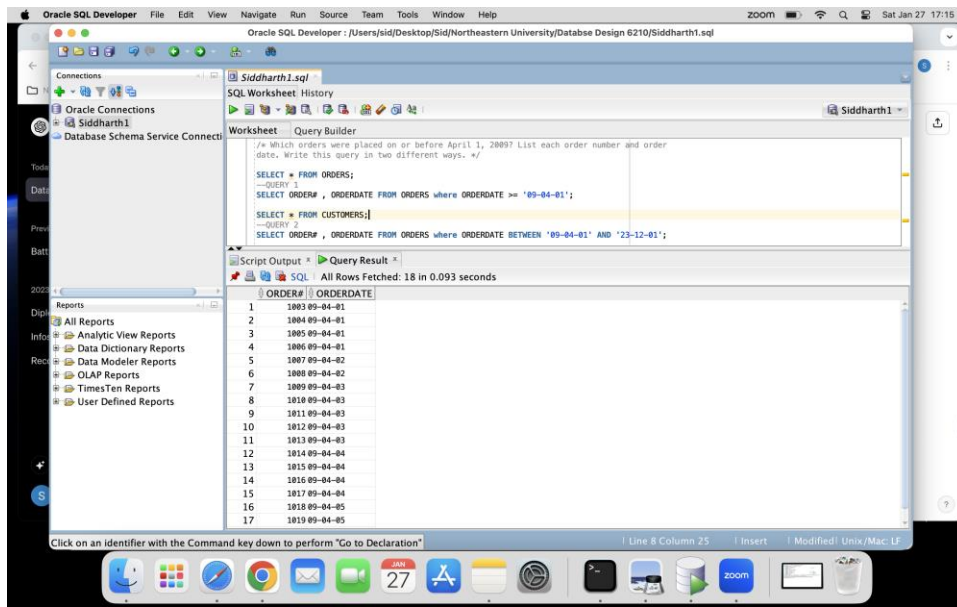


5. --QUERY 1

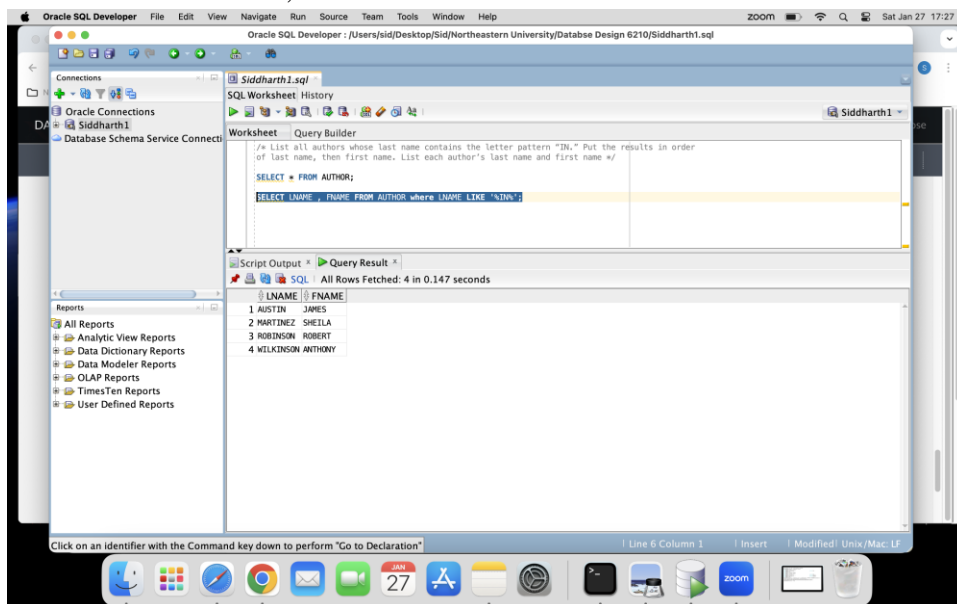
SELECT ORDER# , ORDERDATE FROM ORDERS where ORDERDATE >= '09-04-01';

--QUERY 2

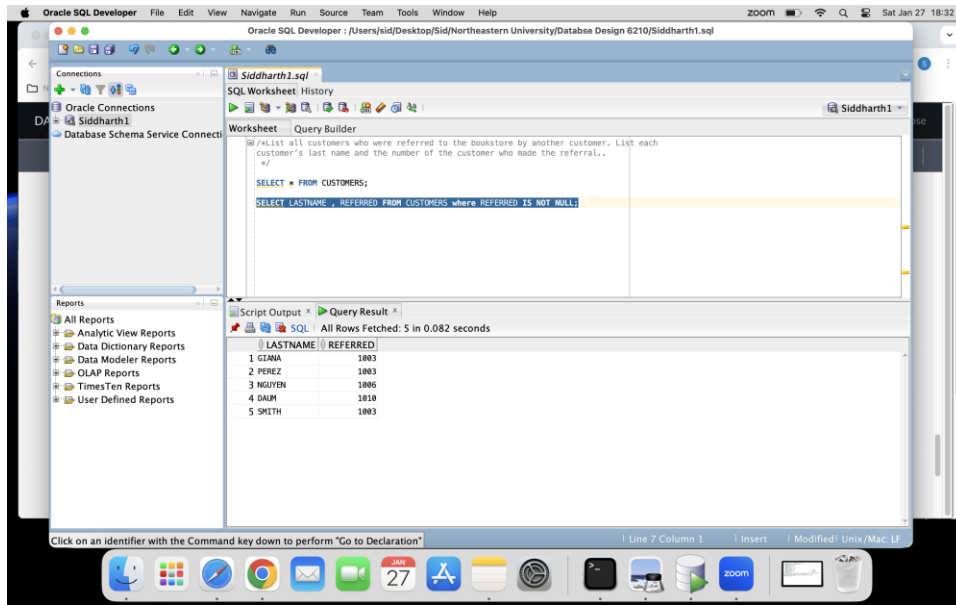
SELECT ORDER# , ORDERDATE FROM ORDERS where ORDERDATE BETWEEN '09-
04-01' AND '23-12-01';



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



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



8.

--Search pattern

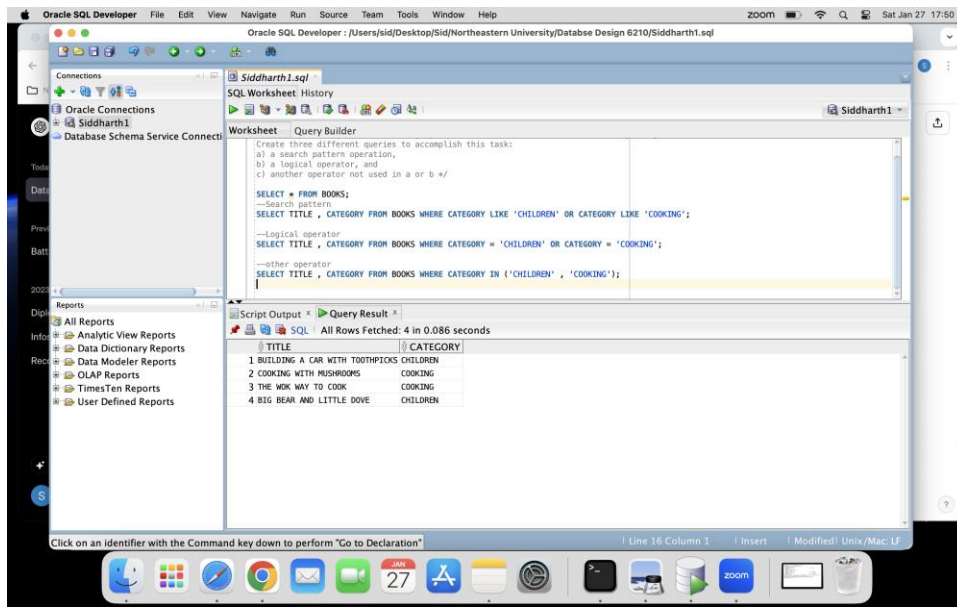
SELECT TITLE , CATEGORY FROM BOOKS WHERE CATEGORY LIKE 'CHILDREN' OR
CATEGORY LIKE 'COOKING';

--Logical operator

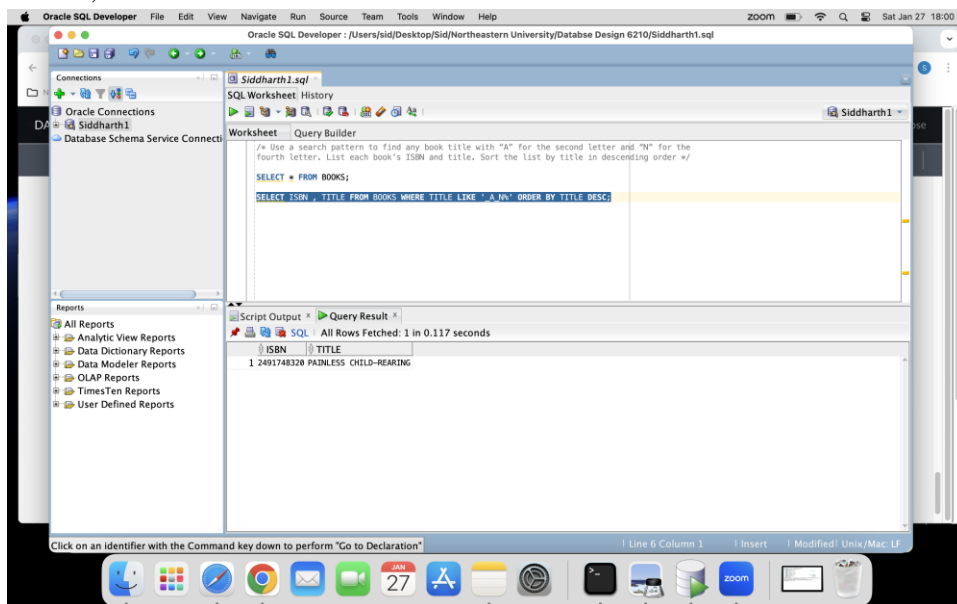
SELECT TITLE , CATEGORY FROM BOOKS WHERE CATEGORY = 'CHILDREN' OR
CATEGORY = 'COOKING';

--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%';

