Kathmandu University

Department of Computer Science and Engineering

Dhulikhel, Kavre

A Report on ‘Lab Work 2’ [COMP 232]

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Q lab1

publishing company needs to store information about its publications and sales, and has hired you as a database designer.

- *The company publishes books as well as magazines. Magazines are published periodically (e.g., weekly, monthly, annually etc.)*
- *All orders for books and magazines are placed by distributors, who then distributes the publications to other stores.*
- *Distributors may pre-order the publications before they are printed, or order the already printed publications.*
- *The company needs to keep track of all the orders and payments.*

Qlab2

1. Install MySQL (Links to an external site.) or MariaDB (Links to an external site.) on your computer.
2. Install MySQL Workbench (Links to an external site.) or HeidiSQL (Links to an external site.) (on Windows only) or DBeaver (Links to an external site.).
3. Create a schema.
4. Write a DDL script for creating the tables corresponding to your ER model of Lab 1.
5. Populate the tables with some data.
6. Write queries in relational algebra and SQL for the following:
    1. Find the name of all published books.
    2. Find the name of all books published before 2000.
    3. Get the details of the books written by a particular author.
    4. Find the name of all weekly publications.
    5. Find the name of pre-ordered books.
    6. Get the details of all publications with the name starting with an 'A'.
    7. Find all the orders for a particular book. The result must be sorted based on the order date.

Solution:

An entity relationship diagram has been drawn as per question of lab 1 and then relational schema has been made for that entity relationship diagram.

Diagram files are attached herewith…

As per the relational schema, written DDL (data definition language) script for the creation of tables corresponding to the schema and then populated the tables with some data.

After that, written queries in relational algebra and SQL (structured query language) for the following:

1. Find the name of all published books.

$\Pi_{book.Title}(book)$

```
SELECT Title FROM book;
```

2. Find the name of all books published before 2000

$\Pi_{book.Title,\ book.Published_Date}(\sigma_{book.Published_Date\ <\ '2001\text{-}01\text{-}01'}(book))$

```
SELECT Title, Published_Date FROM book WHERE Published_Date < '2000-01-01';
```

3. Get the details of the books written by a particular author

$\boldsymbol{\sigma}_{book.Auth_ID} = (\Pi_{author.ID}(\sigma_{author.Auth_Name\ =\ 'Sadhguru'}(author)))(book)$

```
SELECT * FROM book WHERE Auth_ID
IN (SELECT ID FROM author WHERE Auth_Name = 'Sadhguru');

SELECT * FROM book WHERE Auth_ID
IN (SELECT ID FROM author WHERE Auth_Name = 'Kahlil Gibran');
```

4. Find the name of all weekly publications

$\Pi_{book.Title,\ book.Published_Date}(\sigma_{book.Published_Date\ >\ '2022\text{-}02\text{-}07'}(book))$

```
SELECT Title, Published_Date FROM book WHERE Published_Date > '2022-02-07';
```

5. Find the pre-ordered books

$\Pi_{\text{distributor.Dist_Name, distributor.Phone, book.Title, order_items.Quantity, order_items.Total_Amount, order_items.Ordered_Date, order_items.Discount}}$

(order_items

$\bowtie_{\text{order_items.Order_ID = book_order.ID}}$
book_order

$\bowtie_{\text{order_items.Book_ID = book.ID}}$
book

$\bowtie_{\text{book_order.Dist_ID = distributor.ID}}$
distributor)

```
SELECT distributor.Dist_Name, distributor.Phone,
        book.Title, order_items.Quantity,
        order_items.Total_Amount,
        order_items.Ordered_Date, order_items.Discount
FROM
order_items
INNER JOIN
book_order
ON order_items.Order_ID = book_order.ID
INNER JOIN
book
ON order_items.Book_ID = book.ID
INNER JOIN
distributor
ON book_order.Dist_ID = distributor.ID;
```

6. Get the details of all publications with the name starting with an 'A'

$\sigma_{\text{book.Title='A\%'}}$ (book)

```
SELECT * FROM book WHERE Title LIKE 'A%';
```

- ➔ Here 'A%' means book name should start with a and rest of the letter could be any thing and can be any number of letters. Instead of 'A%' we write 'A_' The there can be only one letter after A. and if 'A___' then there can be three letters after A.

7. **Find all the orders for a particular book. The result must be sorted based on the order date**

$\Pi_{\text{distributor.Dist_Name, distributor.Phone, book.Title, order_items.Quantity, order_items.Total_Amount, order_items.Ordered_Date, order_items.Discount}}$

$(\sigma_{\text{order_items.Book_ID}} = (\Pi_{\text{book.ID}}(\sigma_{\text{book.Title} = \text{'Karma: A Yogi's Guide to Crafting Your Destiny'}}(\text{book})))$

$($ order_items

$\bowtie_{\text{order_items.Order_ID} = \text{book_order.ID}}$
book_order

$\bowtie_{\text{book_order.Dist_ID} = \text{distributor.ID}}$
distributor

$\bowtie_{\text{order_items.Book_ID} = \text{book.ID}}$
book)

)

```
SELECT distributor.Dist_Name, distributor.Phone,
        book.Title, order_items.Quantity,
        order_items.Total_Amount,
        order_items.Ordered_Date, order_items.Discount
FROM
order_items
INNER JOIN
book_order
ON order_items.Order_ID = book_order.ID
INNER JOIN
distributor
ON book_order.Dist_ID = distributor.ID
INNER JOIN
book
ON order_items.Book_ID = book.ID
WHERE order_items.Book_ID = (SELECT ID FROM book WHERE Title = "Karma: A Yogi's
Guide to Crafting Your Destiny")
ORDER BY order_items.Ordered_date DESC;
```

Author Table

ID	Auth_Name	Nationality	Date_of_birth	Gender	Qualification	Phone	Trans_ID
1	Sadhguru	Indian	1957-09-03	MALE	mystic	9198765432	5
2	Jiddu Krishnamurti	Indian	1895-05-11	MALE	realized_being	9178674532	1
3	Osho	Indian	1931-12-11	MALE	mystic	9178573545	NULL
4	Swami Vivekananda	Indian	1863-01-12	MALE	Hindu Monk	9178562542	2
5	Ram Krishna	Indian	1836-02-18	MALE	Mystic	9178232631	NULL
6	Annie Besant	British	1847-10-01	FEMALE	socialist, theosophist, educationist	9179432612	4
7	Leadbeater	Australian	1854-02-16	MALE	Occultists	9175832456	3
8	Helena Blavatsky	Russian	1831-08-12	FEMALE	theosophist	9174831412	NULL
9	Richard Alpert	United States	1931-04-06	MALE	spritual_teacher, psychologist	9173824531	1
10	Kahlil Gibran	Lebanon	1883-01-06	MALE	poet and visual artist	9173622512	NULL
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

Book Table

ID	Title	No_of_Prints	Print_Date	No_of_Page	Published_Date	Edition	Price	Auth_ID
1	Inner Engineering	10	2020-02-12	500	2016-07-08	1st	400	1
2	Why Suffering	5	2021-02-12	670	2006-09-01	1st	299	1
3	Death; An Inside Story	20	2022-02-12	1001	2022-02-09	1st	700	1
4	Encounter the Enlightened	5	2021-03-15	570	2001-01-02	1st	799	1
5	Karma: A Yogi's Guide to Crafting Your Destiny	12	2022-02-13	870	2022-02-13	1st	999	1
6	Freedom from the Known	5	2019-02-13	800	1969-01-01	1st	1099	2
7	As One is: To Free the Mind from All Conditioning	50	1955-02-13	870	2007-06-15	1st	1299	2
8	Awakening of intelligence	20	2018-04-23	550	1973-02-05	1st	1199	2
9	Awareness: The Key to Living in Balance	25	2018-12-10	750	2001-12-10	1st	1499	3
10	Living Dangerously	35	2018-12-10	750	2011-12-10	2nd	799	3
11	Yoga Sutras of Patanjali	65	2019-12-10	850	2011-12-10	2nd	799	4
12	Annie Besant: An Autobiography	65	2021-12-10	850	1893-12-10	3rd	999	6
13	Ancient Wisdom	25	2022-01-10	550	1897-12-10	3rd	699	6
14	The Voice of the Master	12	2017-01-10	825	1958-02-10	4th	1299	10
15	Broken Wings	21	2016-01-10	825	1912-02-10	4th	1399	10
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

Book_language Table

English	Nepali	Hindi	Book_ID
1	0	1	1
1	0	0	2
1	0	1	3
1	0	0	4
1	0	0	5
1	0	1	6
1	0	0	7
1	1	0	8
1	1	1	9
1	0	0	10
1	0	1	11
1	0	1	12
1	0	1	13
1	0	1	14
1	0	0	15

Book Items Table

Dist_ID	Book_ID	Quantity
1	1	20
1	2	10
1	3	0
1	10	20
1	15	0
5	4	50
5	7	12
5	3	0
5	12	15
3	1	20
3	2	10
3	3	0
3	4	50
3	5	5
3	6	100
3	7	12
3	8	200

book_order Table

ID	Dist_ID
1	1
3	4
2	6
NULL	NULL

Order_items Table

Order_ID	BOOK_ID	Quantity	Discount	Total_Amount	Ordered_Date
1	1	100	2000	20000	2022-02-10
1	2	50	1500	30000	2021-02-10
1	10	50	1000	15000	2019-02-10
2	15	75	3500	30000	2021-10-10
2	10	100	1500	50000	2021-11-15
2	5	50	2000	4000	2018-06-30
2	10	200	2000	70000	2020-12-30
3	4	20	4000	40000	2020-04-10
3	5	30	200	2000	2020-06-20
3	6	20	3000	70000	2017-07-12

Distributor Table

ID	Location	dist_Name	Pan	Phone
1	Raghunathpur-Lahan	Chandan	193456	9811771892
2	Golbazar	Samsad	187453	9815345672
3	Kathmandu	Ram Sapkota	174532	9876453212
4	Pokhara	Hari Narayan	165429	9870543621
5	Biratnagar	Krishna Yadav	134823	9856432134
6	Jhapa	Saskar Khadka	156783	9876456312
NULL	NULL	NULL	NULL	NULL

Book_transaction Table

ID	Total_Payment	Tax	Trans_Date	Dist_ID
1	10000	1300	2020-02-12	1
2	5000	650	2022-01-30	1
3	2300	300	2021-05-23	2
4	7500	700	2019-07-24	3
5	8942	876	2018-05-28	3
NULL	NULL	NULL	NULL	NULL

Sales Table

ID	Customer	Sales_Amount	Dist_ID
1	Ayush Paudel	10000	1
2	Svarnim	15000	3
3	Bipul	5000	5
NULL	NULL	NULL	NULL

Print Table

ID	Print_num	Book_ID
1	10	1
2	5	10
3	15	15
4	20	8
NULL	NULL	NULL

Sales_items Table

Sales_ID	Book_ID
1	1
1	3
1	4
2	1
2	8
2	3
2	6
3	3
3	7

Q1

```
-- 1 Find the name of all published books.
SELECT Title FROM book;
```

Result Grid | Filter Rows: | Export: | Wra

Title
Inner Engineering
Why Suffering
Death; An Inside Story
Encounter the Enlightened
Karma: A Yogi's Guide to Crafting Your Destiny
Freedom from the Known
As One is: To Free the Mind from All Conditioning
Awakening of intelligence
Awareness: The Key to Living in Balance
Living Dangerously
Yoga Sutras of Patanjali
Annie Besant: An Autobiography
Ancient Wisdom
The Voice of the Master
Broken Wings

Q2

```
-- 2 Find the name of all books published before 2000.
SELECT Title, Published_Date FROM book WHERE Published_Date < '2000-01-01';
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Title	Published_Date
Freedom from the Known	1969-01-01
Awakening of intelligence	1973-02-05
Annie Besant: An Autobiography	1893-12-10
Ancient Wisdom	1897-12-10
The Voice of the Master	1958-02-10
Broken Wings	1912-02-10

Q3

```
-- 3 Get the details of the books written by a particular author.
SELECT * FROM book WHERE Auth_ID
IN (SELECT ID FROM author WHERE Auth_Name = 'Sadhguru');

SELECT * FROM book WHERE Auth_ID
IN (SELECT ID FROM author WHERE Auth_Name = 'Kahlil Gibran');
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

ID	Title	No_of_Prints	Print_Date	No_of_Page	Published_Date	Edition	Price	Auth_ID
1	Inner Engineering	10	2020-02-12	500	2016-07-08	1st	400	1
2	Why Suffering	5	2021-02-12	670	2006-09-01	1st	299	1
3	Death; An Inside Story	20	2022-02-12	1001	2022-02-09	1st	700	1
4	Encounter the Enlightened	5	2021-03-15	570	2001-01-02	1st	799	1
5	Karma: A Yogi's Guide to Crafting Your Destiny	12	2022-02-13	870	2022-02-13	1st	999	1
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

Q4

```
-- 4 Find the name of all weekly publications
SELECT Title, Published_Date FROM book WHERE Published_Date > '2022-02-07';
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Title	Published_Date
Death; An Inside Story	2022-02-09
Karma: A Yogi's Guide to Crafting Your Destiny	2022-02-13

Q5

```
-- 5 Find the pre-ordered books
SELECT distributor.Dist_Name, distributor.Phone,
        book.Title, order_items.Quantity,
        order_items.Total_Amount,
        order_items.Ordered_Date, order_items.Discount
FROM
order_items
INNER JOIN
book_order
ON order_items.Order_ID = book_order.ID
INNER JOIN
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Dist_Name	Phone	Title	Quantity	Total_Amount	Ordered_Date	Discount
Chandan	9811771892	Inner Engineering	100	20000	2022-02-10	2000
Chandan	9811771892	Why Suffering	50	30000	2021-02-10	1500
Chandan	9811771892	Living Dangerously	50	15000	2019-02-10	1000
Hari Narayan	9870543621	Encounter the Enlightened	20	40000	2020-04-10	4000
Hari Narayan	9870543621	Karma: A Yogi's Guide to Crafting Your Destiny	30	2000	2020-06-20	200
Hari Narayan	9870543621	Freedom from the Known	20	70000	2017-07-12	3000
Saskar Khadka	9876456312	Broken Wings	75	30000	2021-10-10	3500
Saskar Khadka	9876456312	Living Dangerously	100	50000	2021-11-15	1500
Saskar Khadka	9876456312	Karma: A Yogi's Guide to Crafting Your Destiny	50	4000	2018-06-30	2000
Saskar Khadka	9876456312	Living Dangerously	200	70000	2020-12-30	2000

Q6

```
-- 6 Get the details of all publications with the name starting with an 'A'
SELECT * FROM book WHERE Title LIKE 'A%';
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

ID	Title	No_of_Prints	Print_Date	No_of_Page	Published_Date	Edition	Price	Auth_ID
7	As One is: To Free the Mind from All Conditioning	50	1955-02-13	870	2007-06-15	1st	1299	2
8	Awakening of intelligence	20	2018-04-23	550	1973-02-05	1st	1199	2
9	Awareness: The Key to Living in Balance	25	2018-12-10	750	2001-12-10	1st	1499	3
12	Annie Besant: An Autobiography	65	2021-12-10	850	1893-12-10	3rd	999	6
13	Ancient Wisdom	25	2022-01-10	550	1897-12-10	3rd	699	6
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

Q7

```
-- 7 Find all the orders for a particular book.
--  The result must be sorted based on the order date
SELECT distributor.Dist_Name, distributor.Phone,
        book.Title, order_items.Quantity,
        order_items.Total_Amount,
        order_items.Ordered_Date, order_items.Discount
FROM
order_items
INNER JOIN
book_order
ON order_items.Order_ID = book_order.ID
INNER JOIN
distributor
ON book_order.Dist_ID = distributor.ID
INNER JOIN
book
ON order_items.Book_ID = book.ID
WHERE order_items.Book_ID = (SELECT ID FROM book WHERE Title = "Karma: A Yogi's Guide to Crafting Your Destiny")
ORDER BY order_items.Ordered_date DESC;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Dist_Name	Phone	Title	Quantity	Total_Amount	Ordered_Date	Discount
Hari Narayan	9870543621	Karma: A Yogi's Guide to Crafting Your Destiny	30	2000	2020-06-20	200
Saskar Khadka	9876456312	Karma: A Yogi's Guide to Crafting Your Destiny	50	4000	2018-06-30	2000