CS246: Database Management Systems Lab

Lab # 14 (1 Questions, 55 Marks)

Lab session: AL1

Held on: 22-Apr-2024 (Mon)

Lab Timings: 14:00 to 17:00 Hours Pages: 3 Submission time: $\underline{16:45}$ Hrs, $\underline{08-Apr-2024}$

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- a. This lab assignment is based on the concepts covered in chapter 5 **Advanced SQL** in the CS245 theory class.
- b. You can refer to the text book for SQL syntax.

Question 1: (55 points)

Pivot tables and OLAP functions Using MySQL perform the following tasks:

Task 01 (1 mark) Create a database named week13

Task 02 (3 marks) Create tables

a. A location table containing the following

1^{st} column	$location_id$	integer
2^{nd} column	city	string of characters of fixed size 10
3^{rd} column	state	string of characters of fixed size 2
4^{th} column	country	string of characters of fixed size 20

with location_id as primary key.

b. A product table containing the following

1^{st} column	product_id	integer
2^{nd} column	$product_name$	string of characters of fixed size 10
3^{rd} column	category	string of characters of fixed size 2
4^{th} column	price	integer

with product_id as primary key.

c. A sale table containing the following

1^{st} column	1^{st} column product_id	
2^{nd} column	$time_id$	integer
3^{rd} column	$location_id$	integer
4^{th} column	sales	integer

with product_id, time_id, location_id as primary key.

Task 03 (3 marks) populate data

- a. Populate data from file location.csv into table location
- b. Populate data from file product.csv into table product
- c. Populate data from file sale.csv into table sale

Task 04 (48 marks) Building a pivot table

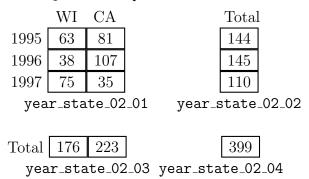
	WI	CA	Total
1995	63	81	144
1996	38	107	145
1997	75	35	110
Total	176	223	399

year_state_01

- a. (12 marks) Construct a pivot table year_state_01 method 01
 - Whose columns are states WI, CA, total
 - Whose rows are years 1995, 1996, 1997, total

by writing the following individual queries to construct the pivot table

- i. Compute the total sales for the state WI in the year 1995
- ii. Compute the total sales for the state CA in the year 1995
- iii. Compute the total sales in the year 1995 for the states (WI, CA)
- iv. Compute the total sales for the state WI in the year 1996
- v. Compute the total sales for the state CA in the year 1996
- vi. Compute the total sales in the year 1996 for the states (WI, CA)
- vii. Compute the total sales for the state WI in the year 1997
- viii. Compute the total sales for the state CA in the year 1997
- ix. Compute the total sales in the year 1997 for the states (WI, CA)
- x. Compute the total sales for the states WI in the years (1995, 1996, 1997)
- xi. Compute the total sales for the states CA in the years (1995, 1996, 1997)
- xii. Compute the total sales for the states (WI, CA) in the years (1995, 1996, 1997)
- xiii. The result of all the above queries should be a year_state pivot table
- b. (12 marks) Construct a pivot table year_state_02 method 02



i. (3 marks) Write a single query using sale, location tables to generate $year_state_02_01$

ii. (3 marks) Write a single query using year_state_02_01 table to generate year_state_02_02

- iii. (3 marks) Write a single query using year_state_02_01 table to generate year_state_02_03
- iv. (3 marks) Write a single query using either year_state_02_02 or year_state_02_03 to generate year_state_02_04
- c. (12 marks) Construct a pivot table $year_state_03$ method 03
 - Compute the pivot table through a **single query**.
 - Hint 1: The query would involve group by over year
 - Hint 2: For each column of the pivot table, use case statement and sum aggregation function
- d. (12 marks) Construct a pivot table year_state_04 method 04
 - (12 marks) Compute the pivot table through rollup operation