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| **Midterm Exam 20221**  **STT**  Subject: IT3290E – DatabaseLab Group: 4  Date: Feb 9, 2023 Duration : 45 **min** | |
| Student ID:  Student Name: | **Note:** |

**For each question, paste your code and a screenshot of the output of each question**

Question 1: (Index)

1. Write SQL query to return a list of records in Inventory having “quan\_in\_stock” greater than 18
2. Write SQL sentence to create a hash index on “inventory.quan\_in\_stock” and show the query plan for query (a) generated by DBMS
3. Write SQL sentence to create a btree index on orderliness.quantity and show the query plan for query (a) generated by DBMS
4. Is there any difference between the query plans generated in b and c ? Explain
5. Drop all the index created in (b) and (c). Write SQL query to return a list of records in Inventory having “quan\_in\_stock” greater than 400 and then redo b,c,d for the new query.
6. Is there any difference between d and e ? Explain

Question 2: (Query)

* 1. Write SQL all possible queries (join, nested queries, …. ) to return a list of different products having “quantity\_in\_stock” (in the relation Inventory) smaller than 100
  2. Compare the query plans generated by DBMS for the above queries. Are they different? Explain
  3. Create relevant index(es) for the above queries and check if index is used. Explain

Question 3 (Trigger)

Write trigger to ensure that the attribute “inventory.sales” and “inventory.quan\_in\_stock” must be updated (increase/decrease) automatically according to the quantity of the product when new order(lines) are added or existing ones are modified. “inventory.sales” and “inventory.quan\_in\_stock” represent the number of product sold and the number of products in the stock.

Question 4: (function)

Write a function to return all products having “quan\_in\_stock” under a given limit (provided as input argument)