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PES University, Bangalore
(Established under Karnataka Act 16 of 2013)

UE16CS312

END SEMESTER ASSESSMENT (ESA) B. TECH. 5TH SEMESTER – December 2018

UE16CS312 - Advanced Database Management Systems

Time: 3 Hours

Answer All Questions

Max Marks: 100

Make suitable assumptions when necessary and state them

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| 1. | a | <p>Design a star schema for the following requirement: A fast food chain of restaurants has a number of branches. The city belongs to a state (like Karnataka etc.), state to a region (like South etc.) and region to the country (like India). The fast food chain operates in a number of countries. It sells a number of food items like Idly, vada, dosa, coffee, tea and other items. Item_type refers to whether the food item is food(solid) or beverage(drink). The billing system captures the time and date on which the transaction is made.</p> <p>Source Schema: item(item_id, item_name, price, item_type). bill_header(bill_id, date_time, branch_id) branch(branch_id, locality, city, address, manager_id). bill_lines(bill_id, line_id, item_id, quantity, price)</p> <p>i. Design and draw a star schema showing all the tables, columns and keys in detail. (4 marks) ii. Identify the dimensional hierarchies in this design. (2 marks) iii. Customers are becoming health conscious. If the manager wants to analyze the sales of items based on whether they have oil or not, what changes should you make and where? (2 marks)</p> | 8 |
| | b | <p>Compare OLTP and OLAP for the following features:</p> <p>i. Number of users iii. Number of records accessed ii. Type of users iv. Type of access</p> | 4 |
| | c | <p>Write SQL statements for the requirements given below: sales(year, month, date, state, city, product_name, sales_amount) i. List the <i>state</i>, <i>product_name</i>, <i>total sales_amount</i> and <i>rank()</i> of the product according to its sales for <i>each state</i> for the year 2017. ii. List the <i>three month moving average</i> of total <i>sales_amount</i> for each <i>product_name</i> for the year 2017.</p> | 4 |
| | d | List and explain any two OLAP operations and any two Data Mining techniques. | 4 |
| 2. | a | <p>Write the diagram for the three architectures for parallel databases. (4 marks) Which of the three is adopted in NoSQL systems and why? (2 marks)</p> | 6 |
| | b | What is I/O parallelism? List and explain the techniques for achieving I/O parallelism. | 4 |
| | c | <p>What is data fragmentation and replication? What are the types of fragmentation? What are the advantages and disadvantages of replication?</p> | 6 |

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