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MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

I SEMESTER M.TECH (SOFTWARE ENGINEERING)
END SEMESTER EXAMINATIONS, NOVEMBER 2017

SUBJECT: ADVANCED DATABASE MANAGEMENT STSTEMS [ICT 5124]

REVISED CREDIT SYSTEM
(23/11/2017)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates

- Answer ALL questions.
- Missing data if any, may be suitably assumed.

1A. Explain the data server architecture and highlight the issues that need to be addressed during its implementation. 5

1B. Find the correlation coefficient for the data given in Table Q.1B by using the Pearson correlation coefficient. 3

Table Q.1B

Age	Glucose_Level
43	99
21	65
25	79
42	75
57	87
59	81

1C. Distinguish between Interquery and Intraquery Parallelism. 2

2A. Compute canonical cover for the following relation R and its functional dependency set F. 5
$R = (A, B, C)$, $F = \{A \rightarrow BC, B \rightarrow C, A \rightarrow B, AB \rightarrow C\}$

2B. List and explain binning techniques for smoothing out the data. 3

2C. Consider a relational schema R=(Student ID, Semester, Lecture, Teaching Assistant) and the set of functional dependency F= { Student ID → Semester, Student ID, Lecture → Teaching Assistant, Student ID, Lecture → Teaching Assistant, Semester}. 2
Find its candidate key.

3A. Compute the frequent items using FP Tree by considering a minimum support count of 2, for the following set of transactions : 5
{T1={I1,I2,I5},T2={I2,I4},T3={I2,I3},T4={I1,I2,I4},T5={I1,I3},T6={I2,I3},T7={I1,I3}, T8={I1,I2,I3,I5},T9={I1,I2,I3}}

3B. Explain three data partitioning strategies with an example each. 3

3C. Distinguish between snowflake and star schema. 2

4A. Consider the data objects given in Table Q.4A which represents the scores of two variables A and B of seven subjects. Use K-means algorithm and Euclidean distance measure to discover two clusters by considering subject 1 and 4, i.e (1.0, 1.0) and (5.0, 7.0) as initial cluster centers. 5

Table Q.4A

Subject	A	B
1	1.0	1.0
2	1.5	2.0
3	3.0	4.0
4	5.0	7.0
5	3.5	5.0
6	4.5	5.0
7	3.5	4.5

4B. Explain the two phase commit protocol. 3

4C. Differentiate between speedup and scaleup in parallel systems. 2

5A. Write a pseudo code for Maximal Frequent Candidate generation procedure in pincer search algorithm. During the execution of Pincer-search Algorithm, it is found that 5
when k=1, L_1 ={ {A} , {B}, {C}, {D, {E} }, S_1 ={ }, MFCS={A,B,C,D,E} ,MFS={}
when k=2, L_2= { {A,B}, {A,C}, {A,E}, {B,C}, {B,D}, {B,E} } and
S_2 = { {A,D}, {C,D},{C,E}, {D,E} }
Find the following:
(i) MFCS , MFS , when k=2
(ii) L_2 after MFS pruning
(iii) C_3 after MFCS Pruning. Indicate all steps.

5B. Explain how fragment and replicate join works with a neat diagram. 3

5C. How do you create and access collection valued attributes in an object oriented databases? 2

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