THE COPPERBELT UNIVERSITY

SCHOOL OF INFORMATION AND COMMUNICATION TECHNOLOGY

CS520 TEST   7th JUNE, 2023

TIME: 2hrs.

Answer all questions and be as brief and as precise as possible in your explanations.

TEST

Q 1   State and briefly discuss four (4) limitations of file-based systems as discussed in class. **[4 Marks]**

Q 2.   State and briefly discuss the two major disadvantages of databases. **[4 Marks]**

Q 3.   A relation is a table with columns and rows. Only applies to logical structure of the database, not the physical structure. What is your understanding of this statement **[4 Marks]**

Q 4   Sate the four (4) guidelines for selecting a Primary Key of relation. **[4 Marks]**

Q 5   State the third normal form synthesis algorithm. **[6 marks]**

Q 6.   Suppose a relational schema R(P, Q, R, S), and set of functional dependency as following:
$P \longrightarrow QR$, $Q \longrightarrow R$, $P \longrightarrow Q$, $PQ \longrightarrow R$, Find the canonical cover. (Minimal set of functional dependency).   **[6 marks]**

Q 7   Let R = (ABCDEGHI) and F = {$AB \longrightarrow E$, $AG \longrightarrow J$, $BE \longrightarrow I$, $E \longrightarrow G$, $GI \longrightarrow H$}
Find a RAP-sequence for $AB \longrightarrow GH$. **[8 marks]**

Q 8   Based on their declaration we can classify variables into two types, use a sample program to discuss these variables. **[6 marks]**

Q 9   Write a PL/SQL function that returns the total number of Employees in the Employee table. (Note: Use the count aggregate function). **[6 marks]**

Q 10   Use the PL/SQL Case statement to evaluate to the commission given to an employee as follows: 0 % to N/A, 10% to low, 40% to high and between 10% and 40% to fair. Print the evaluated commission. **[6 marks]**

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