

BCS Higher Education Qualification

Diploma

May 2021

EXAMINERS' REPORT- Stephan Reiff-Marganec

Examination title – Database Systems

General comments

This exam covered the learning outcomes from the Database Systems syllabus.

Performance overall:

Overall performance was reasonable,

Where few marks were awarded candidates addressed only parts of the questions, did not include examples when asked and generally provided insufficient details. Candidates preferred questions that focused on 'terminology' and abstract concepts to those with 'practical' aspects; however they performed better in the latter where attempted.

It was also noticed that candidates often chose to not answer questions – even a 'weak' answer can attract partial marks so some candidates are losing out by not answering questions.

Questions Report:

| Q1 | Comment |
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| | <p>The vast majority of candidates attempted this question. Around two thirds of the attempts achieved a pass mark.</p> <p>Candidates seemed to either understand the concepts the question was asking for and then provided fairly correct answers (albeit sometimes with insufficient details) or completely misunderstood the concepts. This was particularly true for the concepts of Domain, Relation, Logical Data Independence. On parts b) and c) some candidates did not answer the part of the question related to 'importance' of the respective ideas.</p> |

| Q2 | Comment |
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| | <p>Around half of the candidates attempted this question with the majority achieving a pass mark. Some of the weaker answers simply described some recovery techniques but did not link these in any way to the events in the question; some others stated the event and a suitable recovery technique but did not provide any details of the technique. Some answers considered only one technique as a 'universal method' for all events. Similarly for security measures, answers often lacked detail or mentioned only one technique.</p> <p>The question on data dictionaries was either answered fairly correctly (maybe lacking some detail) or showed complete misunderstanding of the concept.</p> |

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| Q3 | Comment |
| | One third of candidates attempted the question three quarters of whom achieved pass marks. Candidates answered most questions in this section well, making only small mistakes or omitting presenting minor details. Typical faults in the early questions was not to apply the filters correctly (part a and b) or omit the effect of the count clause (part c) and return too many results. On part d) some candidates omitted explaining why answers were different. Overall a good understanding of SQL was shown. |

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| Part B | |
| B4 | <p>Most candidates found developing an ER model from a scenario somewhat challenging. A major problem is that <i>candidates did not appear to take enough care to properly read the scenario before answering the question in the appropriate manner.</i></p> <p>Although it was a fairly popular question with three quarters of the candidates making an attempt, the overall performance was weaker in comparison with other questions. A range of credible solutions was given credit as long as any assumptions that did not contradict the discourse were clearly stated. Candidates would be advised to undertake more practice and gain experience in developing ER models.</p> |
| a) | <p>Identifying Entity Types from the discourse was generally done well, but working out how Entity Types were related in order to ensure referential integrity in the final tables was often unclear. Too many relationships formed connection traps. This was because candidates considered only binary rather than ternary relationships.</p> <p>Part b) If the ER diagram was correct an part a), then the process of mapping to Relations should be straightforward as Entity Types should map directly to Tables. In many cases candidates realised at this stage that tables could not link properly so there was some opportunity to either correct the ERD or simply draft out the tables that would work.</p> |
| B5 | This was a popular question with many good answers throughout all parts of the question. |
| a) | This was a relatively straightforward exercise requiring the construction of familiar statements such as CREATE TABLE statements. Some candidates excelled in producing an answer that showed the execution sequence that a script would follow to prevent a violation of referential integrity. |
| b) | Many candidates struggled with this part of the question. A large variety of answers were submitted, suggesting a lot of thought had been given to it. Some candidates chose the wrong type of join |
| c) | Generally most candidates seemed to be well versed with translating relational algebra expressions to SQL. |
| d) | As in part c) the reverse process of converting SQL to relational Algebra expressions produced a good set of marks on this part. |
| B6 | A very popular question with the vast majority of candidates making an attempt. This syllabus topic covers the Normalisation of a data set to 3 rd Normal Form. A number of candidates continue to struggle to apply the rules of normalisation, but it was pleasing to observe that most candidates seemed to be better prepared compared to previous years. |
| | a) This part was straightforward and generally answered without any problems. |

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| | b) This part was also fairly familiar but many answers would have gained full marks from an example of the cascade effect. |
| | c) This covered normalisation using a step wise approach starting from a set of data that had repeating groups. Hence, it was necessary to follow the process used to achieve 3NF Normal Form, starting with a supplied data set that was in UNF and adopting the usual stepwise approach to move through 1 st and 2 nd to achieve 3 rd normal form |
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