ZIMSEC

For Performance Measurement

ZIMBABWE SCHOOL EXAMINATION COUNCIL

EXAMINERS' REPORT

A LEVEL COMPUTER SCIENCE 6023/2

NOVEMBER 2022 SESSION

Introduction

This report aims to assist and guide teachers and learners in the teaching and learning of Computer Science as a Learning Area. It is important to note that practical skills are essential for candidates to excel in this paper.

General comments

1. Generally, most candidates performed fairly well. The majority of the candidates were able to attempt all the questions in the question paper.
2. In Section A, most candidates demonstrated mastery in developing logic expressions and designing logic circuits. Some candidates were repeating input combinations when constructing truth tables which resulted in repeated outputs. Many candidates exhibited clear understanding of general Computer Architecture concepts.
3. Section B proved to be difficult to the majority of candidates. It was evident that a lot of candidates lacked the high level of practical skills expected in this section.
4. Under Section C, most candidates managed to observe the syntax when performing Structured Query Language (SQL) statements. Candidates managed to create and display tables. Quite a number of candidates were able to produce correct Entity Relationship Diagrams (ERD)s although some failed to use the correct symbols for the diagram.

Specific Question Comments

SECTION A

Question 1

a) Generally, candidates who answered this question managed to score high marks.

i) Most candidates managed to come up with the correct logic expression.

ii) A number of candidates managed to draw the logic diagram with correct symbols and annotation. A few candidates failed to come up the required circuit as a result of mixing up logic gates e.g., where they should have an AND gate, an OR gate was found.

iii) Candidates also managed to construct a truth table with all correct 8 combinations and produced correct output.

b) This part of the question presented some challenges to some candidates who failed to understand how to represent the sequence of instructions on the given diagram but some candidates did well and managed to come up with the correct sequence of instructions D and E during the fetch execute cycle.

Question 2

a) Candidates who attempted this question performed well.

i) Most candidates managed to come up with the correct logic circuit. Also correct logic gate symbols were used to draw the circuit diagram.

ii) A few candidates had challenges in constructing the truth table as some repeated the inputs resulting in repeated outputs.

b) The question presented candidates with an opportunity to use a diagram of choice to explain the steps in the fetch execute cycle. Most candidates managed to draw relevant diagrams illustrating how the fetch execute cycle functions.

SECTION B

This section contributes the most in the overall candidate's performance in this Learning Area.

Question 3

Most candidates had challenges answering this question. This question required programming skills of higher order.

a) Most candidates managed to identify and use a correct built in library where random numbers are defined. Only a few candidates managed to use a randomising function which can generate numbers randomly. Some candidates were able to declare a counter variable, placed inside a loop to count the number of times each number appears when a dice is thrown. A number of candidates

were able to define a loop e.g For/Next….Loop which enables the dice to be thrown 20 times and also conditional statement which checks for number 4 and increments each time the dice is thrown. Quite a number of candidates were able to display the output on the screen showing the number of times 4 appeared during the course of the program.

b) Candidates did well on this part of the question. Most candidates were able to set valid parameters. Most declarations presented by candidates were correct. Many candidates presented correct formulas for calculating the sum of 2 numbers.

c) Generally, the first part of this question was well articulated by candidates. Most candidates managed to correctly declare a global array with 26 characters. The second part of this question was not friendly to many candidates. Almost all candidates who attempted this question performed poorly.

d) Majority of candidates managed to define a main class (Prefect) where other classes are going to inherit from and the other two classes i.e Sports and Club which were going to inherit data members from. Few candidates managed to display encapsulation of members of the Super class which were supposed to be defined as Private so as to be inaccessible from the outside. Some ccandidates defined methods which were used to access data defined within that class as stated by the question. However, some candidates defined methods in the same section where members were defined and sometimes methods were defined first before the methods which breaches the simple rules for defining a class.

e) Most candidates were able to Open a file for Append as well as specifying that it is a Comma separated file through use of .csv extension. A number of candidates had difficulties in properly defining input statements for capturing details which are going to be stored in the file. Writing a record to a file and also closing the file when done writing contents to the file proved challenging for the majority of candidates.

Question 4

a) Generally, the performance on this part of the question was good. Most candidates had fairly good User Interface designs with all the controls correctly named. A few candidates left controls

with their default names. Candidates who did well on this part used the Camel Method naming convention, which is a general convention used when naming controls on windows forms application. However, some candidates did not use any formal method in naming their controls.

b) Most candidates used proper variable names such as name, labourhours, supplierscost, totalcost. Other candidates used meaningless variable names such as a, b and c. The candidates managed to define the supplierscost which was clearly taxed with 15% and the calculations i.e the formulas used were correct. Declared variables by the candidates were properly assigned values after the calculations, thus following logic. Those candidates who did not use variables, clearly managed to use the textboxes, taking into consideration the issue of casting the types to numeric types using val statement. Candidates who used variables also demonstrated the concept of casting when they were assigning their variables.

c) Majority of the candidates managed to correctly apply the IF statement to classify marks according to the needs of the question.

d) A few candidates managed to define the restaurant's two-dimensional array together with the accompanying two loops which controls the row and column respectively. Also, when displaying the output in a 4x4 table two loops were clearly defined to control the rows and columns.

e) Candidates had challenges in defining clear steps when implementing the Tower of Hanoi concept without breaching the rules as clearly articulated in the question. Some candidates were clearly breaching the rules putting a large disk over a smaller one.

f) Most candidates managed the creation of a file in the correct mode for reading. Most candidates demonstrated the calling of a proper defined function which reads all lines in the opened file.

SECTION C

Proved to be a bit easier for the rest of the candidates and the performance was good although some candidates had challenges with the use of quotes ("") on the expressions hence expressing like numeric value.

Question 5

This was the most attempted question by most candidates. Candidates performed above average on this question.

(a) Most candidates were able to create a primary key for the table. However, a handful of candidates were not able to use the Reg. No field as the primary key.

(b) Most candidates scored well on this question. They were able to write SQL commands to produce the table. A few candidates were not able to give field sizes on some of the fields. Some even gave unrealistic filed sizes for example, size 255 for all the fields.

(c) Most candidates scored very well on this question giving the correct SQL syntax. A few wrongly used the ADD statement instead of the INSERT statement.

(d) Most candidates scored very well on this question giving the correct SQL syntax. Few candidates failed to include the Reg. No. and Sport field in their statement but instead gave a statement that displayed all fields form the table.

(e) Most candidates scored very well on this question giving the correct SQL syntax. A few failed to provide the expected condition that will select only candidate MC0708.

(f) Most candidates scored above average on the question. Candidates were able to draw the correct shapes for the Entities and Attributes. Most candidates were not able to identify that Loan entity was a link entity. Those who were able to identify the link entity had challenges in correctly identifying the relationships linking the other entity and the link entity. The one-many relationship was expected on the link entity. Few candidates still fail to draw using the correct shapes for the entities and attributes.

Question 6

Few candidates attempted this question. Candidates performed fairly well on this question.

(a) Most candidates were able to identify the expected relationship (many-one).

(b) (i) Most candidates had challenges on this part question. Candidates were able to identify the NurseID as one of the fields. However, they could not identify WardName as the foreign key in A-Nurse entity.

(ii) Most candidates did not do well on this part question. They failed to explain WardName as the primary key in A-ward that will be used as a foreign key in A-Nurse linking the two tables.

(c) (i) The many-many relationship was correctly identified by most candidates.

(ii) Again, most candidates failed to score well here. Candidates were not able identify the WardName and NurseID as the attributes for B-Ward-Nurse. In most cases candidates included other fields such as Firstname, familyname, NumberOfBeds and Specialism as the attributes. This showed that some candidates were guessing.

(iii) Most candidates were able to identify the entities- but those who failed to identify that Ward-Nurse was a linking entity in c(ii) above also failed to create the Ward-Nurse linking entity. A few who managed to use the Ward-Nurse as a link entity failed to provide the correct relationship.

(d) (i) Most candidates scored fairly well on this part question. Candidates were able to give the correct condition for the SQL statement.

(ii) Most failed to give the correct SQL syntax. Candidates were able to use the UPDATE keyword but failed to use the SET keyword that changes the family name to Makwanzini. Most candidates also failed to give the correct syntax for the search of NurseID 076.

(e) (i) Most candidates were able to give the correct FieldName, Size and DataType but failed to give meaningful Format/Validation. Some candidates even repeated the field size on the Format/Validation.

(ii) Most candidates did well on this question. They were able to design the interface as expected.