



Examination Answer Books

12 Pages

Instructions to Candidates

1. Please give the information requested in the boxes below.
2. Enter your name in the space provided to the right, fold over and seal down (using the label provided) to hide your name.
3. The answers must be legibly written. The Examiners can either ignore illegible script or have it typed and the expense of typing charged to the candidate.
4. Write your answers in ink.
5. Begin each answer on a fresh page. Do all rough work in the answer book and cross it through.
6. No part of this book is to be torn out; it must be handed in complete.
7. If more books than one are used, fasten them together using the tags available from the invigilator(s).
8. Every book must be handed in. In no circumstances may answer books, used or unused, be taken out of the examination venue.

Complete, fold and seal
(see note 2 below)

SURNAME: Richards

FORENAME(S): Ewan

1	Student Number	186121
2	Title of Examination Paper	Software Development
3	Module Code	ACCA4017
4	Date and Time of Examination	09/01/2019 5:09pm
5	Examination Venue	G42
6	Seat Number	
7	Number of Answer Books handed in	1

List the numbers of the questions you have attempted	Office Use
1a	2 ✓
1b	2 ✓
1c	4 ✓
1d	4+5 ✓
2a	0 ✓
2b	2 ✓
2c	10 ✓
3a	5 ✓
3b	1 ✓
4a	7 ✓
4b	4 ✓
4c	5 ✓
Total	51 195 ✓

The queue data structure is a first in first out. Whatever the first item entered in, it will be the first one to be removed. An example of how this data structure works is a printer because the first document to be sent for printing would be released first with the last document being sent to the printer being the last one to be completed. This data structure would be more suitable for this application because it would ~~assist~~ assist with the flow of printing documents efficiently than other data structures.

1b Stack is a linear type of data structure with the operations being followed in a particular order to which they are performed. Stack uses the last in first out order. A suitable computer application that would use the Stack data structure is undo because ~~when reversing~~ it reverses the words entered by the user. It takes out the last letter of each word out first, leaving the first letter entered last. This is the most suitable data structure in this instance because it assists with the removal of letters quicker and it helps with making changes if the user has made mistakes.

1c A recursive algorithm is an algorithm which is associated with smaller and simple input types. It obtains the current input result by applying small operations which is to the returned value for the smaller input. The quicksort may be used instead of other types of sort algorithms because it is able to sort data easily, it is easy to implement in programs, it has a high efficiency reading and it is widely used for sorting a list of only item

size. By using the quicksort algorithm, it's got a good efficiency case ~~which is superior to any other sorting algorithm~~. The quicksort operates by swapping the ~~positions~~ ~~of~~ ~~the~~ ~~items~~ ~~in~~ ~~the~~ ~~right~~ ~~position~~ ~~of~~ ~~the~~ ~~list~~. The quicksort operates by picking out a single item and calls it the pivot. It then reorders the list so that all of the list items that are smaller than the pivot ~~value~~ appear before it and anything that is bigger than the value of the pivot shows come after it. Once this has been completed, the pivot would have reached its final position. When this happens, it is referred to as the partition phase. The higher/lower than the pivot and collection of the pivot from the pivot is repeated until the items reach a smaller or bigger than its ~~tp~~ which is zero or ~~no~~. ~~tp~~ is the ~~shorter~~ ~~none~~ / ~~fine~~ type of pivot.

- 1d Object oriented Programming is a Model where the programs are typically organised around data and objects. This programming model uses classes to be a container for the code and its data. Data within a class ~~and~~ has properties to assist with its access to it. A class generalises an object. This model also uses objects which is an instance of memory as it is usually stored in a class. Any instances would be created using a Dim statement and keyword of New. Object oriented programming also uses attributes. These are keyword tags which information is specified about the defined in any application made in Visual Basic. Attributes are stored in the metadata within an assembly. They can annotate the elements of a program ~~such~~ such as its types, fields, methods and properties. They can also perform an action which is done by an object.

2b The code outputs "false" because on displaying the $= 1.0$ within the Console.WriteLine, it is not the same integer length as what has been declared in the other output double keyword. To modify the code and to change the output to true, I would make the integer length to the other outputs 18 characters including the decimal points. This should then be recognised within the code and the calculation work.

3a
 Start
 Input (NumberList) Declare NumberList as integer
~~Input (NumberList) Output (Please Enter Numbers)~~
 Repeat = false
 For $n = 2$ to $\text{len}(\text{NumberList}) - 1$
 If $2 = \text{NumberList}$
 Temp = $\text{list}(n-1)$
 Removed = true
 Next n
 Until Not removed
 Repeat
 Output "Here is the list, All 2 occurrences have been successfully removed"
 End

4a 1 White box testing is a Software testing method in which the internal structure of an item is tested. The program tester can choose the exercise path input through the code and view if the output is appropriate. The tester would examine the code when it is not being fully used.

2 Black box testing assesses a system solely from the outside (its interface). The testing method

tests programs based on their inputs and ~~output~~ outputs alone. It is a software testing style ~~that~~ that applies to different test methodologies. The testers must draw conclusions based on the input + output results alone.

3 Grey-box testing is a software testing method that tests with limited knowledge of the application code. Context-specific errors that relate to web systems are commonly identified. This increases the coverage of the test by concentrating on one of the layers of any complex system. Grey-box testing is the more popular choice of software development testing because it combines the input of developers as well as testers.

b Unit testing uses units which independently test the proper operation. Unit testing is a pragmatic methodology component that continuously tests and reuses through the software. It initially does unit tests which carries out the testing within the software classes and methods. The next process is functional tests which test collections of classes as subsystems. The final process is Scenario. This process tests the whole system pretending to be the user.

c The incremental build model is a model of software development where the product is designed, implemented and tested incrementally until the product is finished. It involves both development and maintenance. An advantage of incremental development is that it generates working software quickly and

easy during the software life cycle. Iterative development is a way of breaking down the software development of a large application into smaller chunks. In iterative development, feature code is designed, developed and tested in repeated cycles. An advantage of this is that it is more flexible $\rightarrow$ less costly to change scope. A disadvantage to iterative is that each phase is rigid and do not overlap each other. A disadvantage of incremental model is that it needs good planning and design.