GCE AS

wjec cbac

B500U20-1

Z22-B500U20-1

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FRIDAY, 27 MAY 2022 – MORNING

COMPUTER SCIENCE – AS component 2
Practical Programming to Solve Problems

2 hours 15 minutes

INSTRUCTIONS TO CANDIDATES

Answer **all** of questions 1, 2, 3, 4 and 5.

You will need to record all of your answers to questions 1, 2, 3 and 4 in a **single** word-processed document.

Answer only **one** section of question 5. This is the section which requires you to use the Integrated Development Environment (IDE) of your chosen programming language.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets at the end of each question or part-question.

You are reminded of the need for good English and orderly, clear presentation in your answers.

The total number of marks available is 60.

A calculator is allowed in this examination.

You will need a computer with an installed functional copy of the Integrated Development Environment (IDE) appropriate to your chosen programming language and word processing software.

Remember to save your work regularly.

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Scenario

Paul's Pizzeria

Paul's Pizzeria *(PP)* is a specialist restaurant and takeaway serving freshly oven-baked pizzas.

PP is open daily from midday until late.

PP needs many teams of employees to cover its long opening hours working both the restaurant, takeaway collection desk and stone baking kitchen. The business currently records its data on paper and now wants a computerised system to store details of employees and managers.

The current structure of *PP* includes managers, who are responsible for many teams, and employees (waiters, cooks, front of house staff), who belong to one team only. A team will include many employees and be managed by one manager.

The main requirements of the new computer system for *PP* are to:

- Provide a suitable user interface
- Store employee details
- Store manager details
- Accept electronic payment for sales of takeaway and restaurant meals.

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1. (a) Create an entity relationship diagram for **PP** as described in the scenario. There is no need to include any attributes.   [5]

    (b) Create a data structure table for one of the tables stated in your entity relationship diagram.   [10]

2. Select and fully justify your proposed method of solution for the main requirements bulleted in the scenario.   [6]

3. Prepare a class diagram to help the business consider the design of a payment processing system for future financial transactions.

    The class diagram should comprise:

    • one superclass called Transaction. This is to include two private properties of type integer called accNumber and txID, and two public methods which each return an integer called getAccNumber and getTXID
    • a subclass called Credit with one private attribute called value, of type integer and one public method called setValue which accepts an integer parameter.   [7]

4. (a)   *PP* uses wood in its stone ovens to cook the pizzas. Wood burns quickly (two and a half bags per hour) and so *PP* needs to keep sufficient stock of dried wood to keep the ovens hot all day.

PP uses this algorithm to calculate the cost of wood per hour for a four-hour shift.

```
1       woodCost[4,2] is real {array to use}
2
3       costOfWood is real
4
5       input costOfWood
6
7       for h = 0 to 3
8           woodCost[h,0] = h + 1
9           woodCost[h,1] = costOfWood * ((h+1) * 2.5)
10
11      next h
12
```

Copy and complete the table below showing the contents of the array woodCost for the input provided.   [4]

costOfWood = 4.5

woodCost[h,0]				
woodCost[h,1]				

(b)   *PP* intends to use a linear search algorithm to search the array.

Write a linear search algorithm that would be suitable for *PP* to use to search the array called woodCost which is an unsorted 2D array of real numbers. The algorithm should search row 1 and return the value in row 0 as the search result.

Your algorithm should be written using self-documenting identifiers.   [8]

5. Select the programming language of your choice from **Java**, **Visual Basic or Python** and answer **all** the questions.

    (a)   *PP* wants a computer system to be developed that will be used to:

- Store employee details.
- Recall and count specific employee details.

Open the file **PaulsPizzeria**
- Read through the code and familiarise yourself with its contents.
- The file contains incomplete code, which is intended to allow *PP* to store employee details in a file called "employee.txt".

Complete this code.   [8]

Remember to save the changes made to the file PaulsPizzeria

    (b)   Create a new form that will allow *PP* to:

- Input manager details
- Store the details on disk in a text file called manager.txt
- Confirm storage of the details
- Retrieve specified details from disk
- Navigate between the employee data entry form/program and this new form/program.   [12]

Save your work

END OF PAPER

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Instructions to Candidates

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Instructions for candidates

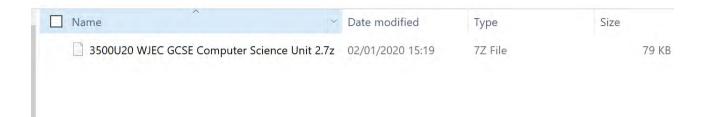## WJEC Eduqas GCE AS Computer Science Component 2 (B500U20-1)

FRIDAY 27 MAY 2022 – MORNING

1. The decryption password for the encrypted media files is ours-_\$#B7gY

2. You will be issued with a Question Paper and instructions for candidates.

3. You will be using:

- A dedicated examination account for this examination only which should be inactive until the examination starts
- 7-Zip pre-installed on each PC
- A pre-installed functional copy of your chosen IDE (Visual Basic, Python or Java)
- Access to a word processing package (e.g. *Microsoft Word)* to produce your candidate responses
- The encrypted media files pre-installed on each PC
- the password for the media files
- An 'empty' user area or storage device (with only the encrypted media files) on which to save the work
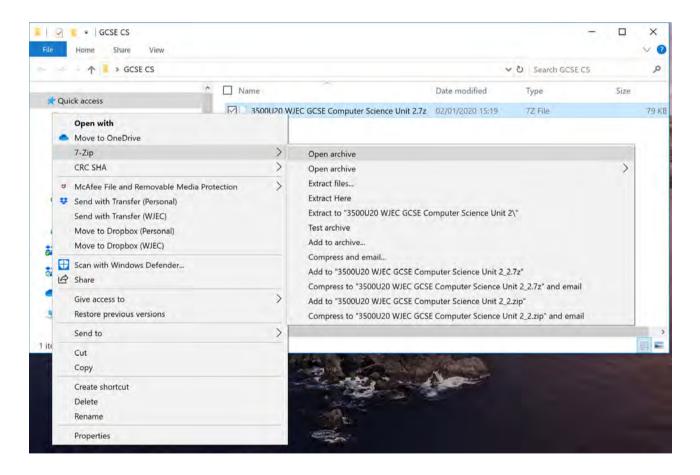
NB: You **must not** have access to the internet, any shared drives, virtual learning environments (VLEs) or email during the examination.

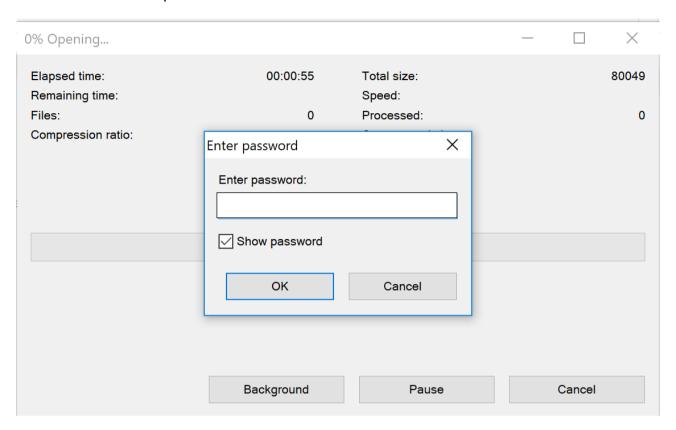**4. In the examination room before the examination starts**

   i. When told to do so by the invigilator, log onto your workstation and follow the instructions below to decrypt the media files using 7-Zip.

   ii. Access your user area on your workstation. Your user area will contain a file with a .7z suffix like this one:

□ Name	Date modified	Type	Size
☐ 3500U20 WJEC GCSE Computer Science Unit 2.7z	02/01/2020 15:19	7Z File	79 KB

   iii. Right click this file, choose 7-Zip and then Open archive as shown below.
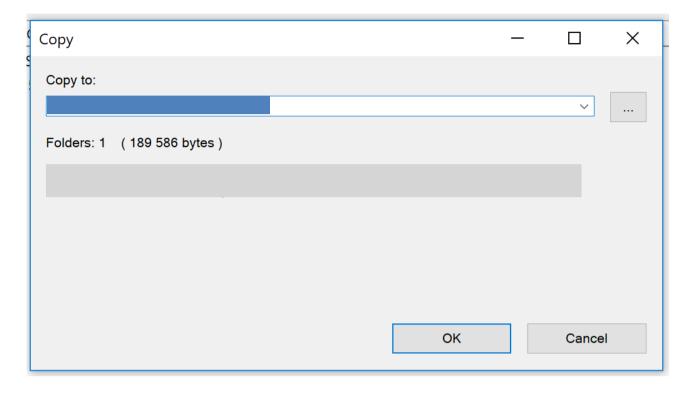
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iv. You will then be asked for the password (this will be case sensitive). You can find this on the first page of these instructions. Type in this password in the box provided. This may be easier if you tick the Show password box as below. Click OK when you've entered the password.

v. In the next window choose extract.
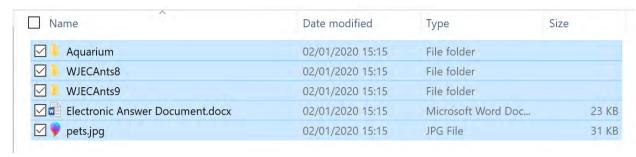
vi. Just click OK at the next window.

Copy	—	□	✕

Copy to:

Folders: 1   (189 586 bytes)

OK   Cancel

vii. The program will then extract all the files you need, and you are ready to start the examination when told to do so by the invigilator.

4

5. In the examination room after the examination has finished.
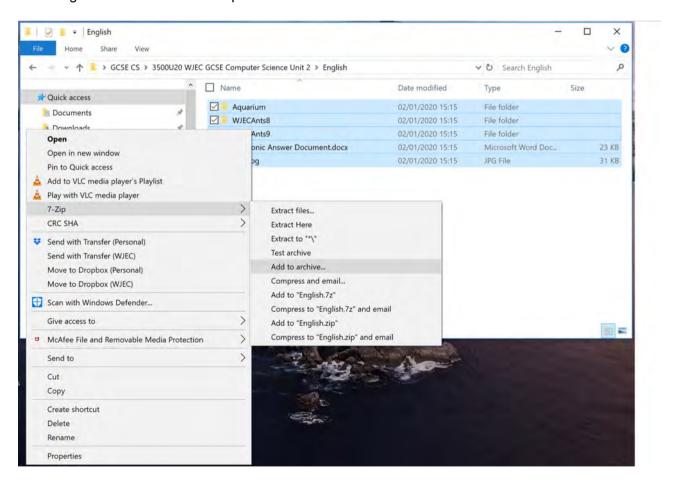
You will need to zip all your files following the instructions below:

i. Highlight all the files in your folder either by pressing Ctrl A or by using the mouse.
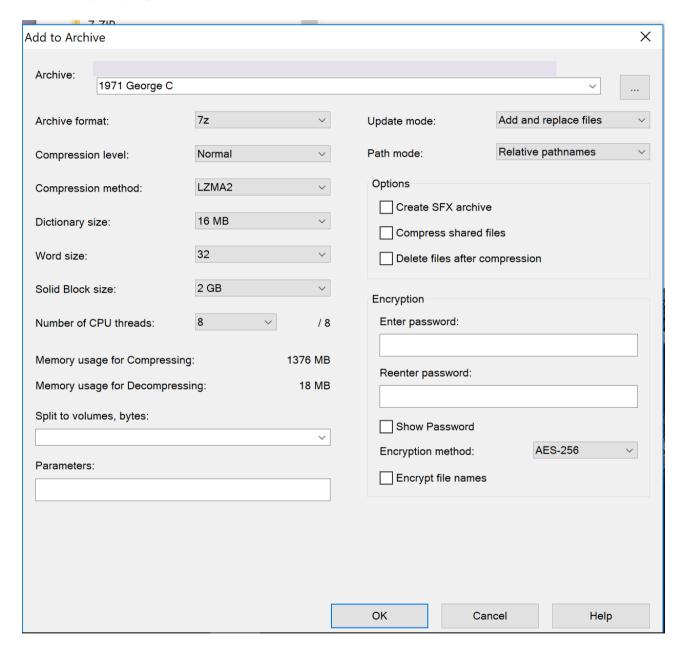

1 Example files only

ii. Right click and choose 7-Zip then Add to archive.

iii. Fill out the archive name with your candidate number followed by your surname and initials.

DO NOT ENTER ANY ENCRYPTION DETAILS. IF YOU DO YOU MAY NOT RECEIVE MARKS FOR YOUR WORK

iv. Then click OK.

6. Leaving the examination room after the examination has finished.

You have now finished and can leave the examination room when told to do so by the invigilation staff.