GCSE

4343/01

COMPUTER SCIENCE
CS3 CONTROLLED ASSIGNMENT

For submission in May 2018 (15 hours)

INSTRUCTIONS TO CANDIDATES

This is one of two scenarios available. Each scenario is available separately. You may choose either of the two scenarios. You will have 15 hours to complete your chosen task.

Research tasks can be carried out outside timed conditions.

Read the scenario carefully to make sure that you understand what is needed.

It is important that you work independently from other candidates and make sure that what you hand in is your own unaided work.

Your report should be about 2,000 words.

Make sure that you check your work carefully to ensure that the work you produce

is accurate and correct. Save your work regularly.

INFORMATION FOR CANDIDATES

Teachers and candidates will be required to sign a declaration that all work presented is the work of the candidate alone. Failure to authenticate the work may result in grades being delayed or refused.

The quality of written communication will be assessed in your evaluation.

Check it out

Sharon has set up a new business producing hand made jewellery. She has been working from home and has been selling her products at local craft fairs. Her designs have proved popular and Sharon wants to expand the market for the jewellery.

Sharon has decided that the business should have a web presence and has set about creating a website for the jewellery. She has also decided to reward repeat customers by issuing them with a loyalty card that can be used to give a 10% discount on orders over £50.00. The loyalty cards will be valid for one year from the date they are issued.

Sharon will need to check if the loyalty card is still valid. Loyalty cards contain an expiry date and an 8 digit number where the eighth digit is a check digit. The 8 digit number can then be used to validate the card number using a modulus 10 check.

Your task is to write an application that will:

- Allow the user to enter the customer's details: name, postcode and loyalty card details
- Check if the card has expired
- Check the loyalty card number is valid by:
    - Allowing the user to enter the 8 digits shown on the front of the card
    - Removing the 8th digit and storing it as 'check_digit'
    - Reversing the numbers
    - Multiplying the 1st, 3rd, 5thand 7th digits by 2
        - If the result of the multiplication is greater than 9 then subtract 9 from the result
    - Adding together the resulting 7 digits
    - Checking if the sum of the added digits plus the 'check_digit' is divisible by 10
- Output whether the loyalty card is valid or not
- Output customer and loyalty card details.

Produce a report fully documenting your solution to automate this process. Credit will be given for the quality of your solution. Your report should be about 2,000 words and designed for someone who is familiar with the content of the specification but has not observed the work being carried out.

I

10% Discount Card

4676 4833

Mrs. J. Osborne

Expiry date 01/01/2018

Example Calculation

	Digit 1	Digit 2	Digit 3	Digit 4	Digit 5	Digit 6	Digit 7	Digit 8	Totals
Card No.	4	6	7	6	4	8	3	3	
								⇧ Stored as Check_digit	
Reversed	3	8	4	6	7	6	4		
Odd x 2	6	8	8	6	14	6	8		
-9	6	8	8	6	5	6	8		
Added up	(6	+ 8	+ 8	+ 6	+ 5	+ 6	+ 8)		= 47
Plus Check_digit						47 + 3			= 50

The number 50 can be divided exactly by 10 and therefore the card number is valid!!

Test data

Sharon has provided you with some card numbers that you should use as test data:

4256 7933
4275 7466
4297 4311
4285 7266
4256 7937
4244 7891
4254 7819
4287 4325
4244 8894
4275 7464