Surname		Centre Number	Candidate Number
Other Names			0

GCSE – **NEW**

wjec cbac

C500U30-1

S18-C500U30-1-R1

eduqas
Part of WJEC

COMPUTER SCIENCE – Component 3
Software Development Task

1 SEPTEMBER 2017

20 hours

C500U301 01

INSTRUCTIONS TO CANDIDATES

You have 20 hours to complete your task.

Read the Information and Task sheets carefully to make sure you understand what is needed.

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

Candidates should complete a refinement log as described overleaf, explaining any issues encountered and resulting refinements to the original design.

Check your work carefully to make sure that the work you produce is accurate and correct.

INFORMATION FOR CANDIDATES

The quality of your written communication, including appropriate use of punctuation and grammar, will be assessed in your report.

Teachers and candidates will be required to sign a declaration that all work presented is the work of the candidate alone.

Have you paid?

Parkwood Vale Athletics Club is a large sporting club that runs football, rugby, hockey and cricket teams. Members of the club can join one of the sections or be a social member of the club. Social members may make use of the clubhouse and the restaurant but not the sporting facilities.

Members can join the club at any time of the year. Memberships run for one year and must be renewed each year. If a member joins the club at any time in March, they will have to renew their subscription at least a week before the beginning of March the following year.

If members do not renew their subscription on time they are sent a reminder letter that their subscription payment is overdue. However it is a time consuming job to check on the memberships that are overdue and send out the reminders to the members.

Sporting members pay £100 per year and social members pay £25 per year. When a membership is overdue there is a penalty of 10 % per month.

You have been asked to create an application that will allow the user to:

- enter and store the details of the members
- enter the type of membership and the date that they joined the club
- search stored records for members whose memberships are due and have not been paid
- calculate the penalty that must be paid (10 % per month)
- output the membership details, how many months overdue and amount to be paid
- record that the membership was overdue.

To produce the application, you should:

- analyse the given information
- design a solution to the given problem
- program the solution to the given problem
- test and refine the application, noting the refinements in your refinement log
- evaluate your application.

Produce a report that includes the sections of work included on the Tasks page. Your report should be approximately 2,000 words.

Tasks

Refinement log [5 marks]

Complete your refinement log as you work through the project.

A copy of the refinement log is included in this document.

Complete your refinement log to show that you have:

- carried out the activities in the correct order
- recorded your progress in each session
- described any problems you have had in carrying out your work in each session
- justified any changes to the original design that have to be made because of problems encountered
- identified logical priorities for actions in the next session.

Make sure you have completed your refinement log every session.

Scope of the Problem [8 marks]

Read the information given in the scenario about Parkwood Vale Athletics Club and its requirements.

Produce a document that:

- clearly summarises the purpose of the project
- identifies the data required to create the application
- identifies the processing to be carried out by the application
- identifies the required outputs from the application
- provides objectives for the project that are manageable and clearly identify the tasks that the application must perform to solve the problem.

Make sure you have completed your refinement log.

Design [12 marks]

Produce a design for the application that includes:

- input and output facilities to be provided by the user interface
- suitable data structures to enable the application to carry out the required tasks
- proposals for validation rules to control data input and limit errors
- designs for input formats including features to aid data entry
- designs for outputs including the intended layout of reports to be generated by the application
- designs for authentication routines
- processing stages as algorithms using standard conventions such as pseudo code or flowcharts.

Make sure you have completed your refinement log.

Effectiveness of Solution [15 marks]

You need to make sure that the finished application:

- is functional and fulfills all the requirements of the scenario
- has an interface that is easy to use
- is modular and makes efficient use of resources
- has authentication routines
- is reliable and robust.

Make sure you have completed your refinement log.

Technical Quality [20 marks]

You need to make sure that you have written code which:

- is self-documenting and well structured
- uses a consistent style throughout including indentation and use of white space
- uses meaningful identifiers and appropriate constants
- uses local variables to minimise the use of global variables
- has validation routines and can handle errors such as division by zero
- has informed annotation to demonstrate your understanding of the solution.

Make sure you have completed your refinement log.

Test Strategy [8 marks] and Testing [8 marks]

You need to plan and carry out testing of your application. Remember to use your Refinement Log to identify problems solved in the development of your application.
Produce a document for this section of the work that shows you have:

- considered your application when developing your test strategy
- provided a description of the test strategy in terms of tests and data to be used
- considered how the outcomes of your testing might identify areas for further development
- produced a detailed test plan
- designed appropriate test data
- followed your test plan in a logical and systematic way
- used a full range of test data
- presented your testing outcomes with detailed commentaries
- used accurate grammar, punctuation and spelling.

Make sure you have completed your refinement log.

Further Development [4 marks]

Produce a Further Development document which:

- considers the outcomes of the testing process in terms of how well the application meets the objectives set at the beginning of the project
- describes the good features of the application and identifies areas for further development
- provides detailed suggestions for specific extensions to the application.

Make sure you have completed your refinement log.

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Non-exam assessment – Software Development Task

Candidate name	Candidate number
Centre name	Centre number

Refinement logbook	
Project title	
Start date	
End date	

Session 1	
Date	
Length of session	
Progress made in this session	
Problems encountered with the project	
Changes made to original designs as a result of problems	
Action plan for next session	
Project plan status (on time, ahead of time, behind time)	
Action plan to manage time	

Session 2	
Date	
Length of session	
Progress made in this session	
Problems encountered with the project	
Changes made to original designs as a result of problems	
Action plan for next session	
Project plan status (on time, ahead of time, behind time)	
Action plan to manage time	

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Non-exam assessment – Software Development Task

Candidate name	Candidate number
Centre name	Centre number

Non-exam assessment				
CRITERIA	**Max. Mark**	**Centre Mark**	**Mod. Mark**	**CENTRE COMMENTS**
Scope of the Problem	8			
Design	12			
Refinement Log	5			
Effectiveness of Solution	15			
Technical Quality	20			
Test Strategy	8			
Testing	8			
Further Development	4			
Total				

TOTAL	80			

Non-exam assessment – Comments

To be completed by the supervisor during the NEA.
Please indicate where help beyond normal supervisory guidance has been given and how this has affected the marks awarded.

List the sources of information used in developing the NEA.

NOTICE TO CANDIDATES

The work you submit for assessment must be your own.

If you copy from someone else, allow another candidate to copy from you, or if you cheat in any other way, you may be disqualified from at least the subject concerned.

DECLARATION BY TEACHER	DECLARATION BY CANDIDATE
I confirm that the candidate's work was conducted under the conditions laid out by the specification. I have authenticated the candidate's work and am satisfied that to the best of my knowledge the work produced is solely that of the candidate. **Teacher's signature:** **Date:**	I have read and understood the **Notice to Candidates** (above). I have produced the attached work without assistance other than that which my teacher has explained is acceptable within the specification. **Candidate's signature:** **Date:**