

**Coursework Task
C206 11**

Intermediate 2 Computing

Valid for session 2011/2012 only

Coursework Task

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Level: Intermediate 2

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Section 1

Organisation and Conditions for Assessment

Organisation and Conditions for Assessment

The assessment is designed to test the candidates' ability to apply knowledge and understanding and practical skills, developed through study of the Computer Systems and Software Development Units.

The notional design length for the assessment is 8 – 10 hours. However, a candidate may be allowed longer than this if required. Sections 2 and 3 should be given to the candidates.

The assessment is to be undertaken under “open book” conditions, but under supervision to ensure that the work submitted is the candidate's own work. The tutor may give the candidate hints and/or help if requested. Any such help should be reflected in the marks awarded. Once the task has been completed and marked, it should not be returned to the candidate for further work.

The task is designed to discriminate between candidates and, therefore, would be expected to provide a wide range of marks. Stronger candidates should be able to complete the task successfully, and without tutor assistance, within the suggested time. Weaker candidates might not complete all aspects of the task within a reasonable time, or may require significant assistance, and so would achieve a lower total mark. Note that there is no requirement for a candidate to achieve a threshold to “pass” the assessment.

The mark obtained out of 30 should be submitted to the SQA unscaled. This will be combined with the Question Paper mark out of 70 to establish the candidate's overall grade of award. The Coursework mark should also be used in preparation of estimate grades.

Section 2

Coursework Task

Coursework Task

Intermediate 2 Computing Coursework Task 2011-2012

Part 1

Runners from across the country are competing for a place at the National Schools Athletics Championships. A qualifying event is due to take place at Carelle High School. Runners who finish within the stated time will go through to the next stage. In addition to recording runners' times, the organisers will take photographs and video clips of the events, burn them on to DVD and sell them to raise funds for the school's athletics club.

The organisers have been given a budget of £800 to purchase the following:

- 1 laptop computer with a built-in DVD writer
- 3 digital cameras with a minimum resolution of 12 megapixels and video capability
- a flash memory card with a minimum capacity of 16Gb. The flash memory card must be compatible with the camera selected.

Tasks		Evidence required
1	<ul style="list-style-type: none">• Identify two laptop computers that would be suitable for the task.• State the <i>speed of processor</i>, <i>main memory capacity</i> and <i>cost</i> of each laptop.• Recommend the laptop that should be purchased. Justify why the laptop you have chosen is preferred for this task.	Report and printouts/photocopies of source material (websites/magazine pages). Highlighting the relevant information on the printouts would be useful.
2	<ul style="list-style-type: none">• Identify two digital cameras that would be suitable for the task.• State the <i>resolution</i> and <i>cost</i> of each.• Recommend the digital camera that should be purchased. Justify why the digital camera you have chosen is preferred for this task.	
3	For the camera you have recommended in task 2 : <ul style="list-style-type: none">• Identify two flash memory cards that could be used.• State the <i>capacity</i> and <i>cost</i> of each.• Recommend the flash memory card that should be purchased. Justify why the flash memory card you have chosen is preferred for this task.	

Part 2

The qualifying event for the 800m race is about to take place. The runners' times are recorded as they complete the first 400m lap and again for the second 400m lap. Runners who complete each lap in 58 seconds or less will qualify for the next stage of the championships. Today there will be a minimum of 2 and maximum of 8 runners in each race.

The program requires the following inputs:

- a valid number of runners
- the name of each runner
- the time taken to run the first lap
- the time taken to run the second lap

The output from the program should display each runner's name and indicate whether they have qualified for the next event.

An example is provided below

Runner Name	Qualified
D Haggerty	Yes

Your task is to create software to determine who will qualify for the next stage of the championships.

The top level algorithm is shown below. Steps 4 and 7 have been refined.

Pseudocode

MAIN STEPS

1. Get valid number of runners
2. Loop for number of runners
3. Get runner's name
4. Get a time for each lap
5. Decide if runner qualifies for next event
6. End loop
7. Display results

REFINEMENTS

4. Get a time for each lap
 - 4.1 Get time for first lap
 - 4.2 Get time for second lap

7. Display results
 - 7.1 Display headings
 - 7.3 Loop for number of runners
 - 7.4 Display runner's name
 - 7.5 Display qualifying decision
 - 7.6 End loop

Tasks		Evidence required																				
1	Refine the following parts of the algorithm: <ul style="list-style-type: none"> • Get valid number of runners (step 1) • Decide if runner qualifies for next event (step 5) (NOTE: <i>all refinements must include an algorithm and not simply use a feature of an event-driven language.</i>)	Pseudocode for steps 1 and 5																				
2	Create a program that matches the refined algorithm.	Listing of program																				
3	Copy and complete the test table below. <table border="1" data-bbox="261 622 831 831"> <thead> <tr> <th>Runner Name</th> <th>First 400m</th> <th>Second 400m</th> <th>Qualified</th> </tr> </thead> <tbody> <tr> <td>D Haggerty</td> <td>56</td> <td>58</td> <td></td> </tr> <tr> <td>S Ahmed</td> <td>55</td> <td>61</td> <td></td> </tr> <tr> <td>L Greenan</td> <td>58</td> <td>58</td> <td></td> </tr> <tr> <td>D Quinton</td> <td>59</td> <td>59</td> <td></td> </tr> </tbody> </table>	Runner Name	First 400m	Second 400m	Qualified	D Haggerty	56	58		S Ahmed	55	61		L Greenan	58	58		D Quinton	59	59		Set of test data
Runner Name	First 400m	Second 400m	Qualified																			
D Haggerty	56	58																				
S Ahmed	55	61																				
L Greenan	58	58																				
D Quinton	59	59																				
4	Test your program using the above test data.	Printed output																				
5	Test the number of runners using exceptional data.	Printed output																				

Section 3

Marking Guidelines

Marking Guidelines

Name _____ Date _____

		Out of	Mark	Comment
Part 1				
Task 1	Identify two suitable laptop computers	1, 0		
	State characteristics (<i>speed of processor, main memory capacity and cost</i>)	1, 0		
	Recommend and justify your choice of laptop computer in terms of characteristics	2, 1, 0		
Task 2	Identify two suitable digital cameras	1, 0		
	State characteristics (<i>resolution and cost</i>)	1, 0		
	Recommend and justify your choice of digital camera based on the characteristics	2, 1, 0		
Task 3	Identify two suitable flash memory cards compatible with the recommended camera.	1, 0		
	State characteristics (<i>capacity and cost</i>)	1, 0		
	Recommend and justify your choice of memory card in terms of characteristics	2, 1, 0		
Stays within budget	Total price of hardware is within £800	1, 0		
Report complete	All evidence is in place	2, 1, 0		

Part 2				
Refine the algorithm	Get valid number of runners (step 1)	2, 1, 0		
	Decide if runner qualifies for the next event (step 5)	2, 1, 0		
Implementation	Get a valid number of runners	2, 1, 0		
	Use of loop in main program	1, 0		
	Use of arrays	2, 1, 0		
	Decide if runner qualifies	2, 1, 0		
	Formatted display	1, 0		
	Implementation matches algorithm	1, 0		
Testing	Program tested using information in test data table	1, 0		
	Number of runners tested using exceptional data	1, 0		
	Overall total	30		

Further Guidelines for Teachers/Lecturers

(Not to be distributed to candidates)

- Teachers/lecturers should read previous years' SQA Internal Assessment Reports for guidance on delivering and marking Coursework Tasks.
- Part 2 of the Coursework Task must be implemented using the algorithm provided.
- If assistance is given, this should be reflected in the marks allocated and noted in the comments column.
- Where 2 marks are allocated in the implementation of Part 2 for **“Get valid number of runners”**: 1 mark for use of a conditional loop with appropriate conditions; 1 mark for displaying suitable message.
- Where 2 marks are allocated in the implementation of Part 2 for the **“Use of arrays”**: 2 marks for use of multiple arrays correctly implemented; 1 mark for use of one array correctly implemented.
- Where 2 marks are allocated in the implementation of Part 2 for **“Decide if runner qualifies”**: 1 mark for correct condition(s); 1 mark for correct logical operator(s).

Section 4

Advice on Recording and Retention of Evidence

Advice on Recording and Retention of Evidence

For each candidate, the following evidence should be retained for possible verification by SQA:

- 1 written reports, program designs, program listings, hard copies and other evidence as detailed in the Coursework Task
- 2 completed marking grid.

The summary form overleaf may be copied for each candidate undertaking the Intermediate 2 Computing Course.

Candidate assessment summary

Name _____ Year of presentation _____

Centre _____ Candidate number _____

Unit assessment

Unit title	Software Development		Date passed	Initials
	Mark			
	1 st attempt	2 nd attempt		
Assessment 1 (Outcome 1)				
Assessment 2 (Outcome 2)				

Unit title	Computer Systems		Date passed	Initials
	Mark			
	1 st attempt	2 nd attempt		
Assessment 1 (Outcome 1)				
Assessment 2 (Outcome 2)				

Unit title			Date passed	Initials
	Mark			
	1 st attempt	2 nd attempt		
Assessment 1 (Outcome 1)				
Assessment 2 (Outcome 2)				

Course assessment

	Mark	Date completed	Initials
Coursework Task (out of 30)			
Estimate examination mark (out of 70)			
Total (out of 100)		Teacher/Lecturer signature	
Estimate grade			