GCE MARKING SCHEME

COMPUTING
AS/Advanced

SUMMER 2011

INTRODUCTION

The marking schemes which follow were those used by WJEC for the Summer 2011 examination in GCE COMPUTING. They were finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conferences were held shortly after the papers were taken so that reference could be made to the full range of candidates' responses, with photocopied scripts forming the basis of discussion. The aim of the conferences was to ensure that the marking schemes were interpreted and applied in the same way by all examiners.

It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conferences, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about these marking schemes.

CG1

1(a)(i) Feature of the email package that will allow the shop to send the same email to many customers is a distribution list / send to many / send to group / mailing list 1

1(a)(ii) Future emails might contain promotions about other products / special offers / product difficulties / surveys / newsletter 1

1(a)(iii) Why some previous customers might not want to receive such emails is because they don't want junk email clogging up inbox / waste time reading 1

1(b) DPA – Any three of 3
Data is processed for limited purposes
Data must be adequate, relevant and not excessive
Data must be accurate and up to date
Personal data stored for no longer than necessary
Processed in line with your rights – individual can check and amend data
Data can only be transferred outside EC to countries with adequate DPA

NOT
Data is fairly and lawfully processed
Held securely

2(a)(i) Character accept char 1

2(a)(ii) Boolean 1

2(a)(iii) Integer 1

2(a)(iv) Real 1

2(b) Record 1

2(c) One mark for each correct dimension 2
MUST have up to 7 columns/rows to indicate number of competitions (condone 1 2 3 …..)
One mark for each dimension

	Member Name	Bob	Jane	Fred				
Comp Num	1	11.37	11.45	11.98	…			
	2	12.02	11.23	11.12	…			
	3	12.56	11.68	11.64	…			
	4	…	…	…	…			
	5							
	6							
	7							

3(a) Candidates are expected to give full answers with examples to support their reasons why the use of voice input for vocabulary dictation may make more mistakes compared to voice input for commands.

One mark for reason why vocabulary dictation might be misinterpreted.
One mark for an example to support the reason.
One mark for reason why command input might not misinterpret for the reason given.

For example an answer worth three marks:
The software for vocabulary dictation may not recognise two words that sound the same (1) for example 'two' and 'to' (1) whereas for command input the system would not have any commands that sound the same (1).

The software may not recognise colloquialisms or local dialect (1) for example 'cwtch' (1) whereas for command input the system would not use these types of words (1).

The software may not recognise strong accents (British or foreign) (1) whereas for command input the system would only have clearly distinct words (1). (NOT TWICE)

The software may not recognise user if he/she has a cold or sore throat (speech impediment) (1) whereas for command input the system would only have clearly distinct words (1). (NOT TWICE)

The software may not recognise vocabulary dictation because background noise is more likely to interfere with words used in everyday English/Welsh language (1), for example if using a laptop in a public place like a train (1), whereas for command input the system would make less mistakes as there are less words to understand and they will be distinct from each other (1).

The software may not recognise proper nouns (1) that are not in any dictionary such as (place names) 'Nantyfyllon' (1) whereas for command input the system would have a list of pre-defined words (1).

Note: Could accept - Voice input for commands is less prone to any of these mistakes as there is only a short list of commands – but only once.

6 marks Candidate gives clear answers for problems associated with the use of voice input for vocabulary dictation (one mark each) with suitable examples (one mark each) and an explanation of why voice input for commands is less prone to these problems.

4-5 marks Candidate gives clear answers (one mark each) for problems associated with the use of voice input for vocabulary dictation with suitable examples (one mark each).

1-3 marks Candidate gives clear answers (one mark each) for problems associated with the use of voice input for vocabulary dictation without examples.

0 marks No appropriate response.

Example answer worth 6 marks (problems with vocabulary dictation including suitable examples and explanation why voice input for commands is less prone to these problems)

The vocabulary dictation software may not recognise two words that sound the same for example 'two' and 'to' but all the commands would be different words that do not sound the same for example 'send', 'save, or 'spell check'. Also some words are only used in certain areas of the country like 'cwtch' or 'hadaway' being used in Wales or Scotland so the vocabulary dictation software may not recognise local dialect, this would not be the case for command input as it would only need to recognise a list of pre-defined command words.

3(b) Analogue to digital conversion will be required for voice recognition because voice is analogue and computers only accept digital input - both ideas required for one mark. 1

4(a)(i) Reasons to recommend a star network.

- If one cable (condone workstation) breaks network can still operate
- Data has to pass through hub (sent direct to workstation) so better security NOT just 'more secure' without explanation
- Easier to extend star / add new stations

Reasons not to recommend a star network

- Lot of expensive cabling required (1) as each station is connected directly to a switch (1) NOT just 'expensive' alone
- Expense of buying switch
- Switch has to be configured and/or managed
- If switch / hub goes down network will fail

Reasons to recommend a bus network

- Cheap and relatively easy to set up (NOT TWICE)

Reasons not to recommend a bus network

- Difficult to extend bus / add new stations (NOT TWICE)
- Response time can deteriorate with many users (many collisions) NOT bus is slower or star is faster
- Break in **bus** or main cable idea – all network down (NOT single workstation down or break in cable)
- All data is broadcast so security can be compromised

NOTE a reason could be extended perhaps with a good example and gain two marks.

3 - 4 marks Candidates give clear answers describing reason(s) for installing one topology and reason(s) for not installing the other topology

1 - 2 marks Candidates describe reason(s) for installing one topology

0 mark No appropriate response

4(a)(ii) Hardware required for laptop would be **wireless** network card (accept adapter) 1
Hardware required for network would be a **wireless** router (or switch) 1

4(b)(i) FTP (File Transfer Protocol); 1

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4 (b)(ii) HTTP (Hypertext Transfer Protocol); 1

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4 (b)(iii) SMTP (Simple Mail Transfer Protocol) 1
Accept POP or POP3 (Post Office Protocol) / IMAP (Internet Message Access Protocol)

5(a) One mark for problem, one mark for solution. Solution **must** follow problem. 2

One other possible problem with the current paper-based system:

A. Difficult and/or time consuming to find customer details NOT just 'difficult to search' alone
B. Paper based systems are difficult and/or time consuming to back up as each piece of paper will have to be copied NOT just 'difficult to back up' alone
C. Time consuming to amend or create customer and/or car details
D. Difficult to sort customer and/or car details (into a useable order) NOT just 'difficult to sort alone
E. Writing can be illegible

Solution (which must follow problem described above)

A. Database would be easy to and quick to search for a customer and/or car details
B. Easy to back up a computerised database
C. It is easy to type data into a database or more likely use data previously stored data
D. Database can quickly sort data into any order required
E. Always able to read writing on screen or could print 'clean copies'

5(b)(i)

The checks must be described correctly with enough detail so that it is clear that the invalid data would be detected by the check described.

One mark for check correctly named or described.
One mark for an example of invalid data that the check described would detect. 2x1

Car engine size

Suitable checks	**Example of invalid data**
Range check to ensure data is between sensible limits for example 0 and 9999	12000, -23
Type check to ensure that a data item is of a particular type; for example, all entries should be digits	Bob or 160j

NOTE - Example of invalid data **must** follow check described

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5(b)(ii) Postcode 2x1

Suitable checks	**Example of invalid data**
Format check to ensure that a data item matches a previously determined pattern; for example, data must only contain digits and match determined pattern ### ########	CF 3EW, CF123 5WED
Length check to ensure that the data entered are of a reasonable length; for example, postcode must be between 7 and 9 characters long	CF 3EW, CF123 5WED

NOTE - Example of invalid data **must** follow check described

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6(a) Compressing images may lose quality (particularly when printing) 1

6(b)

Any one of: 2x1
Compressed images are quicker to upload
Quicker to view web page with compressed images / pages load quicker
Compressed image will take up less space (on the social web site's server)
Server has limited space available

6(c) Use tape or an external/ removable hard disc drive 1
Regularly (periodically) copy all his images (or images added since last back up) to the portable medium. 1
This medium should then be stored in a fire proof safe or stored at another location. 1
Need to purchase a new hard disc and copy all the images from the portable medium back onto the new hard disc. 1

OR
Could purchase disc space from third party on the Internet. 1
Regularly upload all his images (or images added since last back up) to the web site 1
This is secure in case of disaster as is stored at another location. 1
Need to purchase a new hard disc and download all the images from the web site back onto the new hard disc. 1

Example answer worth 4 marks
The photographer will need a suitable device and medium to hold 2000 gigabytes. The device will have to be portable such as a tape drive, an external hard disc drive or a removable hard disc drive. He should regularly like once a week (periodically) copy all his images (or images added since last back up) to the portable medium. This medium should then be stored in a fire proof safe or stored at another location. If there was a disaster and the hard disc destroyed, the photographer could purchase a new hard disc and copy all the images from the portable medium back onto the new hard disc.

7(a) Systems analyst 1

7(b) External entity 1

7(c) 1

7(d) Car owner 1

7(e) (On-line) application approved / declined or result of application 1

7(f) Check MOT and insurance are valid (then approve or decline) 1

7(g) MOT valid or not valid 1

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8 One mark for each correct row in table

Num	Total	Count	Mean
	0	0	0
3	3	1	0
8	11	2	0
2	13	3	0
7	20	4	0
-1	20	4	5

NOTE – deduct one mark if any additional rows are completed.

[Question total 4]

9(a) Manages the resources

Manages peripherals such as input and output devices
Communicates with and sends data output to a printer / monitor / other valid output device
Communicates with and receives data input to a keyboard / mouse / other valid input device

Manages printing using spooling
Data is stored on hard disc/in memory / stored in a queue
Document is printed when printer is free / in correct order
Benefit of spooling - User can carry on working / log off when waiting for job to print

Manages backing store
Ensures that data is stored and can be retrieved correctly from any disc drive
Creates and maintains Filing system such as FAT or NTFS (accepted but not expected)

Organise files in a hierarchical directory structure.

File compression
The amount of data is reduced and the file is made smaller
Compression is used to save disc space

Disc de-fragmentation
Fragmented files are split up and stored on different parts of the disc
Disc fragmentation will slow down disc access speed

Disc de-fragmentation is when file parts are physically re-arranged (re-organised, moved, re-ordered on disc (into the order required for access)

Manages memory (RAM)
Ensures programs / data do not corrupt each other
Ensures all programs and data including itself is stored in correct memory locations

Manages processes
Ensures different processes can utilise the CPU and do not interfere with each other or crash
On a multi-tasking O/S ensure that all tasks appear to run simultaneously

Manages security
Allows creation and deletion of user accounts
Allows users to logon and change passwords

The description of any of the points could be extended with more detail and gain an extra mark.

3 - 5 marks Candidates give a clear, coherent answer fully and accurately describing how the operating system manages system resources.

1 - 2 marks Candidates simply list resources managed by the operating system.

0 marks No appropriate response

9(b) Real time transaction processing could be used by a stadium selling tickets because as a seat is booked, other users are **locked out** (1), the record is **updated immediately** (1) and availability of that seat on that date is immediately removed/changed this **avoids double booking** (1) a seat. 3

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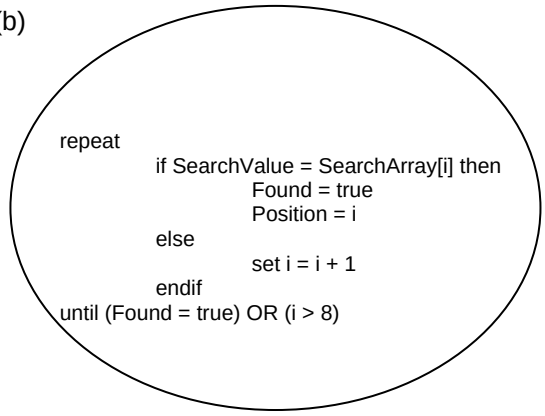
10 (a) Example of self-documenting identifier from the algorithm – any one of: 1

Found
Position
SearchValue
SearchArray
FillArray
Search
Output

Used to make programs easier to read (by different programmer or the same programmer at a later date) 1

10(b)



repeat
if SearchValue = SearchArray[i] then
Found = true
Position = i
else
set i = i + 1
endif
until (Found = true) OR (i > 8)

repetition clearly identified 1
Could be for-next loop

Purpose of loop is to repeatedly execute code (1), until a condition is satisfied (1). 2

10(c) Benefits of using standard functions are: 2x1 2

already been written – no need to write again so saves time
has already been tested/used ("for real") - less likely to have errors
probably been written by experts in the field
ensures consistency between programs – all programmers use the same functions makes programs easier to read than programs where the programmers write all functions differently with diff names etc…

11(a)(i) A field is a single item of data. 1

11(a)(ii) A record is a collection of items all **relating** to an object (1) and is **treated as a unit** for processing (1) 2

11(b) A serial file is where records are not stored in any particular order 1

A sequential file is where records are stored in (primary key) order. 1

To add to a serial file the new record is appended to the end of the file (1) 1

To add to a sequential file, a new file is made by copying the old file until an insertion is required then inserting the new record (1) and copying the rest of the file (1) 2

12 The purpose of a feasibility study is to decide whether a solution is possible (and how it may be completed) or to decide whether the current system can be replaced / is worth replacing.

Activities and outcomes

- Observing / using the current system in operation
- Consulting current documentation
- Carry out a questionnaire of staff / customers
- Interview staff / customers / employees
- A description of the problem / detailed system requirements /a requirements specification is produced
- Different possible methods of solution identified
- Storage requirements are considered
- Different types of HCI considered
- Hardware requirements will be considered
- Legal, social and environmental issues are considered
- Whether the project is technically feasible – does the technology/skills exist to complete the project
- Whether the project can be completed in the time scale - acceptable or projected time scale for the solution produced
- Whether the project can be completed on budget - the projected cost of the solution
- Involves a cost-benefit analysis to decide if a solution is affordable
- Training requirements for staff on the new system are considered

The description of any of the **outcomes** could be extended with more detail or examples and gain an extra mark.

5 - 6 marks Candidates give clear answers describing purpose of a feasibility study and activities and outcomes.

3 - 4 marks Candidates briefly describe activities and outcomes.

1 - 2 marks Candidates briefly list activities and outcomes

0 marks No appropriate response

Example of an answer with outcomes extended (worth more than six marks):
The purpose of a feasibility study is to decide whether a solution is possible and how it may be completed. Activities carried out during initial investigation for a feasibility study will be studying the current system in operation and consulting any current documentation.

The outcomes of the study will include a description of the problem including detailed system requirements and different possible methods of solution will be identified and the chosen method justified.
They will have to decide whether the project can be completed in an acceptable time scale and produce a time plan. Probably the most important outcome is a cost / benefits analysis to determine whether the project can be completed on budget and produce a projected cost for the solution. The data requirements including the amount of data and storage required should be considered and possibly which HCI is most suitable.

13(a) It is good programming practice is use constants in computer programs because if you want to change the value of the constant you only have to change it once at the top and its value will be updated throughout the whole program 1

13(b) Problem is that area might not be an integer or whole number or it might be a real or decimal (and the program may not compile) 1

Amendment - Replace the word Integer with Real (condone single/double/decimal) 1
Area is ~~integer~~ becomes Area is Real

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14 One mark for each correct output 4

Num1	Num2	Num3	Output
3	4	5	5 Finished
4	8	3	8 Finished
7	5	9	9 Finished
6	6	5	Finished
7	9	9	Finished

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15 **Positive effect on social life**

Can make new friends with similar interests
Can make new friends from all round the world not just local area
Can reunite old friends
Can chat with distant friends or family
Can chat with people with similar interests

Can chat/socialise with many people at the same time
Can share pictures etc
Some people don't have many 'real' friends and might be more confident on-line and have many 'cyber friends'

Can be a completely different person on-line with a different social standing for example a good gamer would have respect from on-line community that he/she would not have in real life

Disabled or elderly people may find it more convenient to use than going out which might be difficult

Can set up and join 'interest' groups / organise events / parties

Some people find it easier to talk to strangers particularly about personal issues instead of friends, family or doctor

Can play games
Cheaper to communicate using social web sites compared to phone so save money
Share school / study resources / help with homework (effects social life)

Negative effect on social life

May not go out as often and meet real people which could lead to deterioration in communication skills

People may be more likely to lie or exaggerate as no face to face contact or give out Information that might be inaccurate or misleading

May come into contact with people trying to sell illegal material such as drugs / weapons / pornography / paedophiles

Someone can access your account and delete stuff or pretend to be you ('Fraping' – Facebook rape)

People go out less

People create false accounts and use them inappropriately

People can develop addictive behaviour or become dependant and use the sites continuously

May become victim of 'cyber bullying'

May become victim of 'cyber stalking'

People may gain access to personal information which could be used against them

Could develop heath problems from prolonged computer use such RSI / posture / eye problems

Could become obese / less fit as on computer for prolonged periods and therefore not walking or exercising

Could become distracted from family and friends and become isolated

Individual's information, pictures, socialising can be seen by prospective employers etc… who could use it to vet applicants or landlords to check on prospective tenants

The description of any of the points could be extended with more detail and/or examples and gain extra credit.

8 -11 marks	Candidates give a clear, coherent answer fully and accurately describing and explaining all of the issues. They use appropriate terminology and accurate spelling, punctuation and grammar.
4 – 7 marks	Candidates describe and explain a range of some of the issues, but responses lack clarity. There are a few errors in spelling, punctuation and grammar.
1 – 3 marks	Candidates simply list a range of points or give a brief explanation of issues. The response lacks clarity and there are significant errors in spelling, punctuation and grammar.
0 marks	No appropriate response.

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