GCE MARKING SCHEME

COMPUTING
AS/Advanced

SUMMER 2014

INTRODUCTION

The marking schemes which follow were those used by WJEC for the Summer 2014 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.

GCE COMPUTING - UNIT CG1

Mark Scheme - Summer 2014

Question	Answer	Mark
1(a)	<u>Club could create (and populate) a distribution list which is a group/list/set of ALL members'</u> email address (then the same email can be sent as one operation / to all the group / at the same time)	1
1(b)	Any 4 from: Data is fairly and lawfully processed Held securely Personal data stored for no longer than necessary Personal data shall be adequate, relevant and not excessive Data must be accurate and up to date Data can only be transferred outside EC to countries with adequate DP legislation **NOT** Processed in line with your rights Data is processed for limited purposes	4
2(a)	Real Character (accept char) String	1 1 1
2(b)	Record	1

2(c)	One mark for each correct dimension
	
	Competitor Name
	               Bob Jane Fred
	Dive Num 1 8.3 9.4 8.9 …
	             2 9.0 9.2 9.1 …
	             3 7.5 9.6 8.6 …
	             4 8.4 … … …
	             5 7.9
	             6 8.7
	
	MUST have 6 columns/rows to indicate number of dives
	MUST have at least two names/numbers on other dimension
	
	One mark for each dimension
		2

Question	Answer	Mark
3(a)	One mark for problem, one mark for solution. Solution **must** follow problem. Problems with the current paper-based system: A. Difficult and/or time consuming to find member details when entering museum 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. Difficult and time consuming to amend/add member details D. Writing on paper can be difficult to read due to poor hand writing or paper degradation (NOT just 'difficult to read' alone) Solution (which must follow problem described above) A. Database would be easy to and quick to search for a client details B. Easy to back up a computerised database C. It is easy to overwrite / amend / update data in a database D. Database on screen always consistent and does not degrade	6
3(b)(i)	The check 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. <table><tr><td>**Suitable checks**</td><td>**Example of invalid data**</td></tr><tr><td>Presence check</td><td>Nothing in box</td></tr><tr><td>Range check to ensure data is between sensible limits for example 0 and 99</td><td>12000, -23</td></tr><tr><td>Type check to ensure that a data item is of a particular type; for example, all entries should be digits</td><td>Bob or 160j</td></tr></table> NOTE - Example of invalid data must follow check described	1 1
3(b)(ii)	one verification check that could be carried out on the postcode is by entering twice and **compare** OR post code is entered and **compared** to a stored list of valid postcodes – must have compared idea This check will detect input errors as if they match post code is verified if **no match** then post code might contain input errors	1 1
4(a)	A nearly full disc might: (together idea required) not have enough space **together** to store a large file OR not have enough consecutive (idea required – might not be consecutive depending on interleave) blocks **together** so files are split up (fragmented) and stored on **different parts** of the disc OR read/write heads have to **move** to locate file parts which is slower	1 1

Question	Answer	Mark
4(b)	Disc could be defragmented which means moving parts of a file (closer) **together** (1) (on same track if possible) to reduce **read/write head movement** (1) and therefore reduce access times.	2
4(c)	Solid State Drives can access data more quickly because there are no moving parts.	1
5	Candidates are expected to give full reasons why many mobile devices make use of a touch screen, examples include: • No need for two separate methods, one for input and one for output therefore device can be kept small • Touch screen is intuitive and easy to use and users may be familiar with concept - icons and clicking • Whole screen on the device can be used for output so can use whole screen to watch films (or other media) • Touch screen can be used as a keyboard or for handwriting recognition • Ability to zoom in by clicking or 'pinch and stretch' • Can be made to look like a traditional desk top or any interface with icons etc… • Some people find very small physical keyboard difficult to use • Can play interactive games by touching the screen • Less moving parts (such as buttons) so not susceptible to damage by dust or mechanical wear – robust Additional marks for extension giving examples or more detail. 5 - 6 marks Candidates give a clear, coherent answer fully and accurately describing why many mobile devices make use of a touch screen. 3 - 4 marks Candidates describe why many mobile devices make use of a touch screen 1 - 2 marks Candidates briefly why many mobile devices make use of a touch screen. 0 marks No appropriate response	6
6(a)	Formula similar to below =IF(B6>=B2,"YES","NO") IF B6>=B2 then "YES" else "NO" OR =IF(B6<B2,"NO","YES") OR =IF(B2>B6,"NO","YES") must be strictly greater than One mark for use of 'IF' with correct condition One mark for correct output (Then and Else)	2
6(b)	Absolute	1

Question	Answer	Mark

7	Binary search (All these points may be shown on a diagram)
	    • Calculate/determine mid
	    • Compare to middle element
	    • If not found, search lower or upper half
	    • Repeat until found (or not present)
	
	Alternatively candidates could give an algorithm – accepted not expected
	
	Start = 1
	End = Size of array
	ItemFound = false
	
	repeat
	  Mid = (Start + End) DIV 2
	  if SearchValue = SearchArray(Mid) then item found
	  if SearchValue > SearchArray(Mid) then Start = Mid + 1
	  if SearchValue < SearchArray(Mid) then End = Mid - 1
	until (ItemFound = true) or (End < Start)
	
	if ItemFound = false then output "not present"
	
	Marking
	  Calculation of Mid value 1
	  Comparison 1
	  Calculate Start and End values 1
	  Terminating loop conditions 1
		4

Question	Answer	Mark
8(a)	Process	1
8(b)	Application form Reference Local Authority Reply whether on or not on register	1 1 1 1
9(a)	5, 5, 0	3
9(b)	Standard method will be to use a weighting, for example replace the line set Total = Digit1 + Digit2 + Digit3 with (or similar) set Total = (Digit1 *1) + (Digit2 * 2) + (Digit3 * 3) One mark for method that will produce different codes	1
9(c)	Method above would produce (2*1) + (3*2) + (4*3) Mod 7 = 6 (3*1) + (4*2) + (2*3) Mod 7 = 3	2
10	**size of code** - needs to be small to be stored in ROM on embedded chip in microwave **control over the hardware** - embedded systems like controlling a microwave require control over the hardware **run fast** - real time systems like controlling a microwave require immediate response so has to run fast	3
11(a)	**Any three from:** Provides meaningful icons such as recycle bin Provides menus / dropdown lists for easy choices Allows creation of shortcuts / hotkeys Allows copying / deleting / moving / sorting / searching of files or folders Allows easy navigation of folders Allows customisation of desktop such as change colours and layout Allows user to have more than one window open Allows user to switch between windows Allows user to copy data between windows (applications) Provides user with error/warning/help messages	3

Question	Answer	Mark

11(b)	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
	
	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
	
	5 - 6 marks Candidates give a clear, coherent answer fully and accurately describing how the operating system manages resources.
	3 - 4 marks Candidates describe how the operating system manages resources
	1 - 2 marks Candidates briefly describe or simply lists the resources managed by the operating system.
	0 marks No appropriate response
		6

Question	Answer	Mark
12(a)	<table><tr><td>**Num**</td><td>**Total**</td></tr><tr><td></td><td>0</td></tr><tr><td>2</td><td>2</td></tr><tr><td>8</td><td>10</td></tr><tr><td>5</td><td>15</td></tr><tr><td>-1</td><td>14</td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></table> One mark for each completely completed row Deduct on mark if any additional rows are completed	4
12(b)	The algorithm does not produce the correct result because it adds the terminator (rogue value) to the total (before it exits the loop)	1
13	{initialise variables} integer boolean OR	1 1 1 1
14(a)	RAM cache is memory between the CPU and main memory (sometimes referred to as L2 or L3 cache) where sections of (recently or frequently used) data and/or programs are stored Disc cache is a section of main memory between the CPU and disc where data recently read from disc or about to be written to disc is (temporarily) stored (before being transferred RAM).	1 1 1 1
14(b)	Internet or web cache has advantage of: • view previously viewed page to speed up viewing (as they are read from disc which (is usually) quicker that downloading them again) • storing 'pre-fetched' pages (from information provided with page being viewed other pages are downloaded and cached in anticipation that the user might view them) • storing pages in anticipation of not having internet access in future so pages can still be viewed	1
15	In a sequential file the records are stored in order (1) (usually primary key field) while in a serial file the records are not stored in any order (1) (or order of arrival). To add to a serial file the new record is appended to the end of the file (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) Suitable example of sequential file Suitable example of serial file	5 1 1

Question	Answer	Mark
16	Drawbacks for the customer include: • Customer has to spend time inputting details when updating • Accounts could be hacked and personal details stolen • Data could be deleted or amended on purpose by a third party • Customers might change the data in error • Customer might have to wait for answer to messages • Customer cannot speak to human if there is a problem • Customer has to pay for printing costs if they print the documents Benefits for the company include: • No printing costs for insurance documents (Not twice) • Smaller premises required as no printers or paper required • Save money as no physical documents to move (Fewer employees) • Customer can buy cheaper insurance from these companies as lower overheads • No postage costs of insurance documents • Customer receives new or updated documents very quickly • No accessible office space or shop required for face to face contact • Fewer employees as no call centre or face to face contact • Fewer employees as messaging is more efficient use of employee time than telephone or face to face contact • Company receives feedback very quickly such as errors in document 5 - 6 marks Candidates give a clear, coherent answer fully and accurately describing drawbacks for the customer and benefits for the insurance company possibly with extra detail and examples. 3 - 4 marks Candidates describe drawbacks for the customer and benefits for the insurance company. 1 - 2 marks Candidates briefly describe drawbacks for the customer and/or benefits for the insurance company. 0 marks No appropriate response	6

Question	Answer	Mark
17	**User documentation** User documentation would describe how to use the system to the new users of the system. Contents of user documentation include: Detailed instructions on how to navigate (find features), input data, produce reports etc… Actions to take when error messages are produced. Installation guide. **Maintenance documentation** Maintenance documentation would be used by the original developer or by different programmer at a future date. Contents of maintenance documentation include: Algorithms for all code which are an unambiguous list of instructions to solve a problem (is the code in pseudo code or flowcharts) Annotated listing which is the program code with comments. Data dictionary is a file or printout containing descriptions of, and other information about, the structure of the data (held in a database) used in the system. System testing. **Back up and recovery procedures** Describe how and when data is (or should) be backed up and how to recover the data in event of loss. Contents of back up and recovery procedures documentation include: When data is backed up Where data is backed up Clerical procedures to follow after back up, for example how to securely store backed up data Instructions or steps to recover data after loss **Health and safety issues arising from computer use** Describes health and safety issues arising from computer use and how to avoid them Contents of health and safety issues arising from computer use documentation include: Risk of RSI – use ergonomically / well designed keyboard / wrist rest or straps Risk of Eye strain or headaches - frequent eye checks / safety screen / correct lighting / correct distance from monitor / looking at something else other than monitor regularly	11

Question	Answer	Mark
	Risk of Back or neck problems – sitting correctly / ergonomically / well designed chair, desk, etc…	
	Risk of Radiation from monitors - use of safety screens / frequent breaks (fears of radiation from monitors)	
	Risk of Possible epileptic seizure – warnings on software or avoid games, web sites, packages etc… that could trigger a seizure.	
	8 - 11 marks Candidates give a clear, coherent answer fully and accurately describing **all** types of documentation. They use appropriate terminology and accurate spelling, punctuation and grammar.	
	4 - 7 marks Candidates give a clear, coherent answer describing documentation. There are a few errors in terminology and accurate spelling, punctuation and grammar.	
	1 - 3 marks Candidates give an answer simply describing documentation. There are significant errors in spelling, punctuation and grammar.	
	0 marks No appropriate response	
	Total	100

GCE COMPUTING - UNIT CG3

Mark Scheme - Summer 2014

Q.1   VLE: <u>is a software system / intranet application / facility / tool</u> (**Condone website or program)** designed to help (teachers and pupils) in the (management and) <u>use of learning materials</u>   1
       Both ideas needed for the mark.

       Could be used for instance by pupils to access revision / a classwork assignment / feedback / etc   -   Accept any specific example.   1

       Internet: is a (world-wide) networked information and communication system freely available via any <u>connected computer/device</u>   (**Not** just a large network)   1

       Could be used to research for information not available from the VLE   1

       Drawbacks: any 2 of: 1+1
       - could be used to look at unsuitable material (**needs a reason** eg pornography, hate sites, etc)
       - could be used for time-wasting / to communicate with friends, social media etc
       - could be used to look up answers for tests, etc
       - could allow a virus etc to be downloaded / can carry out illegal downloads etc, eg pirated films or games
       - could make pupils susceptible to paedophiles / cyber-bullying etc
       - information derived from www could be incorrect

Q.2   Data structures are: **any 1 of:**
       - convenient / efficient way of organising/grouping data relating to a real problem 1
       - may be efficient to deal with various elements as one item

       Any 1 of:
       - (binary) tree   1
       - linked list

Q.3   **Any 2 of:**
       - subprogram return address etc   1+1
       - undoing / back for instance on a browser
       - recursion values
       - short-term arithmetical result / reverse Polish calculations **(accepted not exp)**
       - reversing a queue / list

Q.4 Circuit switching: 1

Any 2 **for one mark total**:
- Path is set up between the sender and receiver
- All data follows the same path, in order
- Path cannot be used by any other data

Packet switching:

Any 2 **for one mark total**:   1
- Data split into packets
- Each packet may be transmitted by different routes
- Packets may arrive out of order and are re-assembled

Packet switch preferred:
- Better security as it is very difficult to intercept   1

- Makes more efficient use of data lines as there is no waiting during gaps   1

NOT (as it's in the question) Less likely to be affected by network failure, etc

Content of packet: any 2 of:
- the source address   1+1
- the order number of the packet / reassembly data / assembly data / timestamp
- error control mechanism / check sum / parity bit / etc

NOT (as it's in the question) actual data and destination addresses

An example of an extended answer worth six marks is:

Circuit switching is where a path is set up between the sender and receiver before the start of transmission and is kept open until the end of transmission. All data follows the same path, in order. The path cannot be used by any other data during the transmission.

Packet switching is where the data is split into packets before transmission. Each packet may be transmitted by different routes through network. They may arrive out of order and are re-assembled on arrival.

Packet switching is usually preferred because it results in better security as it is very difficult to intercept and reconstruct the packets. Packet switching also promotes the more efficient use of data lines as there is no waiting during gaps.

A packet could also contain the source address and the order number of the packet

Q.5 Data collision occurs when two sets of data are detected on the network simultaneously   1

Once detected, each computer waits for a short/random time then sends again   1

Q.6 Mask(ing)   1

00000010   1

AND   1

Q.7   Hex: **any 1 of**:
- acts as shorthand for binary   1
- easier for humans to read and understand / fewer characters required than binary
NOT takes up less space

0100 1110 = **4E**   1

Q.8   Advantage of integer form: any 2 of:
- numbers are stored completely accurately / precisely   1+1
- require less complex processing than floating point
- allows for an exact representation of zero
- takes up less storage space

Advantage of floating point form: any 1 of:
- non-integers / real numbers / number with decimals can be stored   1
- greater range of (pos/neg) numbers can be stored

Q.9   <u>Overflow</u>: occurs when the number is too large to be stored (satisfactorily) by the
computer   1

<u>Underflow</u>: occurs when the number is too close to zero (**condone** too small) to be
stored (satisfactorily) by the computer   1

Q.10 Any 1 of:
- enables computer /software (systems) to communicate with each other easily 1
- use of (mainly) just one code avoids confusion/ incompatibility between systems

"d" or d   **Not** "D" or D   1

Q.11 Records stored in key sequence order   1

An index allows data to be accessed directly / index contains key field and disc address
of record / the key field and index are used to locate the position   1

Compared with ordinary sequential:
Allows for faster access because you can access individual records directly   1

Q.12 Archiving is the process of storing data which is no longer in current use   1

It is held for security / legal / historical reason   1

It frees up resources on the main computer system.   1

Q.13 <u>Blocked</u> means that the process is not running because it is waiting for some event
(such as an input/output operation)   1

<u>Ready</u> means that the process is not running because another process is currently
being run / waiting for processor time   1

Q.14 Buffering:
Using an area of memory to store data while transferring to/from a peripheral   1

Single buffering: only one buffer is used   )
Double buffering: while one buffer is being emptied, another can be filled   )   1

Double buffering is quicker as it avoids waiting for the data transfer   1

An example of where double buffering is useful is writing to a screen / in a printer queue
                                                                                        1

An example of an extended answer worth four marks is:

A buffer is an area of computer memory where data is held while transferring it to or from a (slower) peripheral. With double buffering, while one buffer is being emptied, another can be filled. This avoids waiting for the data transfer. An example is a printer queue double buffering system - one buffer can be filled while another one is being emptied to the printer, whereas a single buffer is adequate for a keyboard.

Q.15

Example:

GCSE Grades

	English	Maths	-----	-----	-----
Pupil1	C	A	-----	-----	
Pupil2	B	E	-----	-----	
--------	-----	-----	-----		
--------	-----	-----			

Marking: 1 mark for each dimension   1+1
Must be more than one column / row to get mark for that dimension
If no diagram, max of 1 mark

Three-dimensional array: more complex to program / process   1

Q.16 BNF is used to describe (unambiguously) the syntax / grammar / rules   1
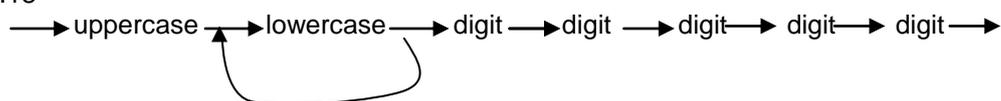of a programming / computer language

Q.17 <upperletter>   ::=   A|B|C| …..|Z
<lowerletter>   ::=   a|b|c| ….. |z   1
<digit>   ::=   0|1|2| ….|9 (**Must have** indication of zero)   1

<name_chars>   ::=   <lowerletter>|<lowerletter><name_chars>   1

<compcode>   ::=<upperletter><name_chars><digit><digit><digit><digit><digit> 1

Accept
<compcode>::=
    <upperletter><name_chars><digit><digit><digit><digit><digit> |
    <upperletter><digit><digit><digit><digit><digit>

[**Marking:**   one mark for attempted recursion even if incorrect:
                 - same item Left and Right + other item(s) on Right are needed
            Can't get 4 unless completely correct
            Notation error max 1 mark lost]

Q.18

uppercase → lowercase → digit → digit → digit → digit → digit →

(with a loop from lowercase back to uppercase/repeat)

Marking: 1 mark for uppercase
1 mark for lowercase plus repeat   1+1+1
1 mark for 5 digits

Q.19 Any partial dependencies must be removed   1

Q.20 Any 1 of:
- Any transitive dependences must be removed   1
- It needs to be ensured that each attribute/field depends only on the primary key

Q.21 A primary key is a field which uniquely identifies a record in a database.   1

Q.22 POET (PoetID, PoetName, PoetDOB)

POEM (PoemTitle, PoetID, DateCompleted)

VENUE (VenueName, Address, AudienceSize)

POETRY-READING (*VenueName, Date, PoetID)*

Marking: Four suitable name tables   1
Each of four tables with suitable PK shown as such (1 mark if 2 or 3 PKs) 2
Each FK shown as such   3x1

Any number of bad fields / bad FKs – remove only 1 mark
Ignore additional / irrelevant fields

Q.23 A pass is made through the data, comparing each value with the following one…   1
… and swapping them if necessary   1

A number of passes is made until the data is in order / no swaps   1

Accept a diagrammatic answer

Q.24 A recursive algorithm is one which calls itself.   1

It must also have a terminating condition / "base case"
(**Condone** idea of unwinding)   1

Quicksort   1

Q.25 Why it's important: any 2 of: 1+1
- Many organisations could not survive if the system failed / data lost
- All computer systems are liable to fail
- You can't always avoid fires, floods, terrorist attacks etc.
- Organisation needs to recover quickly after the disaster

Elements of disaster planning: any 3 of: 1+1+1
- Backups should be made
- Files should be archived off-site
- There should be an alternative system
- There should be a back-up power supply
- Staff need to be trained to be able to recover successfully

Q.26

		Marking	
1	declare Sales array(1..999) of integer (*or real*)		
2	set Total = 0	Initialise and first input	1
3	set Min = 999999 (*or any large number, or can be set to first value*)		
4	set NumLows = 0		
5	input NumStaff		
6	for Count = 1 to NumStaff	(either) Loop structure	1
7	input Sales(Count)		
8	set Total = Total + Sales(Count)	Input and two updates	1
9	if Sales(Count) < Min then set Min = Sales(Count)		
10	endfor		
11	set Mean = Total / NumStaff	Calc and output mean	1
12	output "Mean = ", Mean		
13	for Count = 1 to NumStaff		
14	if Sales(Count) < Mean then		
15	set NumLows = NumLows+1	Update & output in loop	1
16	output Sales(Count)		
17	endif		
18	endfor		
19	output "Total number of values below mean = ", NumLows	Two outputs	1
20	output "Lowest sales figure = ", Min		

[**Marking**: Other approaches are possible and will be given full credit if correct.
No marks are given for brevity/efficiency/elegance]

Q.27

Data is stored on a number of different computers (probably in different locations)   1

It is often more efficient / it will maximise performance to store data in this way   1

It is difficult to ensure that all the data in all the computers is always   1
up-to-date / maintain integrity

Q.28

    <u>4GL:</u>
used in (eg) a relational database system as a query / manipulation language   1

    <u>Why:</u>
aimed at end-users / relatively close to natural language / requires less prog'g skill 1

    <u>Visual Language:</u>
used for production of objects / buttons / icons / GUI / windows / graphics content /
    event driven environment   1

    <u>Why:</u>
may be easier to learn / more intuitive because visual / tools available   1

    <u>Special Purpose Language:</u>
used for simulation, control applications, etc   1

    <u>Why:</u>
may have special features relevant to the application e.g. time analysis elements 1

Q.29 Any 1 of:
- A scripting language (is often embedded in other languages and) can add functionality to web pages, etc   1
- Is the set of commands understood by the application software. Different software usually have different script languages and the scripts cannot always be used with other produces [BCS, 2013]

Q.30   Suitable interfaces **(No mark just for naming interface)**
        GUI
- GUI system is usually easy to learn for a novice user
- GUI system is usually more intuitive to use e.g. icons relevant to the application
- may be similar to other packages with which users are familiar
- can show images/videos etc to promote the clothing / make it appeal to customers
- can have an on-screen / soft keyboard

Touch screen
- generally more robust than eg mouse or keyboard
- easy to use with little comp knowledge/customer may be familiar with touch screen
- can be designed to replicate common mobile phones / tablets (swiping etc)
- takes up less space the keyboard and mouse
- will be attractive to customers
- can have an on-screen / soft keyboard [not twice]

Forms dialogue
- customers can choose items from a list
- may have in-built validation

Unsuitable interfaces **(No mark just for naming interface)**
        Text-based
- time consuming
- not attractive to most customers / not likely to have images
- not easy to learn or use in a crowded environment

Speech recognition interface
- not easy to use in a crowded environment - probably too much background noise
- may be ineffective until computer "learns" customer's speech style: impractical
- may have problems with different accents / different voices, homophones etc

Voice synthesis
- not suitable in noisy environment (particularly if several computers nearby)

Handwriting recognition
- text input may not be appropriate for this application
- not very reliable
- may not be easy to use in a crowded shop

Mouse
- not easy for complete novice users
- easily damaged [not twice]
- could be stolen

Hardware Keyboard **[COULD BE A <u>SUITABLE</u> INTERFACE IF WELL ARGUED]**
- text input not appropriate for this application
- easily damaged [not twice]
- quite large [but not if used as a benefit of eg touchscreen elsewhere in answer] 11

[**Marking**: The description of any point can be extended with more detail to gain extra marks]
8-11   Candidates give a clear, coherent answer fully and accurately describing and
         explaining both suitable and unsuitable interface types. They use appropriate
         terminology and accurate spelling, punctuation and grammar.
4-7   Candidates describe and explain a reasonable part of the subject area, but responses
         lack clarity. There are a few errors in spelling, punctuation and grammar.
0-3   Candidates simply list a range of points or give a brief explanation
         the subject area. The response lacks clarity and there are significant errors in
         spelling, punctuation and grammar.
Maximum of 8 if only suitable interfaces discussed (or if only unsuitable interfaces)]

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