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ALLIANCE

# General Certificate of Education

# Computing 6510

## CPT 2     Principles of Hardware, Software and Applications

# Mark Scheme

*2008 examination - June series*

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this Mark Scheme are available to download from the AQA Website: www.aqa.org.uk

| Qu. | Part | Sub Part | Marking Guidance | Mark | Comments |
|---|---|---|---|---|---|
| 1 | (a) | | Bar Code Reader; *To read the barcode in order to* | | *Reason to use each item* |
| | | | input item number; | | |
| | | | identify purchased item; | | |
| | | | look up the price of the item; | | |
| | | | **A** add to itemised list, **R** input price, | | |
| | | | **I** stock control process | | |
| | | | | | |
| | | | Credit & Debit Card Reader; *To read the chip (or magnetic strip) in order to* | | |
| | | | Input account details; | | |
| | | | validate the card; | | |
| | | | authorise the transaction; | | |
| | | | enable payment; | | |
| | | | **R** debit the account | | |
| | | | | | |
| | | | Touch sensitive screen; | | |
| | | | To display instructions to the customer; | | |
| | | | Display purchases | | |
| | | | To allow input through on-screen menu selections; | | *Including on-screen keyboard* |
| | | | To enter failed bar codes; | | |
| | | | **A** to activate self check-out; allow interactive product search; | | |
| | | | | | |
| | | | Numeric Keypad; | | |
| | | | For the customer to enter the PIN; | | |
| | | | **A** to type in the bar code if the barcode reader fails | | |
| | | | | | |
| | | | Speech synthesizer; | | |
| | | | To give (spoken) instructions to the customer; | | |
| | | | Printer; | | |
| | | | To provide receipt; **I** other uses | **6** | |

| 1 | (b) | | Fewer staff required;     so store saves money;<br>// theft / fraud may increase;   as customers may not register all items in their basket;<br>**A** cost of installation/ increased maintenance/ staff training; for 1 mark | **2** | *1 mark for consequence, 1 mark for 'why' Must be economic consequence for store. Maintenance 'why' only because customers using it so may break down* |
|---|---|---|---|---|---|
| 2 | (a) | (i) | The full name would be different lengths;<br>GCSE subject name would be different lengths;<br>**A**     some fields would have variable no. of characters<br><br>Students will have taken different numbers of GCSEs;<br>**A**      records have a variable number of fields | **2** | *Number of chars in a field*<br><br>*Number of fields*<br><br>*In or out of context* |
| 2 | (a) | (ii) | Special characters to mark the beginning or end of each field; and record;<br>Each field may be preceded by a descriptor field giving its length in bytes;<br>A special field at the start of each record stating the field lengths of all the fields in that record; | **Max 2** | *For 2 marks, characters must be plural.* |
| 2 | (b) | | Would have wasted space; **A** take up more space/ memory<br>Because he would have had to allow a maximum number of GCSEs for all students / a maximum length for the name fields;<br>/ If data entered does not fill a fixed length field, the space is wasted;<br><br>//Would be less complex to process;<br>As each record would be the same length;<br>**R** faster, search<br><br>//Would be able to estimate the file size;<br>By multiplying the record length by the number of records;<br>/as the record length would be known;<br><br>//Would be able to update (/delete)records in situ;<br>If a student retook the exam / or a remark changed the grade;<br><br>//Data too long for field;   would be truncated; | **4** | *For each of **two** effects, 1 mark for effect, 1 mark for 'explain'*<br><br>*If they give 3 or 4 effects, mark all and give the best* |

| 3 | (a) | | New records are added to the end of the file;<br>Records are unsorted; **A** in no particular order<br>R in random order<br>Records are stored in the order in which they are received; **A**<br>one after the other<br>To find a particular record each record has to be checked<br>from the beginning of the file;<br>**A** search through the whole file<br>**A** To update (/delete) a record the file has to be copied;<br>**R** file | **3** | *1 mark for each of three statements* |
| --- | --- | --- | --- | --- | --- |
| 3 | (b) | | As a temporary file to store transaction data / a transaction file / a log file; | **1** | *Not backing up or archiving* |
| 3 | (c) | | By <u>sorting</u> the records / file;<br>**A** ordering<br><br>on a primary key<br>/on a key field;<br>**A** on a particular field | **2** | **A** *sort, re-order*<br><br>*Key sequence, key characteristic – NE*<br>*Not by example* |
| 3 | (d) | | 2 + 24 + 30 + 6 + 8 = <u>70</u> bytes;<br>70 <u>* 250</u> = 17500 bytes; | **2** | *If >1 solution TO* |
| 4 | (a) | | Producing contents / index;<br>Word-wrap round images;<br>Footnotes / endnotes / cross-referencing;<br>Running text / tables / columns etc. over pages;<br>Ability for a group of people to work on the same publication;<br>Columns;<br>Templates / styles;    **R** examples only<br>Interact with scanning / OCR software;<br>Use of image / editing (cropping);<br>Bullet point / numbered lists;<br><br>**R** Saving, printing, etc. | **3** | *NOT: text editing, spell & grammar checking, character (font) & paragraph formatting, use of headers & footers for e.g. page numbering.*<br><br>*Must be distinct and relevant to this book* |
| 4 | (b) | | Copyright, (Design & Patents) (Act);<br>Because they will be including prints and poetry / materials which could be copyright / from external sources;<br>**R** software licenses<br><br>Data Protection (Act);    **R** DPA<br>If they include personal details of living past pupils; | **4** | **A** *approximation to C,D & P*<br><br>*If commenting on how to obey the act, map onto ms if possible* |

| 5 | (a) | (i) | C / D/ K;<br>**I** descriptive terms e.g. Local Disk | **1** | |
|---|-----|-----|------------------------------------------------------|-------|---|
| 5 | (a) | (ii) | 2009Exam/ Grades / Past; | **1** | |
| 5 | (a) | (iii) | K:\2009Exam\Paper1.doc<br>/    K:\2009Exam\Paper2.doc;<br>/    K:\2009Exam\Marks.xls<br><br>Allow / in place of \ | **1** | *Reject if (K:)* |
| 5 | (b) | | The drive the file is stored on;<br>The folder the file is stored in;<br>The filename;    **R** document name<br>The location of the file; (*if drive / folder not given*)<br>**A** What software created it / will be used to access it / type of file; | **3** | *Follow ms closely here*<br><br>*Credit to a max of 3,* |
| 5 | (c) | |  | **1** | ***I** K: in top box*<br><br>*Past and Grades may be interchanged* |
| 6 | | | The computer might not have a CD Reader;<br>The computer might not have the software to interpret the data;<br>The files are in a format  which is /file type may no longer in use;<br>**A** the data stored on the CD-R could have degraded / could have corrupted | **2** | *It is 2050 – hardware and software will have changed!*<br><br>*If 'encryption', must say 'no key'* |
| 7 | (a) | | *collection of* tables / relations;<br><br>*created through* common attributes / shared attributes;<br>**A** common fields / shared fields<br>**A** primary keys and foreign keys<br>(must have both primary & foreign) | **2** | |

| 7 | (b) | (i) | to uniquely identify each record / to uniquely identify a particular instance of an entity; **A** to uniquely identify a member | **1** | *Purpose of primary key* |
|---|-----|-----|---|---|---|
| 7 | (b) | (ii) | because people can change their email addresses; | **1** | |
| 7 | (b) | (iii) | to speed up searching for a particular item; | **1** | |
| 7 | (b) | (iv) | MemberID; | **1** | |

| 7 | (c) | (i) | | | |
|---|-----|-----|---|---|---|

| Field name | ItemOnOffer | Description | MemberID | Email address |
|---|---|---|---|---|
| Table | Item | Item | Item /Member | Member |
| Criterion | *bed* | | | |

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               ;;              ;            ;           ;
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*bed* as criterion in ItemOnOffer - i.e. correct use of wild card 2
Or: bed/ childs bed/ bunk beds, as criterion for ItemOnOffer 1
Or no criterion in ItemOnOffer when *bed* in Description 1

*bed* or *bunk beds* as criterion in Description 2
Or: no criterion in Description 1

MemberId, in table item / table member & no criterion 1
emailAddress in table Member & no criterion 1 — **Max 3**

| 7 | (c) | (ii) | 3 *(if wild card used in either ItemOnOffer or Description)*; 2 *( If *bunk bed* in Description)* 1 *(If criterion for ItemOnOffer 'bed', 'child's bed' or 'bunk beds'* | **1** | |
|---|-----|------|---|---|---|
| 8 | (a) | | Hidden camera to record you entering your PIN; Watch as the PIN is keyed in; False keypads / key logger ; **R** key logger on PC Phishing; Hacking into servers / records where card data is stored; Searching through dustbins to find documents/ interception; **R** skimming, spyware, cloning devices | **2** | *How to get your PIN* |
| 8 | (b) | | By the padlock in the bottom right hand corner of the screen / the browser's indication of a secure site; | **1** | |

| | | | | | |
|---|---|---|---|---|---|
| | | | /By the protocol HTTPS;<br>/It has an authentic certificate; | | |
| 8 | (c) | | encryption;<br>**A** use SSL | **1** | |
| 9 | (a) | (1) | To use with a UserID;<br>(Passwords) are hard to guess / strong or e.g./only known by you;<br>Change them frequently;<br>Encrypt the password lists;<br>Lock out after 3 mistypes of a password; | **2** | |
| 9 | (a) | (2) | (Have virus checking software) which is regularly updated;<br>And run the checker on a regular basis;<br>To prevent the corruption of data files / set to check all files;<br>Treat files found infected by viruses; | **2** | |
| 9 | (a) | (3) | (Set access rights) on files / software / folders / drives;<br>to restrict access / give different levels of access;<br>to those who need it / to different groups of user; | **2** | *n.b.*<br>*unauthorised*<br>*access is in stem* |
| 9 | (b) | | Use a (hardware or software) firewall;<br>To prevent unauthorised access <u>over a network</u>;<br><br>// Encrypt the data;<br>So that if accessed it can only be understood by someone with the decryption key;<br>So an unauthorised user cannot understand the data;<br><br>// Program the computer system to restrict access to certain files;<br>To selected terminals;<br>/At selected times of day;<br><br>// Use a Hardware dongle;<br>So the software runs in restricted mode if not present;<br><br>// Use a keyboard lock;<br>Which disables the keyboard when enabled;<br>(**R** 'locks' twice)<br>When computer unattended;<br><br>// Biometric method of access;<br>e.g. finger print / iris scan;<br><br>// Lock on computer room door;<br>And restrict the personnel who have the code /key | **2** | *A Hacking*<br><br><br><br><br><br><br><br><br><br><br>*Not: passwords*<br><br>*Virus checker*<br><br>*Access rights*<br><br><br>*R all forms of monitoring, including CCTV, and logging software* |
| 9 | (c) | | Natural hazards; **A** by example<br>Accidental destruction; | | |

| | | | | | |
|---|---|---|---|---|---|
| | | | Accidental loss of data;<br>Hardware failure;<br>Terrorism; | **1** | |
| 9 | (d) | | Errors on input;<br>Errors in operating procedures;<br>Program errors;<br>Viruses;<br>Transmission errors;<br>Incorrect data at source; | **2** | *R corruption, hackers* |