



General Certificate in Education

Computing 6511

**CPT2 Principles of Hardware, Software
and Applications**

Report on the Examination

2008 examination - June series

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General

Text in the questions in CPT 2 is kept to a minimum, and is never irrelevant. The text in the stem of questions and part questions is there to explain the details or the context of the question and should be read carefully. Too many candidates clearly did not read all the stems of the questions and then lost marks by not answering the question that was actually asked.

Candidates must remember that in order to be credited with marks, they need to give sufficient detail to show that they have understood the question and can explain their answer. For example, in question 2(a), candidates who just answered 'students names' and 'subjects' gained no marks as they had not said what was relevant about student names and subjects. For this question, all they had to write was, 'student names will vary in length,' and, 'the number of subjects taken could vary,' to gain the full two marks.

Many candidates lost marks in more than one question by the mis-use of, or confusion between, words such as files, fields, entities, records and attributes.

Question 1

Many candidates gained all or most of the marks available for this question, but there were classic mistakes. A bar code does not contain the price of an item. The bar code is scanned in order to input the item code which looks up the price and description on the database. A credit / debit card reader does not actually debit the money owed from the bank account. It reads the account details in order to validate the card and authorise the transaction. A touch sensitive screen is more than an input device; it can display instructions to the customer and display the list of purchases, as well as allowing customers to make selections.

A numeric keypad would be used to enter the PIN or, conceivably, the item code if the bar code failed to scan. It is unlikely that customers would enter how many of an item they were buying. In fact, some candidates talked about a member of staff entering the quantity of items, ignoring the fact that the whole point of the question was that customers checked their goods out for themselves. A number of candidates confused a speech synthesizer with speech recognition, or suggested it could be used to give instructions to blind customers – who would find it difficult to use such a system anyway – and even to the deaf.

Some candidates did not gain marks as they simply said what a device would do 'A numeric keypad is, 'to input numerical data.'" Other candidates' answers referred back to a question in a previous examination series.

Part (b) of this question asked for the economic consequence to the store. A lower wages bill because fewer checkout staff would be needed was worth two marks, but fewer staff needed causing more unemployment was a social, not an economic consequence.

Question 2

Many candidates gained full marks for part (a)(i) which asked for the causes of variable length records in the particular scenario described. A good answer was 'through students' full names having a variable number of characters' and 'through students taking a variable number of subjects'. Unfortunately, this was one question where candidates were sometimes let down by their seeming inability to put into words what they wanted to convey.

Part 2(a)(ii) was not well answered. It appeared that many candidates misinterpreted the question, answering instead how the variable length records could be made fixed length. A

small percentage of candidates did interpret the question correctly to give a good answer gaining full marks.

Many candidates gained full marks for part 2(b), but others did not seem to appreciate that for 4 marks they needed 4 points. So, although the question carefully asked them to 'give and explain' two major effects of using fixed length records, candidates wrote, for example, that the file size would be larger, but did not go on to explain why. As a matter of fact, fixed length records would not necessarily result in faster searching, but in less complex processing.

Question 3

Part (a) was disappointing. Far too many candidates gained no marks because they wrote that serial files were stored in the order they were entered, that the computer had to search through every file to find the one they wanted or that new files were added on to the end. The terms 'records', 'files' and 'data' were used as if they meant the same thing.

Those who clearly knew what serial file organisation is, as shown in part (a), also knew for what serial files were typically used. However, there was a surprising lack of understanding of the process required to convert a serial file into a sequential one. Many realised that the file would need to be sorted, but fewer that it should be sorted on a particular field, or primary key field. Hashing processes were suggested by more than one candidate.

The commonest error in part 3(d) was reading the 16 bit integer as a 16 byte integer. It was very disappointing that some candidates came up with answers such as 8.48 bytes or 60 bytes and did not seem to realise that this was not a sensible answer.

Question 4

It was pleasant to read answers to part (a) that mentioned a feature and suggested why it would be relevant, although this was not actually asked for. This suggested that at least some candidates did read the question and answered it in context. Answers that suggested features of word processing that were not relevant to producing a book, such as mail merge, were not credited. Answers of one or two words, such as 'borders and shading', or 'tables' gained no marks.

Part 4(b) asked candidates to name two Acts and state why they were relevant to the students writing their book. More candidates gave a creditworthy reason for considering the Copyright Designs and Patents Act than the Data Protection Act. The students were considering using material such as photographs, prints and poems which might be subject to copyright. If they included personal details about living past and present pupils they needed to abide by the Data Protection Act. Many candidates answered by correctly naming the Acts but then stated what the students should do in order to comply with them, rather than explaining why those Acts would be relevant in their situation.

Question 5

In part (a), most candidates correctly identified a logical drive and a sub folder, but a surprising number could not provide a correct full file pathname.

In part (b), candidates again lost marks through being too brief. For example, 'Drive' is not sufficient for 'the drive the file is stored on'. Candidates also lost marks by misusing the term 'document' to mean 'file'. The most ironic example of this was an answer 'the type of document

e.g. xls'. Most candidates correctly completed the directory structure diagram, although some tried to put K:, or even Removable Disk K: in the top box.

Question 6

This question was well answered. Many candidates appreciated that hardware and software is changing so fast that current storage media and file formats could become completely obsolete by 2050. Some candidates lost marks by saying that the disk drives would not read CD-Rs; candidates should distinguish between disk drives and CD-Readers.

Question 7

A relational database is a collection of tables in which relationships are created through shared attributes. This is by no means the only definition of a relational database, but it is the definition that follows from the part sentence given in the question. The commonest error was that it was thought of as a collection of records, and the relationships were created through keys. 'Primary and foreign keys' was accepted, but 'keys' or even 'primary keys' was insufficient.

In part (b)(i), a disappointing number of candidates failed to state that the purpose of a primary key is to uniquely identify a record. Simply to say that it was a unique identifier was insufficient. Again, some candidates said what it was 'a unique field' without giving its purpose. An e-mail address is not recommended as a primary key because people change their email address. In part (b)(iii) candidates were asked to answer this question *in context*, so were expected to say that indexing the table on ItemOnOffer would speed up searching for an item. Indexing the table on a field makes searching for that value no easier. Most candidates recognised that the foreign key in the table Item was MemberID.

In part (c), despite the example and explanation to remind candidates of the use of the wild card, only a minority of candidates used it correctly. Marks were also lost by candidates' unwillingness to leave the other criterion cells empty. Many, who put 'bed' as the criterion for ItemOnOffer then thought they would still find 3 results from their search, although the single word 'bed' only appears in one of the records shown.

Question 8

Most candidates gave creditable ways in which fraudsters could obtain a PIN without the owner's knowledge. Key logging on your computer was not accepted, as you never have to enter your full PIN when making an online purchase. Other methods such as hidden cameras, phishing or simply watching over your shoulder were all credited. A significant number of candidates seem to think the PIN could be found on their bank statement.

A purchaser can tell that a site is secure when making an online purchase by the symbol, typically a small closed padlock in the bottom right hand corner of your browser window. Alternatively, a protocol of https denotes a secure site. Typically, personal data is encrypted when being transmitted by a secure site.

Question 9

Part (a) was trying to encourage candidates to give sufficient detail when explaining how three different methods could be used to restrict unauthorised access or corruption to online files. There were some excellent answers to these parts, but candidates who just re-arranged the words in the stem with the specific method were unlikely to gain marks. 'To stop unauthorised

users gaining access to restricted material' could apply to any of the three and contributed nothing to the explanation.

One good suite of answers to part (a) was the following. 'By using strong, difficult to guess passwords made out of both letters and numbers, that are changed regularly to prevent unauthorised access to hardware / software.'. This gained 2 marks. 'By using an up-to-date virus checker that will perform a full system scan and remove / quarantine any viruses found, to prevent deliberate corruption to files' This gained two marks. 'By using appropriate access rights for each user's designated purpose'. This gained one mark.

For section 1 there were many good descriptions of strong passwords. However, too many candidates simply said that passwords would stop unauthorised access or that only authorised people could access the files, which was simply re-writing the stem of the question and so not creditable.

In section 2 it was pleasant to see many candidates noting that virus checkers should be kept up to date and run regularly. Other points that gained credit here was that virus checking software then removed, quarantined or destroyed any viruses found.

Section 3 was the least well answered method. Candidates seemed to have a vague idea of what sort of access rights could be set, but not what effect they could have, such as giving different levels of access to different groups of user.

The most popular responses to part (b) were encrypting data, having a firewall, and biometric methods of restricting access, although there needed to be two good points to earn the two marks available. It was hoped that the way part (a) had been worded would prompt better than usual answers to (b). Backing up data was not credited, as it does not prevent corruption, it provides a means of recovering data which has been corrupted. Similarly, methods of monitoring access do not prevent the problem.

Part (c) was asking for examples of threats other than unauthorised access and deliberate corruption, so answers such as 'hackers' were not credited. There were many acceptable suggestions, the most common being natural disasters such as fire, but also accidental loss or destruction of data and terrorism.

Finally, part (d) asked for two examples of threats to integrity. This was not asking for a definition of integrity, but rather what might damage data integrity. Common correct answers were errors on data input or during transmission, or the data being incorrect at source.

Finally

A final plea on handwriting. CPT2 is now scanned in and marked electronically, on screen. At the same time, the number of candidates whose handwriting is barely legible seems to be increasing. A teacher, who teaches a candidate for a year, can very possibly get used to that candidate's handwriting and be able to interpret it, but coming to it fresh is much more difficult. If we cannot gain any idea of what the candidate is trying to write, we cannot in all honesty give any credit to the answer. This is not a question of poor spelling, but of making any sense of the shapes that are on the script. AQA give permission for some candidates to word process their answers. If you have a candidate with illegible handwriting, please explore with AQA the possibility of this permission being given to them.

Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the [Results Statistics](#) page of the AQA Website.