Examiners' Report

Principal Examiner Feedback

Summer 2024

Pearson Edexcel International GCSE in Computer Science Paper 1 (4CP0_01)

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

Summer 2024

Publications Code 4CP0_01_2406

Introduction

Candidates achieved a range of scores throughout the range of possible marks, with some candidates demonstrating both excellent subject knowledge and contextual application.

REPORT ON INDIVIDUAL QUESTIONS

1 (a) Candidates generally answered this question quite well with almost all achieving at least one mark. Marks were mostly lost where candidates stated both sides of the same point (wider geographical area / local area) as two separate points. Common correct responses related to the geographical range of the respective networks or to the fact that a WAN is a collection of LANs linked together.

1 (b) Many candidates answered this question well with a range of acceptable responses being seen. A minority lost out by giving vague answers such as 'other computers on the network can see your data' without specific reference to unauthorised access. Most responses gave responses related to malware and hacking.

1 (c)(i) A small number of candidates erroneously gave star as the answer, but most gave the correct answer of a partially connected mesh. Mesh topology on its own was accepted.

1 (c)(ii) A number of candidates gave unqualified and vague one-word responses such as 'expensive' or 'complex' and therefore achieved no credit. The most common correct responses cited either the cost or the amount of cabling required.

1 (c)(iii) Fewer candidates achieved two marks for this part of the question. A fairly common error was to state that if one computer in the network went down the others would continue to work, missing the point of the question, which was to justify why this would be the case. Those candidates that did respond well were able to explain fault tolerance in terms of re-routing as there were many potential paths between different nodes.

1 (d) There was a mixed response to this MCQ with fewer candidates giving the correct response than expected, showing that candidates continue to struggle to understand the TCP/IP model topic.

1 (e)(i) Many candidates gave the correct protocol, although some missed off either S, if they had given the acronym for HTTPS, or secure, if they'd written it out in full.

1 (e)(ii) There were many incorrect responses for this question with '*computing'* being the most frequently seen incorrect response, showing the inclusion of the full path rather than the actual document name being retrieved.

2 (a)(i) Many candidates did not clearly identify the purpose of application software and often stated that it was used to do things that would otherwise by be done by hand. Few could link application software to productivity or end-user related tasks. Where candidates gave examples, they tended to score better.

2 (a)(ii) Responses to this question were either very good or very poor. Some candidates referred to the user interface point that had already been given in the question so did not achieve credit. Peripheral / hardware management was the most popular response. One word answers such as scheduling, paging and multi-tasking were seen quite often but did not gain credit because they did not make it clear that the operating system function related to process management or memory management.

2 (b)(i) There were a lot of good responses to this question, but there were some quite general responses such as RAM is volatile, and ROM is non-volatile, which only scored one mark, instead of going on to talk about the purpose of either of them to achieve two marks.

2 (b)(ii) This was very well answered by relatively few candidates, although many did achieve some credit. A number of responses described lasers or pits and lands and gained no credit, confusing magnetic with optical media. Most of those who achieved marks did so from the magnetic polarity point, but fewer candidates went on to mention the mechanics of platters or the read-write head.

2 (c) Whilst many candidates achieved full marks a variety of permutations of the sequence of numbers was seen. Where candidates only scored one mark it was often for correctly identifying the ALU performing a calculation as the final step in the sequence.

2 (d) This MCQ was generally well answered with many candidates selecting the correct option.

3 (a)(i) Most candidates gave one of the equivalent answers, although some contradicted themselves with statements like $2^8 = 128$.

3 (a)(ii) A number of candidates erroneously used 1000 instead of 1024 or used too many or too few 1024s. 1920 * 1080 in the numerator was achieved by most candidates. 16/8 was less frequently awarded, although 1024^2 or its equivalent were often achieved. A pleasing number of candidates achieved all three marks for this question.

3 (a)(iii) This MCQ question was often well done, but -74 was seen as a common incorrect response in many scripts, showing that candidates did not always recognise what was meant by an unsigned integer.

3 (b)(i) Most candidates launched into working for converting a two's complement number to a positive value. Many candidates either subsequently forgot the negative sign and answered 63, or erroneously reached -65 as an answer. 193 was a frequent incorrect answer too. Single marks were awarded for a negative sign or the value 63 but fewer than half gained the full two marks.

3 (b)(ii) Many candidates answered correctly. Some shifted correctly, but left the answer in 9 bits, whilst others erroneously used a 1 to fill the new value in the least significant bit.

3 (b)(iii) Most candidates achieved the mark for naming the overflow error, but fewer explained it in terms of the number of bits available in the register, so missed the second mark.

3 (c)(i) Common responses to this question included the 8-bit 0011 0101, the 7-bit 011 0101 and the denary equivalent 53, although there were cases where the candidate hadn't realised that at least 7 bits were required, so gave 11 0101 as their answer or simply gave it in binary as 0101.

3 (c)(ii) Many candidates produced low scoring responses. Answers were often vague and were not very meaningful, such as 'easy for the computer to understand'. A minority confused encoding with encryption and went down the wrong path with their response. The most common correct responses included representing the English (or Latin) alphabet, using 7 bits, taking up less storage space and being a standard method for encoding.

4 (a) Many candidates gained at least one mark, but often the linked explanation to achieve a second mark proved a step too far. What-if answers and the ability to test scenarios by changing variables were seen frequently. Some responses were very generic, such as "it's faster" and others referred to it being "cheaper" without any attempt to qualify the point made.

4 (b) Many candidates got this MCQ question correct. The most common incorrect response was parallel model.

4 (c) Many candidates misunderstood the question and gave examples of biometric technologies. Some mentioned 2FA/MFA or username/passwords but did not include a linked explanation. Many just described the need for unique passwords but didn't mention a username. Overall, this was not as well answered.

4 (d)(i) A number of candidates gave vague answers such as tiny, microscopic, or 'really small' technology rather than correctly identifying that nanotechnology works on the 10^{-9} scale or works with nanoparticles.

4 (d)(ii) This part of the question was better answered than the first, with many candidates coming up with a sensible example, even if they weren't precise enough in the previous question. Commonly seen answers were to do with self-cleaning glass, followed by medical applications and miniaturisation of transistors.

4 (e) The answer most often seen was a total of 128 bits and 8 blocks * 16 bits. 32 was often identified as bits rather than characters. Whilst many candidates gained one or two marks, few scored all three.

4 (f) Many candidates struggled to structure an extended written response. Points made tended to focus on hacking and employee demotivation. Better responses covered monitoring employee access to restricted areas, consent and data protection. Many responses therefore achieved Level 2 by looking at issues regarding employees on site and passers-by as well as the security of the filmed content. Those who explored the wider consequences achieved Level 3, but very good answers were few and far between.

5 (a) Candidates tended to answer the interpreter and compiler characteristics better than the assembler characteristics. Whilst some candidates scored full marks, many did not score any.

5 (b) Many candidates scored at least one mark for a generic answer, but then struggled to gain the second mark for giving a specific impact within the context of the scenario. Where candidates did contextualise, they often gained the second mark for identifying that the number of instructions per second would be fewer, causing gameplay to lag or to not be as responsive as required.

5 (c) Most candidates gained the mark for file conversion, with many also getting backup/restore and defragmentation. Far fewer candidates successfully identified that file recovery software was required in the first row.

5 (d) The vast majority of candidates answered 'lossless', but many only scored two marks as they didn't further relate that to the context of the instruction manual or proofreader, and only specified that no data would be lost.

5 (e) Many candidates gained some credit for this question, with a good number of candidates getting full marks in what they probably considered to be a difficult topic. Some omitted brackets and there were also a number who omitted operators, such as writing (C OR D) NOT (C AND D), omitting the conjunction.

6 (a) Many candidates appeared to change their response to this MCQ showing indecision. It was disappointing to see many candidates give Array Loop, which doesn't exist, as a response for this question.

6 (b) Whilst there were many correct responses for parts b(i) to b(iv) some candidates struggled with getting the greater than and less than symbols the correct way round, particularly in b(i), and this proved to be the more challenging of the parts.

Candidate responses to (b)(iv) showed an understanding of the need to fix the calculation but some candidates used `index` to subtract from rather than `LENGTH(arrival)`.

6 (c) Many candidates correctly identified that the loop would not stop and would therefore result in an infinite loop if index was not incremented.

6 (d) Many candidates answered well with many able to score 4 or more marks, even if overall they had not done well. Most of the weaker answers had placed Fizz and Buzz in the wrong places. Other common errors included missing off flow arrows, having two yes or two no routes out of a decision box or leaving outputs hanging and not going to the 'stop'. It was encouraging to see nearly all candidates attempt this question at the end of the paper.

Pearson Education Limited. Registered company number 872828
with its registered office at 80 Strand, London, WC2R 0RL, United Kingdom