

BCS Higher Education Qualification

Certificate in IT

October 2024

EXAMINERS' REPORT

Software Development

Questions Report:

A1	
	<p>For part a), many candidates did not correctly translate the given problem into appropriate pseudocode. Many attempts at writing pseudocode omitted reference to any form of code representation and simply provided a narrative.</p> <p>Part b) required the algorithm developed in part a to be represented in a flowchart. Very few answers provided a correct logical flow in the flowchart. In many cases the flowchart was terse and largely incomplete. Marks were gained by correctly identifying the correct standard flowchart symbols</p> <p>Part c) required the modification of the pseudocode from part a) to include error handling. Since most attempts at part a were incomplete and contained no code representation candidates found some difficulty in amending the pseudocode to show appropriate looping conditions and error checking.</p>
A2	
	<p>This question specifically dealt with the impact on future software development of emerging technologies. The majority of candidates gave answers that focused on the impact of emerging technologies to society in general with no particular reference to software development. Many answers were short and simply listed benefits and problems in general from each of the three technologies. In a few cases candidates did acknowledge the potential impacts on software development although this was often appended as an afterthought to a more general discussion.</p> <p>Many candidates did not correctly explain parallel computing in the correct context but tended to confuse the technology with a management method of handling parallel running of systems when upgrading installations.</p> <p>Explanations of the impact of Quantum computing were generally well answered with the challenges of the technology and the implications for software development reasonably well covered. This particular technology gave the best performance in gaining marks for most candidates.</p>
A3	
	<p>This question was the least popular choice but gave the best overall performance of section A of the paper.</p> <p>Part a) was generally well answered with most candidates able to describe four data types however many answers failed to show the representation of the declaration in the chosen language.</p>

	<p>Part b) was concerned with the differences between dynamic and static typing. Many answers discussed typing in terms of monitoring keyboard strokes either dynamically or when saving a document. A sizeable number of candidates did correctly identify dynamic checking as in Python being distinct from static checking typically performed by compiler-based languages.</p> <p>In part c) sub section i), most candidates explained how programming languages handle implicit and explicit typing and were able to cite languages such as Python doing implicit typing with an arithmetic operation and contrasting this with explicit conversion being done by the programmer. Sub section ii) asked for three examples where type conversion is necessary. Many candidates provided only one example and subsequently lost marks.</p>
A4	
	<p>This question was the most popular choice with second best overall performance.</p> <p>For part a) sub section i), answers gave a thorough description of system software; however, in many cases, answers indicated incorrectly that system software was the operating system. Many answers omitted three main components being operating system, language translators and utilities. Answers for sub section ii) repeated the contents of sub section i). Marks would have been gained for mentioning resource management, process and task management, and security and protection etc.</p> <p>In part b), most answers correctly indicated process scheduling, memory management, user interface, control of hardware etc.</p> <p>Many part c) responses incorrectly mentioned Google, compilers, Microsoft office etc. Marks would have been gained for citing antivirus disk cleanup, defragmenter, decompression tools, task manage, file manager etc.</p>
B5	
	<p>This question was not chosen by many candidates. Of those that attempted the question, 37% received a passing grade. A few answers were able to write and modify the function correctly. The majority of answers were showed a misunderstanding what was required.</p>
B6	
	<p>This was a popular question with most candidates answering part a) effectively by identifying Questionnaires, Interviews, Observation, and Surveys as key techniques.</p> <p>Answers to Part b) were not as effective some responses rephrasing what had been written for Part a).</p>
B7	
	<p>This was a popular question with most candidates. Most responses were able to identify and distinguish linear and binary search algorithms. However, some mistakenly discussed sort algorithms (most often bubble sort) in detail. For part c), a minority of candidates were able to explain how BigO notation could be used as a measure of the efficiency of algorithms.</p>
B8	
	<p>A popular question with an overall pass rate of 49%.</p> <p>Most candidates identified queues as FIFO data structures. However, in the second part, many candidates did not apply queue functions to a real-world scenario and spent time discussing ways of entertaining people waiting in a queue.</p>

B9	
	Generally good responses to this question with a 59% pass-rate overall. Marks were not awarded due to sub point ii). For recursion, answers presented functions employing different types of loop with neither including a recursive call.
B10	
	This question was generally answered well. Most students understood what was meant by dry running and the different approaches to testing.
B11	
	This question was generally answered well. Candidates lost marks due to confusion regarding the difference between a class and an object.
B12	
	This question was generally answered well. Some candidates lost marks by only referring to two types of file – sequential and indexed.