

This assessment consists of three tasks.

Candidates should complete all tasks and provide evidence to meet all the marking criteria.

For the following scenario analyse the detailed requirements for each situation and, using suitable algorithms, design a solution to be coded in a suitable high-level programming language. Show the iterative development of the individual solutions with suitable testing throughout the process. Test the final products and evaluate your solutions against the detailed requirements you identified in the analysis.

The results for a task may be used without further testing in any subsequent task, or each of the tasks may be solved as a separate system.

Arithmetic quiz**Task 1**

A primary school teacher wants a computer program to test the basic arithmetic skills of her students. The program should generate a quiz consisting of a series of random questions, using in each case any two numbers and addition, subtraction and multiplication. The system should ask the student's name, then ask 10 questions, output if the answer to each question is correct or not and produce a final score out of 10.

Analyse the requirements in detail and design, code, test and evaluate a program to meet these requirements.

Task 2

The teacher wants to keep track of the scores each member of the class obtains in the quiz. There are three classes in the school and the data should be kept separately for each class.

Analyse the requirements in detail for this program and design, code, test and evaluate a program that will record and store the data for three separate classes of students using the arithmetic quiz.

Task 3

The teacher wants to use the results from students taking these quizzes to log their performance. The system should store the last three scores for each student. The teacher would like to be able to output the results of the quiz for a particular class, sorted:

- in alphabetical order with each student's highest score for the tests
- by the highest score, highest to lowest
- by the average score, highest to lowest.

Analyse the requirements in detail for this program and design, code, test and evaluate a program that will allow the teacher to select which class group to look at and which field to use when sorting the output data.