EDULiTO

Component 2:

Computational thinking, algorithms and programming (J276/02)

Topic Tests

Photocopiable Resources

Contents

Give your students a better chance of success

Edulito is a UK based educational publishing company that has been set up to ensure that students have a real opportunity to fulfil their potential. All of the available resources have been tested in UK schools to ensure that they provide students with a meaningful experience and provide teachers, parents and students with a clear indication of progress.

This resource has been produced to ensure that your students are able to successfully complete the Computational thinking, algorithms and programming component of the OCR Computer Science GCSE (from 2016)

These tests are designed to provide a stimulating, engaging and effective way of assessing the progress of your students. This set of topic tests provides complete coverage of the OCR Computer Systems component and includes 6 standalone tests.

As well as the 6 topic tests, you are also provided with a comprehensive marking scheme for each test. Please be aware that there may be appropriate alternative answers to some of the questions, and it is therefore suggested that the teacher uses their discretion when marking students work.

Terms and Conditions of Use

Your school has permission to copy this resource as many times as you require and to use it as you wish within your school/organisation.

You do not have permission to distribute it as a paper or electronic document to other schools or organisations.

Any questions? Email: edulitolearn@gmail.com

Topic Test 2.1 Algorithms

1 (a) Match each word to the correct definition. [4]

1 **Algorithm**	**A** This involves filtering out (or ignoring) the characteristics that we don't need in order to concentrate on those that we do.
2 **Decompose**	**B** It involves breaking down a complex problem or system into smaller parts that are more manageable and easier to understand.
3 **Pattern Recognition**	**C** This is a list of rules to follow in order to solve a problem. The steps need to be in the right order.
4 **Abstraction**	**D** Once we have broken down a complex problem, it helps to examine the small problems for similarities. These similarities can help us to solve complex problems more efficiently.

(b) What is meant by the term Algorithmic Thinking? [2]

……

……

……

……

(c) Why is algorithmic thinking used in programming? [1]

……

……

……

……

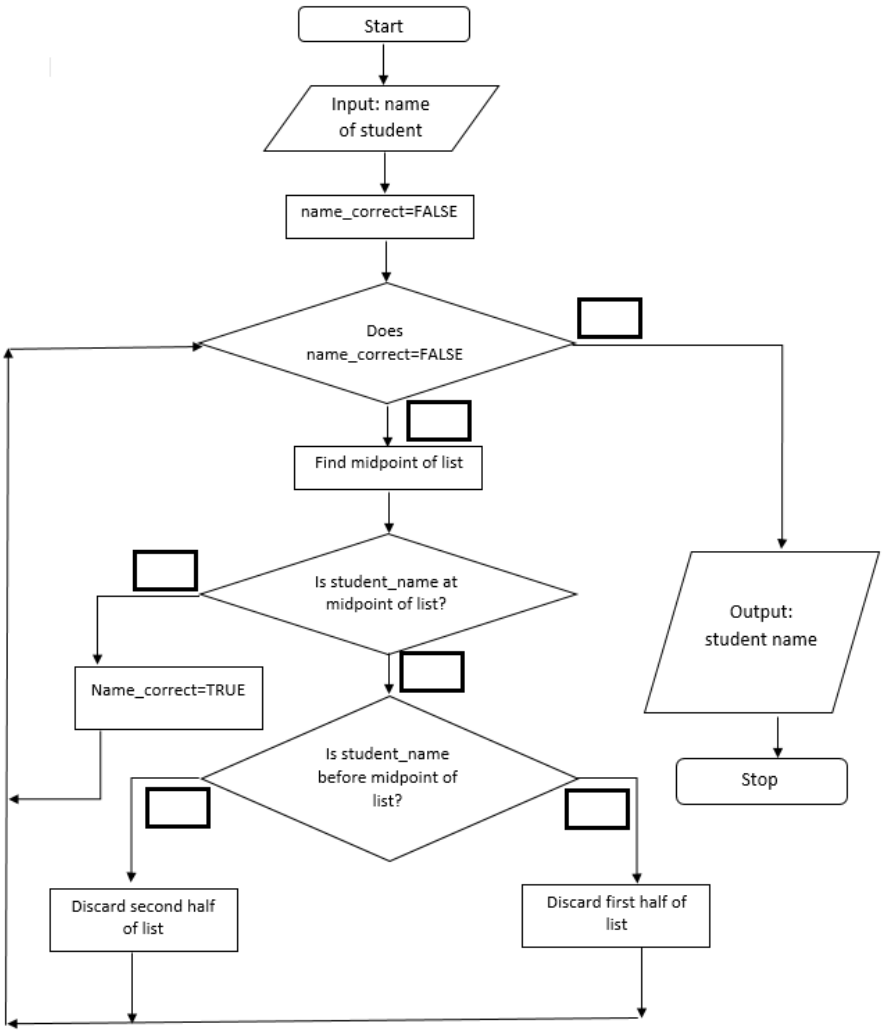
2. (a) Use the list of words to complete this document. [7]

faster linear number match splits tries binary

A …….. search starts at the beginning of the sequence of information and tries to find a……. Once it has found a match it stops.

Another type of search is called a **……** search. This type of search …… the parts of the list being searched into two with each check. This makes it ……than a linear search. For example, if you were playing a number guessing game and had to guess a …….. between 1 and 10, it would not take more than 3 ……, if you always choose the middle number each time and you were told whether the number was higher or lower.

2 (b) This is an example of a binary search. It can be used to search for a particular student name. Complete the algorithm by adding **T** for True and **F** for FALSE to the empty boxes. [6]



2 (c) What is a linear search? [3]

……

……

……

……

……

……

2 (d) Using pseudocode or a flow chart, write an algorithm for a linear search in the space provided below. [4]