

## AS Computer Science Holiday Assignment 2020-21

This assignment consists of three mini-tasks and you are expected to complete all of them.

### 1. Algorithm consolidation exercise

The following exercise will give you a good introduction to the basics of programming by introducing Algorithms, their use and practical application.

**Go to this webpage:** <https://www.bbc.co.uk/bitesize/guides/z6m7xfr/revision/1>

**Study the associated 3 pages on Algorithm Production. Then answer these questions:**

- 1A) What is an algorithm?
- B) What is a Program?
- C) What is Pseudocode?
- D) What is a Flowchart?

### 2. Common Algorithms - Searching and Sorting algorithms

**Go to this webpage:** <https://www.bbc.co.uk/bitesize/guides/zjdkw6f/revision/1>

Study the associated 6 pages and then perform the following tasks:

- 2A) Describe Linear and Binary Search and
- 2B) compare them when used to search for an item that is at the first position, Middle position and last position in a list of 100 items.
- 2C) Describe and compare Bubble Sort and Insertion Sort.
- 2D) Show how you apply each method when applied to sort the following list into ascending order 7, 11, 10, 5, 12, 4, 18, 15.

### 3. Computational Thinking – Decomposition, Pattern Recognition, Abstraction.

**Go to this webpage:** <https://www.bbc.co.uk/bitesize/guides/z4rbci6/revision/1>

Study the associated 3 pages then tackle the following tasks:

- 3A) Describe Decomposition, Pattern recognition and Abstraction.  
Two other computational thinking methods include thinking logically, thinking ahead,  
thinking procedurally and thinking concurrently.
- 3B) Research and describe:
  - i) thinking logically,
  - ii) thinking procedurally,
  - iii) thinking concurrently.
- 3C) How are the methods applicable to making a good cup of tea?

If you have any difficulties regarding any of these tasks or want to find out more about the course, then e-mail me: [jnn@havering-sfc.ac.uk](mailto:jnn@havering-sfc.ac.uk)



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