ECM1400 Programming
Continuous Assessment 1

Date set:	28th September, 2020
Hand-in date:	**11:59am 16th October, 2020**

This continuous assessment (CA) comprises 20% of the module assessment.

Note that electronic submission is required and instructions are provided at the end of the specification.

This CA is designed to test the programming concepts around algorithm design and text handling that are covered in the first two weeks. The submission requires flowchart and pseudo code representations, no Python code.

Specification

Word searches are a common word and letter game played on paper by children to learn about letters and words and by adults to hone their cognitive alertness. In this programming assignment you are required to design a program using flowcharts and pseudo code to create and enable gameplay of word searches on a command-line interface.

You will use the words file, `words.txt`, to create word search boards and then present these in the command-line. The player will then input coordinates of word answers that will be verified as true or false. The time taken to complete the word search as well as the number and length of words found will be used to dictate the points scored and returned to the user at the end of the game.

The specification has been broken down into four sections each worth 10 marks.

- **Creating the word search board**

  Create a function (nested algorithm) called `create word search` that returns a sqaure matrix of letters. The matrix should contain an appropriate number of words from the `words.txt` file.

  [10 marks]

- **Check answers against word search board**

Create a function (nested algorithm) called `check answer` that asks the user for the start and end coordinates of a user guess and the word that is being guessed. The function should check the correctness of the answer by checking the coordinates and word match the current word search board and check that the word is present in the `words.txt` file.

[10 marks]

- **User interface**

  Create a `main` module (parent algorithm) that contains functions (nested algorithms) for user interactions, including a function to format the word search board for command-line presentation and a function to record the time at the start and end of the game. All user inputs should be processed to detect keywords 'FINISH', 'ANSWERS' and 'AGAIN'.

  [10 marks]

- **Gameplay logic and project delivery**

  Modify the `main` module (parent algorithm) to create a routine that coorindates the gameplay logic in appropriate contructs making good use of the nested algorithms specified above. The game should start with a welcome message and should be terminated at any point when the user enters 'FINISH'. The game should also restart at any point that the user enters 'AGAIN' and all possible answers shold be returned if the user enters 'ANSWERS'. Before any of these gameplay terminator routines are executed the program should display the points scored. The user scores points for any correct words enetered within 5 minutes of starting the game and the number of points scored is the length of the words that are found.

  [10 marks]

You should carefully follow the functionality described. Note the requirements intentionally do not include some details and you should make design decisions carefully.

Submitting your work

The CA requires electronic submission to the BART online submission platform.

Electronic You should submit your flowcharts and pseudo code via the electronic submission system at `https://bart.exeter.ac.uk/` under CEMPS and Harrison. Use the category containing ECM1400 and 2020-21 Continuous Assessment 1. Upload a compressed version of your files as a single file using the `zip` compression forma