Program Design Assignment 2016

Class: DT228/DT282/1   **Weighting: 30%**

Section 1: Flowchart Design - Weighting 20%

Design a flowchart to express the following:

The main objective of this assignment is to create a design for a game that allows a user to make a word from 9 random letters. The program will select 9 random letters and will display them to the user. The user must try to make a word from the random letters, using each letter only once. The aim is to use as many of the letters as possible. The score of the word should be calculated as follows:
1 Point – vowel.
2 Points – consonant.

Eg.
Random letters: d b r e o f y s r
Word: border
Score: 2+1+2+2+1+2 = 10

The game must **check the users word** to ensure that the letters are used only once and that the letters used are contained within the 9 random letters. If the users word passes the check the length of the word is the score for the given round. The game must generate the **9 random letters from (a-z) from 99 letters stored in an array.**

The **99 letters** are assigned as follows:
12 letters: e
9 letters: a, i
8 letters: o
6 letters: n, r, t
4 letters: l, s, u, d
3 letters: g
2 letters: b, c, m, p, f, h, v, w, y, k
1 letters: j, x, q, z

Game Conditions:

A game consists of **five rounds**.
The **users score is added** after each round.
The game must **remember the users best word** (by score)
At the end of the game display the users score and ask to play again.

Requirements:

- Use DIA or yEd Diagram Editor to draw your flowchart.
- Provide appropriate error checking and user interaction
- Swimming lanes are used.
- Include a README file (PDF) that explains how your system works.

Section 2: Programming in Scratch

Weighting: 10%

This assignment gives you an opportunity to practice computational thinking with a simple programming language and tool called Scratch.

Your Scratch Project

- You will create a project implementing the game described in Section 1.
- You will include a README file (PDF) that explains the steps of how the program operates (ie the steps to follow to solve the problem) and how to interact with your project.
- Please list any sources of images, sounds used in your project. (That is to say that you can take images from the web to use with your sprites, but you must give credit.)

Assignment Submission:

This assignment is given on Monday 17th October with a due date of Tuesday 15th November 2016 at 12pm.

You need to submit all your assignment related files as a zip file named: DT228-1-FirstnameSurname.zip or DT282-1-FirstnameSurname.zip through webcourses, you zip file should include:

- Scratch.pdf (steps for solving the problem, problem description etc.)
- Flowchart.pdf (description of the flowchart and the steps to solve the problem)
- the ScratchGame
- the Flowchart (the source file)
- and any other files you want to be considered for marking.

Late submissions (*within 2 weeks of the submission date*) will be marked out of 50% by giving a valid reason, otherwise 0 will grade will be awarded.

Attention:

Please note this is an **individual assignment**. Do your own work. Any student suspected of copying or plagiarising another piece of work will be given a 0 mark.