

Assessment 2

by Kulsom Akhtar

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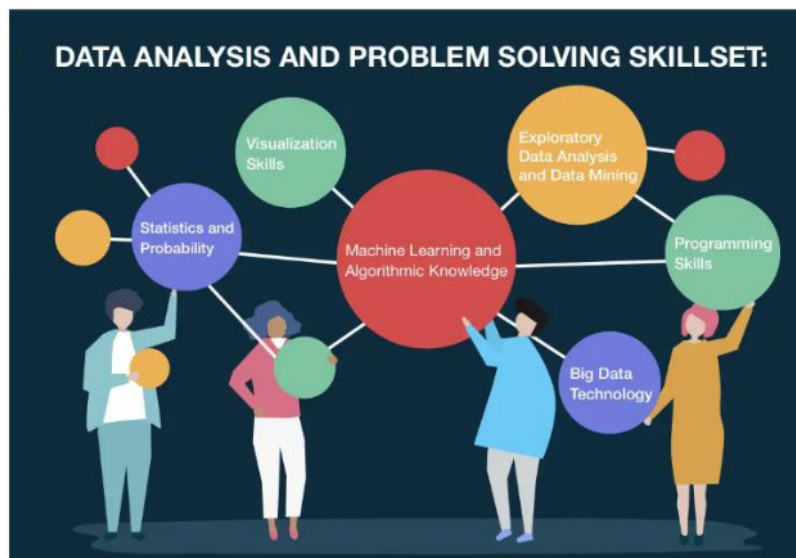
Word count: 1617

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Analysing And Solving Problem – ACCA4019

25th July 2023 – 3 PM



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Task 1A Describe the Rules of Scrabble

1. Prepare to play by setting up the scrabble board game and racks. The board consists of 15 cells high and 15 cells wide. There are 100 scrabble tiles with letters on 98 of them and 2 blank tiles are wild tiles [1].
2. Choose who starts the game. Every player will take a tile out of the bag; whoever has an alphabet closest to A tile will be the one who starts the game.
3. Every player draws their tiles. They draw 7 scrabble tiles each.
4. Every player has a turn, to play their word. Every letter has points.
5. Scores should be totaled by keeping a track score with pen and paper.
6. Get new tiles.
7. Existing words that are on the board, can be built on
8. Try to get the highest score possible. By making your words with highest points.
9. Other Player words can be challenged and elaborated for a higher score.
10. Tiles not wanted can be exchanged can be for newer scrabble tiles.
11. Calculate each player's score to finish the game. The person will highest score wins.
12. Using the board to your advantage by placing your word on cells to gain extra score.
13. Try to make the longest word that is additionally within the dictionary.

[2] [3]

Task 1B Create a requirement feature list and requirement prioritisation techniques.

- 01) Board Game
- 02) Tiles
- 03) Players
- 04) Login -Password
- 05) Extended Version
- 06) Different Languages
- 07) Games History
- 08) Scoring System
- 09) 1 – To – 1 with Computer

- 10) Worldwide Gaming
- 11) Bonus
- 12) Emoji Rewards
- 11) Stopwatch Timer
- 12) Cheat System
- 13) 3D Option
- 14) Have A Dictionary
- 15) Spell Check

Must Have Login - Password Board Game Players Tiles Scoring System	Could Have Bonus Stopwatch Timer Extended Version Different Languages 3D Option Spell Check
Should Have 1 – To –1 Computer Worldwide Gaming Game History Have Dictionary	Will Not Have Emojis rewards Cheat System

2

Task 1C Select three of the options to implement under Must and explain their priorities.

The three must have options I have implemented are The Scrabble Board, Scrabble Tiles and the Players.

The Scrabble board is the foundation of the game, where there are a total of 225 cells. Players use tiles to place words on the board that they have spelt out. On the board there are sixty-one premier cells that have greater value when words are placed on them, for example double letter, triple letter. double word and triple word, the tiles can interlock making the words look like crossword puzzles. [4]

The tiles are vital as they have alphabet that are printed on them with an assigned numerical value, there are 100 tiles on total which consist of 9 –A, 2-B, 2-C, 4-D, 12-E, 2-F, 3-G, 2-H, 9-I, 1-J, 1-K, 4-L, M-2, N-6, O-8, P-2, Q-1, R-6, S-4, T-6, U-4, V-2, W-2, X-1, Y-2, Z-1 and there are 2 wild/blank tiles. [5]

All 100 tiles have a total value of 187 points. [5]

The scrabble word game has two to four players. Each player competes with one another to acquire the highest score. The words must be included in the dictionary from the tiles they own, the words are then placed by the player in crossword fashion, reading left to right in the rows and downwards in columns. [6]

By the players playing scrabble they will improve their own skills and strategy. They will have knowledge of creativity, also able to have quick thinking skills, strong vocabulary, good spelling skills, having the ability to pick up on opportunity quickly, being strong in decision making, knowledge and understanding of prefixes and suffixes, good emotional control, having quick learning skills, strong organisation skills, being patience, anagramming skills, mathematic skills and strategic thinking. [7]

Task 2 Implementation

Task 2a Identifying the variables needed in the solution

Variables are used in computer programs to store information that has been referenced and manipulated. The data is labelled with descriptive names, providing that the program can be understood and read clearly by us and others. An easy way remembering variables as container that retain information. The sole purpose of variables is solely to store data in memory, which can be used throughout your programming. [8]

One of the difficult tasks in computer programming is naming the variables, the variable should be named accurately and meaningful to the program so think hard regarding the names, so it is easy when you or other reader revisit the program, they have a descriptively and understood it previously.[8]

1 Variable naming conventions are crucial. Whenever a developer is learning a new language or learning a new low-code tool one of the first things they ask is, “What are the standard naming conventions?” Some of the standard naming conventions are Pascal case, camel case, etc. The main difference between Camel case and Pascal case is that Camel case requires variables to be created from compound words and the first letter of every appended word must be uppercase. Pascal case does not require this. [9]

The following examples follow the camel case naming convention as well as the 1 Pascal case naming convention:

- OutOfMemoryException
- DateFormat
- DatabaseConnection
- LinkedList
- EventHandler

Pascal case is always consistent with camel case rules. However, when a variable starts with a lowercase letter, the Camel case is not consistent with Pascal case.

The following camel case examples do not follow the Pascal case convention:

- jenkinsServer
- iterationCount
- tomcatInstance
- gitRepository
- microService

When a variable begins with a lower case letter (JenkinsServer), it is often referred to as “lower camel case”. On the other hand, “upper camel case” is used for variables that follow Pascal case rules. [9]

I have done the variables below in the Pascal case style.

LoginInName – The player has his own personal details to enter the game.

Player1 – The player's name you want shown on screen.

Player2 – The player's name you want to be shown on screen.

PlayingWithComputer – Having a 1-2-1 game with the computer.

Tiles98 – There are 98 tiles with Alphabet and number point on there.

BlankTiles2 – These tiles are blank and hold their own value.

GameBoard – The virtual board has cells; some cells hold extra points.

LeaderBoard – This displays the player's name with their scores.

WinLose – When the game is over the Player who has won is displaced.

WordsInDictionary – Icon on screen, where you can check your word and spelling.

ValuesOfLetters – Every letter has its own point value, to increase your points, by challenging the words.

Player1Score – These ¹² points are added to the leader board.

Player2Score – These ¹² points are added to the leader board.

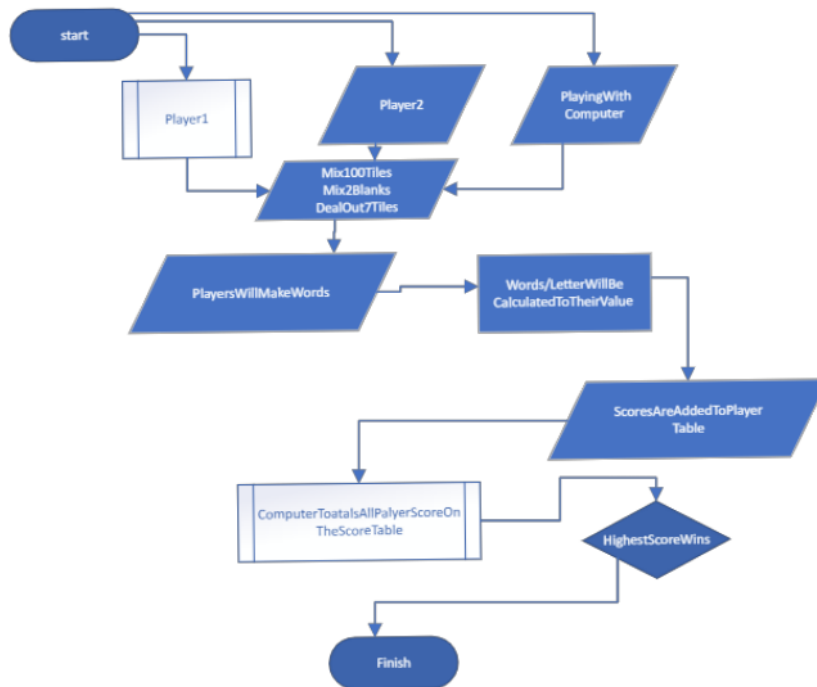
TotallingScore - At ^{the} bottom of the leader the scores are totaled to determine the winner.

Task 2b Create a flowchart to represent an algorithm

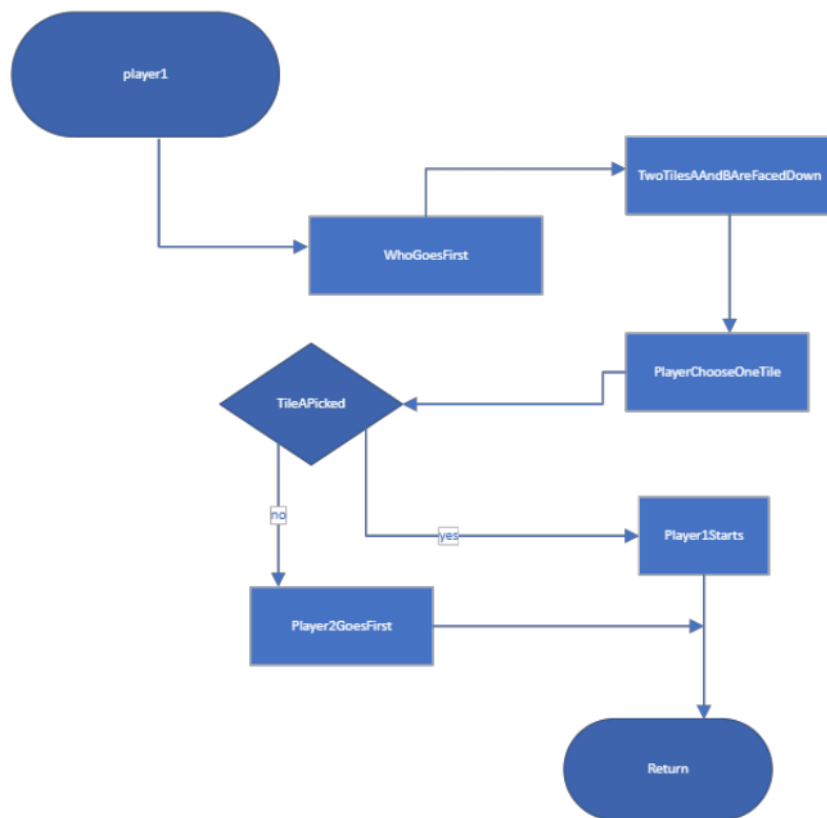
³ A flowchart is a diagram that shows a system, a process, or an algorithm for a computer. It includes a summary of the crucial steps to addressing the problem in addition to being a diagrammatic representation of the solution to a specific problem.[10]

Using flowcharts when creating and planning a process can help you pinpoint ⁷ all the crucial elements while also providing a larger perspective. The tasks are arranged chronologically and classified according to kind, such as procedure, decision, data, etc. Each step has its own implementation because the flowchart just tells you what happens at this step, what you need to input and what the result of this step is, but it doesn't tell you how to do it. Once a flowchart has been created, it can be used to identify subtleties in the process that can be improved upon to make it more efficient. These subtleties, such as bottlenecks in the process, flaws in the process, unnecessary steps, etc., can be viewed as an evolving diagram. Perhaps the most important factor in a flowchart is readability. As a process diagram, a flowchart's goal is to provide a visual representation of what's going on to help you understand what's happening. However, sometimes a flowchart can get a little too complicated and end up being so complex that it defeats its purpose. Flowcharts are restricted in scope and are typically used in conjunction with other diagrams. However, they do have a long history. Flowcharts were first introduced as flow process charts to members of the Society of Mechanical Engineers in 1921. They were popular in the early computing of the 1950s. [10]

Below is the flowchart that I have designed on Visio for Scrabble.



The first Sub processes of the scrabble designed on Visio.



The second sub processes of scrabble designed on Visio.



Reference List

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- [10] ⁶ UCL (2021). *What is the significance of a flowchart?* [online] Culture Online. Available at: <https://www.ucl.ac.uk/culture-online/case-studies/2021/jun/what-significance-flowchart#:~:text=A%20flowchart%20is%20a%20diagram> [Accessed 15 Jul. 2023].

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