CS1021 Tutorial #9
Typical Examination Questions

1   Scrabble

In a Scrabble®-like game, players form words and each word is awarded a score that is the sum of the "values" of the letters used to form the word. For example, the word "banana" would be awarded a score of 8 because "b" has the value 3, "a" has the value 1 and appears three times and "n" has the value 1 and appears twice. (i.e. $3 + 1 + 1 + 1 + 1 + 1 = 8$).

Design and write an ARM Assembly Language program that will compute the score for a single word. The word is stored in memory at the address contained in R1. The word is stored as a NULL-terminated ASCII string containing only UPPER CASE alphabetic characters. The score value of each letter in the alphabet is also stored in memory as a sequence of 26 byte size values beginning at the address contained in R2. The first byte is the score value of "A", the second byte is the score value of "B", etc. Your program should store the score for the word in R0.

Your answer must include:

   (i) an explanation of your approach and
   (ii) your ARM Assembly Language program.

2   Increasing Sequences

Assume a sequence of word-size signed integers is stored in memory at an address contained in R1. The number of integers in the sequence is stored in R2. Design and write an ARM Assembly Language program that will count the number of sequences of contiguously increasing values. For example, the sequence below contains two sequences of contiguously increasing values, which have been underlined.

<p style="text-align:center">12, 9, 7, <u>5, 6, 10, 17, 19</u>, 16, 12, 11, <u>11, 19, 21</u></p>

Your answer must include:

   (i) an explanation of your approach and
   (ii) your ARM Assembly Language program.

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