# Assignment 1

## Coding task -- Morse code

### Requirement

* Write a computer program to encode a string of characters and numbers into the Morse code, and calculate the length of the resulting coded string. Any programming language (for example, C, C++, Matlab, Python, Java...) is OK.
* explanation
  + Each character (letter or numeral) is represented by a unique sequence of dots and dashes. The dot duration is the basic unit of time measurement in code transmission.
  + The duration of a dash is three times the duration of a dot.
  + Each dot or dash is followed by a short silence, equal to the dot duration.
  + The letters of a word are separated by a space equal to three dots (one dash), and the words are separated by a space equal to seven dots.

### Source code

To see the source code and the annotation, refer to the M file.

### Note

* The definition of Morse code: <http://en.wikipedia.org/wiki/Morse_code>
* Suppose the input string consists only letters and numbers and each words are separated by a space.

### Test

1. Input: **a**

Output:

***Original string:***

***A***

***1 words***

***Coded string:***

***.-***

***The length is 5(counted as dot)***

Explanation: A:.- . last one dot duration, and comes after a silence that holds one dot duration. And – equal to three dot. i.e. 1+1+3=5.

1. Input: **b**

Output:

***Original string:***

***B***

***1 words***

***Coded string:***

***-...***

***The length is 9(counted as dot)***

Explanation: B:-… - last three dot duration, and comes after a silence that holds one dot duration. And . last one dot duration and comes after a silence. There is no silence after the last dot. i.e. (3+1)+(1+1)+(1+1)+(1)=9.

1. Input: **C**

Output:

***Original string:***

***C***

***1 words***

***Coded string:***

***-.-.***

***The length is 11(counted as dot)***

Explanation: C:-.-. - last three dot duration, and comes after a silence that holds one dot duration. And . last one dot duration and comes after a silence. There is no silence after the last dot. i.e. (3+1)+(1+1)+(3+1)+(1)=11.

1. Input: **AB C**

Output:

***Original string:***

***AB C***

***2 words***

***Coded string:***

***.- -... -.-.***

***The length is 35(counted as dot)***

Explanation: ABC: .- -... -.-. A 5 dots. B 9dots. C 11 dots. And there exits 3 dots between A and B(two letters). Also, the distance between B and C is seven dots(two words). i.e. (5)+3+(9)+7+(11)=35.