Computer Science 2030

Project 2 Morse Code

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ADT Summary:

The goal of our abstract data type is to encode and decode messages in both Morse code to English and English to Morse code. It takes a file input from the user and reads the elements into to the program where they can be translated into their wanted state. It accomplishes this translation through the use of a Binary Search Tree set up so that the right node is a dash and the left node is a dot.

Data Items:

encode()

* Char x: intake character to be translated into Morse

decode()

* file\_name: take the name of the file to be translated
* Head: take the node root to be translated
* Space\_count: count the spaces for the translation

createTree()

-Head: helps decide where the root branches

Add\_Dash()

-parent: tells where the parent node is

-dash: helps decide whether to put a dash or not

Add\_Dot()

-parent: tells where the parent node is

-dot: helps decide whether to put a dot or not

Search()

-Morse: helps decide whether the input is a dot or a dash

-Head: utilizes root based on dot or dash

Build\_Search()

-head: helps decide where the root branches

-letter: helps decide where to find the letter

Operations:

File\_in()

* The function will not return any variables but will prompt the user to enter a file and will continue to prompt the user for a file until a file is located. after the user will then be prompted to enter whether the file is to be decoded from Morse code to English or to be encoded from English to Morse code.

decode()

* Goes through the Binary Search Tree to find the value of each letter writing them to the out file location. Writes to file will export the decoded message in the file. Uses node objects to create the binary tree that will either contains a letter value, dot child, dash value, or NULL.
  + If 3 spaces, next letter
  + If 7 spaces, next word

encode()

* Goes through the Binary Search Tree to find the value of how to encode a letter to Morse. The process will go letter to letter encoding each element and outputting them to the output file.