Module Five - Assignment Submission

The Assignment

1. Create a program which can translate between english ascii characters and digits, and morse code, represented as . and - ascii characters.

Design

```
Approaching the design of this program, it is clear we need few components:
1. A mechanism by which to get the mode of translation we are doing
2. A mechanism to get the the string from the standard input into a format
which can do analysis
3. Some sort of translation lookup table
4. A mechanism of return

In order to do the parsing of the individual strings we'll have to use
methods akin to something below:

For translating from english to morse code, we can index through each
character of the string and then call a to_morse function, which returns
the morse code of the character, implemented as a switch statement which
functions as a lookup table

For translating from morse code to english, we'll iterate along substrings
which are space delineated, and then return the respective english
character for recognized characters. Notably, case will not be preserved in
either direction.
```

Implementation

```java
package module5;
// Class Morse Translator
// This class will translate a string of text into Morse code
// and output the Morse code to the console, or translate a
// string of Morse code into text and output the text to the
// console.

import java.util.Scanner;
public class MorseTranslator {
    // Program Entry Point
    public static void main(String[] args) {
        boolean isMorse = false;
        String input = "";
        String output = "";
        Scanner scanner = new Scanner(System.in);
```

```java
            // Get user input
            System.out.println("Please enter 0 to translate English to
Morse or 1 to translate to English to Morse: ");
            isMorse = scanner.nextInt() == 0;
            System.out.print("Please enter the text to translate: ");
            input = scanner.nextLine();   // Consume newline from buffer
            input = scanner.nextLine();
            // Translate the input
            if(isMorse) {
                output = translateToMorse(input);
            } else {
                output = translateToEnglish(input);
            }
            // Output the result
            System.out.println(output);
            scanner.close();
        } // end main

        static String translateToMorse(String input) {
            // Translate the input string to Morse code
            // and output the Morse code to the console
            String output = "";
            for(int i = 0; i < input.length(); i++) {
                output += getMorseCode(input.charAt(i));
                output += " ";
            }
            return output;
        } // end translateToMorse

        static String translateToEnglish(String input) {
            // Translate the input string of Morse code to English
            // and output the English to the console
            String[] morseWords = input.split(" ");
            String output = "";
            for (String morseWord : morseWords) {
                output += getEnglishChar(morseWord);
            }
            return output;

        } // end translateToEnglish

        static String getMorseCode(char c) {
            // Return the Morse code for a single character
            switch (c) {
                case 'a':
                    return ".-";
                case 'b':
                    return "-...";
                case 'c':
                    return "-.-.";
                case 'd':
                    return "-..";
                case 'e':
                    return ".";
```

/

```java
            case 'f':
                return "..-.";
            case 'g':
                return "--.";
            case 'h':
                return "....";
            case 'i':
                return "..";
            case 'j':
                return ".---";
            case 'k':
                return "-.-";
            case 'l':
                return ".-..";
            case 'm':
                return "--";
            case 'n':
                return "-.";
            case 'o':
                return "---";
            case 'p':
                return ".--.";
            case 'q':
                return "--.-";
            case 'r':
                return ".-.";
            case 's':
                return "...";
            case 't':
                return "-";
            case 'u':
                return "..-";
            case 'v':
                return "...-";
            case 'w':
                return ".--";
            case 'x':
                return "-..-";
            case 'y':
                return "-.--";
            case 'z':
                return "--..";
            case '0':
                return "-----";
            case '1':
                return ".----";
            case '2':
                return "..---";
            case '3':
                return "...--";
            case '4':
                return "....-";
            case '5':
                return ".....";
```

```java
                case '6':
                    return "-....";
                case '7':
                    return "--...";
                case '8':
                    return "---..";
                case '9':
                    return "----.";
                case ' ':
                    return "|";
                default:
                    return "";
            }
        } // end getMorseCode

    static String getEnglishChar(String morse) {
        // Return the English character for a Morse code string
        switch (morse) {
            case ".-":
                return "a";
            case "-...":
                return "b";
            case "-.-.":
                return "c";
            case "-..":
                return "d";
            case ".":
                return "e";
            case "..-.":
                return "f";
            case "--.":
                return "g";
            case "....":
                return "h";
            case "..":
                return "i";
            case ".---":
                return "j";
            case "-.-":
                return "k";
            case ".-..":
                return "l";
            case "--":
                return "m";
            case "-.":
                return "n";
            case "---":
                return "o";
            case ".--.":
                return "p";
            case "--.-":
                return "q";
            case ".-.":
                return "r";
```

```java
                case "...":
                    return "s";
                case "-":
                    return "t";
                case "..-":
                    return "u";
                case "...-":
                    return "v";
                case ".--":
                    return "w";
                case "-..-":
                    return "x";
                case "-.--":
                    return "y";
                case "--..":
                    return "z";
                case "-----":
                    return "0";
                case ".----":
                    return "1";
                case "..---":
                    return "2";
                case "...--":
                    return "3";
                case "....-":
                    return "4";
                case ".....":
                    return "5";
                case "-....":
                    return "6";
                case "--...":
                    return "7";
                case "---..":
                    return "8";
                case "----.":
                    return "9";
                case "|":
                    return " ";
                default:
                    return "";
            }
        } // end getEnglishChar
    } // end class MorseTranslator
```

Output

```
Script started on 2025-02-27 19:11:00-05:00 [TERM="xterm-256color"
TTY="/dev/pts/1" COLUMNS="263" LINES="15"]
[?2004h]0;arkosh@greyskull:
~/repos/601_201/module5[01;32markosh@greyskull[00m:[01;34m~/repos/601_2
```

```
01/module5□[00m$ exit□□□□java
MorseTranslator.java□□□□□□□□□□□□□□□□□□□□□□□□□□□exit□[K□□□□□[Kexit□□□□java
MorseTranslator.java
□[?2004l
Please enter 0 to translate English to Morse or 1 to translate Morse to
English:
0
Please enter the text to translate: Hello my dear friend
.... . .-.. .-.. --- | -- -.-- | -.. . .- .-. | ..-. .-. .. . -. -..
□[?2004h□]0;arkosh@greyskull:
~/repos/601_201/module5□□[01;32markosh@greyskull□[00m:□[01;34m~/repos/601_2
01/module5□[00m$ java
MorseTranslator.java□□□□□□□□□□□□□□□□□□□□□□□□□□□exit□[K□□□□java
MorseTranslator.java□□□□□□□□□□□□□□□□□□□□□□□□□□□exit□[K□□□□java
MorseTranslator.java□□□□□□□□□□□□□□□□□□□□□□□□□□□□□[K□java MorseTranslator.java
□[?2004l
Please enter 0 to translate English to Morse or 1 to translate Morse to
English:
1
Please enter the text to translate: .... . .-.. .-.. --- | -- -.-- | -.. .
.- .-. | ..-. .-. .. . -. -..
hello my dear friend
□[?2004h□]0;arkosh@greyskull:
~/repos/601_201/module5□□[01;32markosh@greyskull□[00m:□[01;34m~/repos/601_2
01/module5□[00m$ ei□□[Kxit
□[?2004l
exit

Script done on 2025-02-27 19:11:41-05:00 [COMMAND_EXIT_CODE="0"]
```