Summary and conclusion

The Morse Code Translator implements the Morse code translation process by converting text to Morse code and vice versa.

There are two operation modes:

* Mode 1 (English Text to Morse Code):
  1. Press pushbutton Mode 1 to select the “English to Morse” mode.
  2. Use pushbuttons (Left and Right) to select an English letter from the LCD screen
  3. Press pushbutton Mode 1 again to confirm your letter choice.
  4. If you want to delete the letter, use pushbuttons (Left and Right) to scroll to the end on the LCD screen and select BS (Backspace).
  5. Once you confirm your choice, simply scroll to the very end on the LCD screen to select EN (Enter) to start the translation.
  6. Morse code will be displayed on the LCD screen as well as played by the speaker.
* Mode 2 (Morse Code to English Text):
  1. Press pushbutton Mode 2 to select the “Morse to English” mode.
  2. Click pushbutton Mode 2 or press and hold Mode 2 to toggle between dot and dash.
  3. Keep pressing pushbutton Mode 2 to find a desire combination of dots and dashes.
  4. Corresponding English letter will be display on the LCD screen.

Through this project, we gained an intimate knowledge of how push buttons, 74HC164 shift registers, HD44780U LCD and the 273-092 8-Ohm Mini speaker work with the microcontroller. The SPI peripheral is used by the microcontroller to interface with the 74HC164 shift register. When data is written into the SPI data register, the SPI automatically shifts out the data to the shift register. The timer peripheral is used for precise delays and counting how long a push button is asserted. The PWM peripheral is used to create a waveform for the speaker.

Our Morse code translator can converts Morse code and English letters in both directions. It also utilizes both audio and visual aids to illustrate the translated text. In addition, we integrated a backlit LCD for easy visibility in dark and low light conditions.

The consequence is good, but that as spectacular as it could be, we will try to improve the product if time is permitted. For example, we could install a wireless module so that the Morse code information can be transmitted wirelessly.

Again, in general, we are very satisfied and proud with the mini project experience.