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/*
```

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*/
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```
// Uses Morse Library - Author Erik Linder - errors corrected by Glen Popiel KW5GP
```

```
#include <Morse.h>    // Use the Morse Library
#include <Wire.h>      //I2C Library
#include <LiquidCrystal_I2C.h>  // Liquid Crystal I2C Library
```

```
const int lcd_end = 16; // set width of LCD
const int lcd_address = 0x27; // I2C LCD Address
const int lcd_lines = 2; // Number of lines on LCD
const int beep_pin = 11; // Pin for CW tone
const String spd = "Speed = ";
String text; // Variable to hold LCD scrolling text
char c; // The CW character to send
char Code[41]; // The array to hold the CW Alphabet 0-9,-./A-Z
int key_speed; // CW Speed
int index; // variable to select CW character to send
```

```
LiquidCrystal_I2C lcd(lcd_address,lcd_end,lcd_lines); // set the LCD I2C address to 0x27 for a 16 chars and 2 line display
```

```
void setup()
```

```
{
    lcd.init(); // initialize the LCD
    lcd.backlight(); // Turn on the LCD backlight
    lcd.home(); // Set the cursor to line 0, column 0
```

```
    // populate the array containing the characters to use (0-9 , . / ? A-Z)
```

```
    for (int x = 0 ; x<14 ; x++) // 0-9,-.
    {
        Code[x] = char(44 + x);
    }
```

```
    for (int x = 14 ; x<40 ; x++) // A-Z
    {
```

```

    Code[x] = char(51+x);
}

Code[40] = char(63); // add ? character

// randomize
randomSeed(analogRead(1)); // Seed the Random Number Generator

delay(3000);
text = "";

} // End Setup Loop

void loop()
{

    key_speed = map(analogRead(0),0,1023,5,35); // Read the potentiometer
to determine code speed
    Morse morse(beep_pin, key_speed, 1); // Set the Code Library to Beep on
Pin 11 at the selected Key Speed

    index = char(random(41)); // Randomly pick a character from the
character array
    c = Code[index]; // Assign the value of the selected character to c

    lcd.setCursor(3,1); // Display the CW Speed on Line 1
    lcd.print(spd);
    lcd.print(key_speed);
    lcd.print(" ");

    // Assign the text to display on line 0.
    if (text.length() >15) // When length = 15, trim and add to new
character so display appears to scroll left
    {
        text = text.substring(1,16); // Drop the First Character
    }

    text = text + String(char(toupper(c)));

    lcd.setCursor(0,0); // Set the cursor to 0,0
    lcd.print(text); // Display the CW text
    morse.send(c); // Send the character in CW

} // End Main Loop

```