ME218a Smart Product Design

Laboratory Assignment Number 4 for ME 218a

Pre-Lab Due by 5:00 pm on October 31, 2017
Due by 5:00 pm on November 07, 2017

Part 0: Pre-Lab

Report Format Reminder:

1) Use cut and paste to move your schematics into your reports. Do not use screen captures! Limit the size of the area being transferred so that the resulting images fit on the page in the report.
2) When copying your code into your report, please use the Highlight program to prepare an RTF file using the "bright" color theme. You can then open the RTF file in Word and copy and paste the code into your report and it will maintain the color highlighting.
3) Be sure to clearly label the question that you are answering (include the question number & quote the question) along with your response.

Assignment:

☐ 0.1) What snippet of C code will you use to test if the input signal has changed states (you will potentially use this as the Morse input event checker)?

```
if ( (CurrentPinState != LastPinState) &&
     (CurrentPinState == SIG_PIN_HI) )
```

For checking when signal changes when from low to high

☐ 0.2) What snippet of C code will you use to test if the length of a high or low interval represents a legal dot-space interval?

Assumes timeOfLastRise, timeOfLastFall, and dotSpace have been defined

```
Uint8_t dotSpace = //value determined through calibration;
uint8_t lastInterval = timeOfLastRise – timeOfLastFall;
if(lastInterval == dotSpace)
return true;
else
return false;
```

☐ 0.3) What data structure do you propose to use to represent the Morse character as it is being received?

```
char morseChars[] = [];
```

☐ 0.4) What snippet of C code will you use to add a dot to that structure?

```
Char oneDot = '.';
Uint8_t len = sizeof(morseChars)/sizeof(morseChars[0]);
morseChars[len] = oneDot;
morseChars[len + 1] = '\0';
```

☐ 0.5) What does this line of C code do? (Assume the GetSignal() returns the state of an input pin)

```
for (signal = GetSignal(); signal == (new_signal = GetSignal()););
```

This for loop is obtaining the state of the pin at one point and then waits in the for loop until state of the pin has changed.

☐ 0.6) Propose a more readable and understandable piece of C code to do this same function.

```
Signal = GetSignal();
while(signal == GetSignal()) {
    //do stuff here

}
```