**Setup Function**

setup()

Set default pin states

Display Team Name and Logo

Define default values

**Set\_backlight Function**

set\_backlight()

Display Backlight Adjust menu

Update Display

Call draw\_brightness()

Increase brightness

Decrease brightness

If Cursor on “Finished”

If Cursor on “UP” and max brightness not reached

If Cursor on “Down” and min brightness not reached

Select Button

Move cursor up/down

Up/Down Button

Yes:

if digitalRead of buttons = TRUE

No

User Input?

**Exit**

**draw\_backlight Function**

Brightness input from set\_backlight

draw\_backlight()

Draw empty rectangle at the bottom of the screen

Fill rectangle according to brightness level

Display brightness value next to rectangle

**Exit**

**Loop Function**

Loop()

If count = 0

Call draw\_frequency\_and\_amp()

Call draw\_cursor()

Count = 1

Yes:

if digitalRead of buttons = TRUE

No

User Input?

Up/Down Button

Select Button

If min value not reached

If max value not reached

Move cursor up/down

Increase Value

Decrease value

Count = 1

Call modulate\_output()

**draw\_frequency\_and\_amp Function**

Draw\_frequency\_and\_amp()

Amplitude and Frequency input from loop

Draw Frequency and Amplitude menu items

Draw empty rectangle below each menu item

Fill rectangles according to freq/amp level

Display freq/amp value next to rectangles

**Exit**

**draw\_cursor Function**

Draw\_cursor()

Cursor location input from loop

If cursor input = 2

If cursor input = 1

Draw cursor at the Amplitude menu item

Draw cursor at the frequency menu item

**Exit**

**modulate\_output Function**

Modulate\_output()

Amplitude and Frequency input from loop

sine = sin(time\*Frequency)/abs(sin(time\*Frequency));

If sine sine from previous iteration

Close the “open” half of h bridge by turning those pins off

Wait 5 milliseconds

Open the “closed” half of h bridge by turning those pins on

analogWrite amplitude value to Amplitude pin

**Exit**