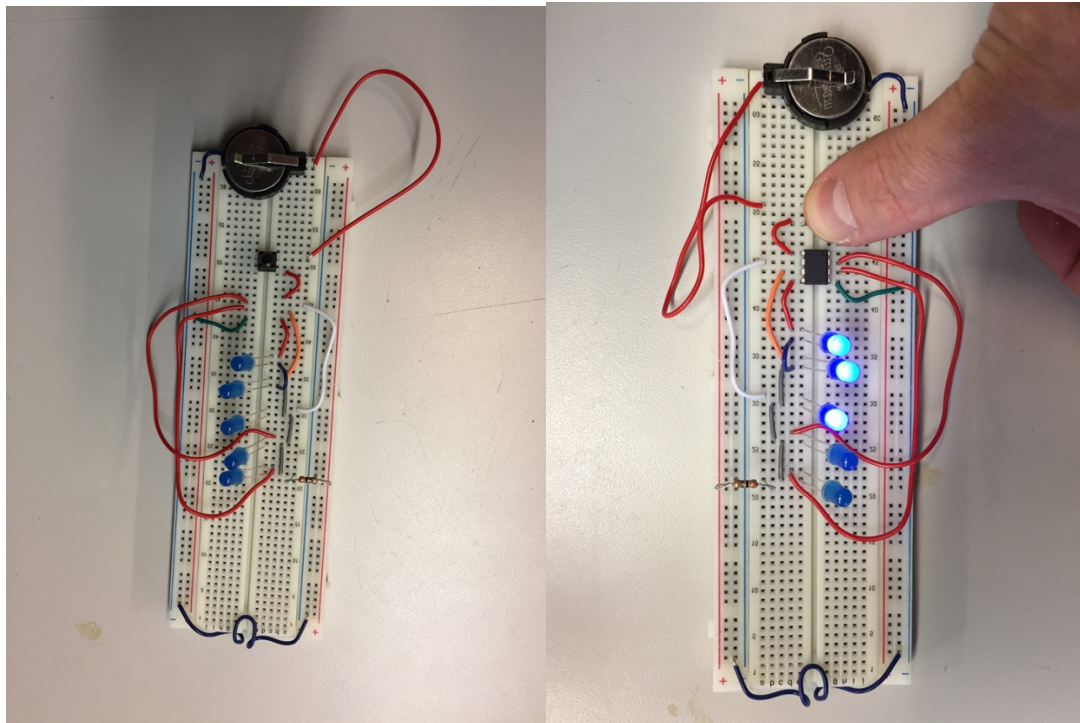


ETUDE TWO – MICHAEL WATTS - Submission

- A) My strategy was to put together the bread board first to see make sure that power was flowing from the battery to all the LED lights.



Then I uploaded the code of Elio into the microcontroller to see how that worked once in the bread board. After which I looked at the code to figure out how my chosen work “BINGO” is set up in the LED lights. Had I not asked about the grid on which they are created I would never have known where they came from. This allowed me to add a smiley face at the end.

```
if (c == 'p'){for (int i = 0; i < 5; i++){displayLine(p[i]); delay(delayTime); displayLine(0);}}
if (c == 'a'){for (int i = 0; i < 5; i++){displayLine(a[i]); delay(delayTime); displayLine(0);}}
if (c == 'r'){for (int i = 0; i < 5; i++){displayLine(r[i]); delay(delayTime); displayLine(0);}}
if (c == 's'){for (int i = 0; i < 5; i++){displayLine(s[i]); delay(delayTime); displayLine(0);}}
if (c == 't'){for (int i = 0; i < 5; i++){displayLine(t[i]); delay(delayTime); displayLine(0);}}
if (c == 'u'){for (int i = 0; i < 5; i++){displayLine(u[i]); delay(delayTime); displayLine(0);}}
if (c == 'v'){for (int i = 0; i < 5; i++){displayLine(v[i]); delay(delayTime); displayLine(0);}}
if (c == 'w'){for (int i = 0; i < 5; i++){displayLine(w[i]); delay(delayTime); displayLine(0);}}
if (c == 'x'){for (int i = 0; i < 5; i++){displayLine(x[i]); delay(delayTime); displayLine(0);}}
if (c == 'y'){for (int i = 0; i < 5; i++){displayLine(y[i]); delay(delayTime); displayLine(0);}}
if (c == 'z'){for (int i = 0; i < 5; i++){displayLine(z[i]); delay(delayTime); displayLine(0);}}
if (c == 'l'){for (int i = 0; i < 5; i++){displayLine(excl[i]); delay(delayTime); displayLine(0);}}
if (c == '?'){for (int i = 0; i < 5; i++){displayLine(ques[i]); delay(delayTime); displayLine(0);}}
if (c == '.'){for (int i = 0; i < 5; i++){displayLine(eos[i]); delay(delayTime); displayLine(0);}}
if (c == ' '){for (int i = 0; i < 5; i++){displayLine(space[i]); delay(delayTime); displayLine(0);}}
delay(charBreak);

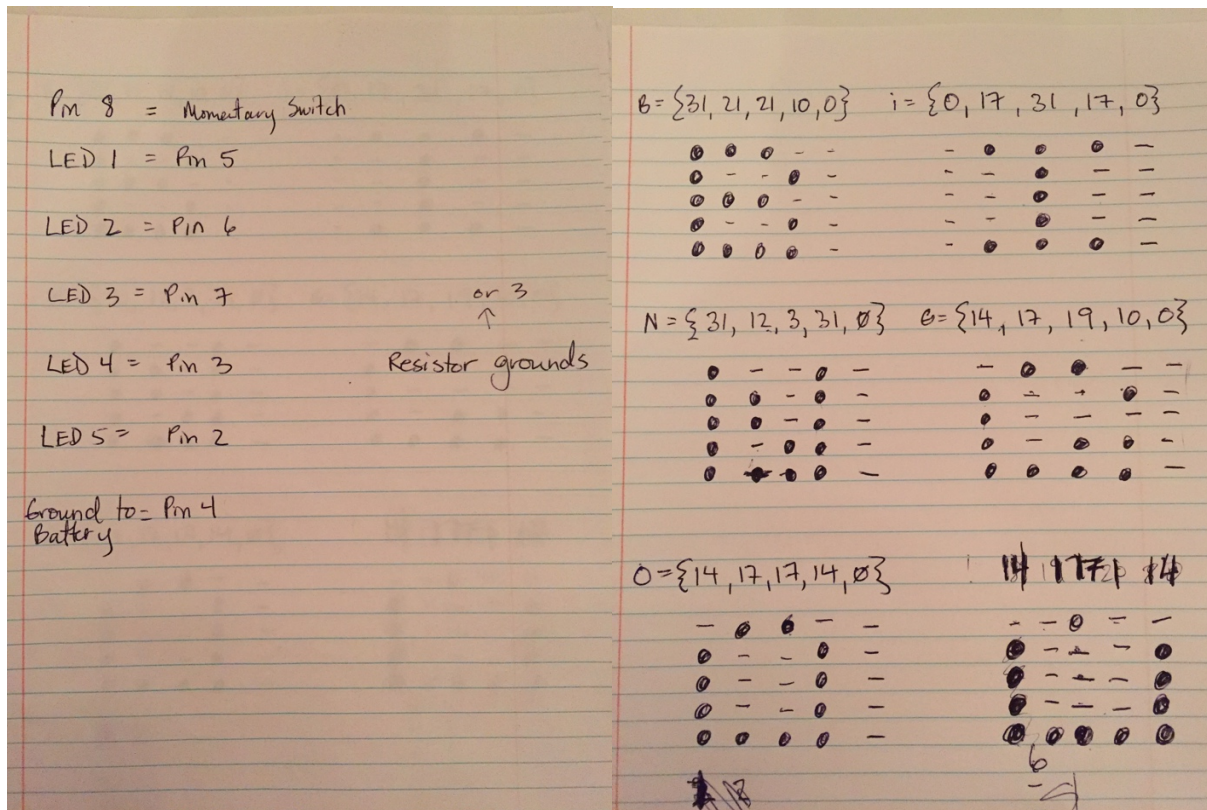
void displayString(char* s)
{
  for (int i = 0; i < strlen(s); i++)
  {
    displayChar(s[i]);
  }
}

void loop()
{
  displayString("bingo.");
}
```

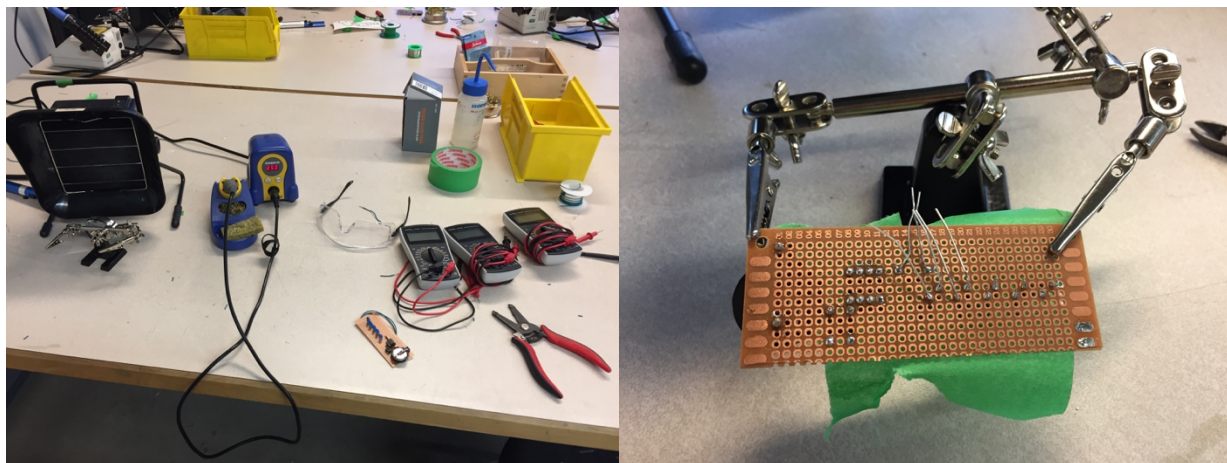
```
int eos[] = {0, 1, 0, 0, 0};
int excl[] = {0, 29, 0, 0, 0};
int ques[] = {8, 19, 20, 8, 0};

int smile[] = {14, 1, 17, 1, 14};
int space[] = {0, 0, 0, 0, 0};

void displayLine(int line)
{
  int myline;
  myline = line;
  if (myline >= 16) {digitalWrite(LED1, HIGH);}
  if (myline >= 8) {digitalWrite(LED2, HIGH);}
  if (myline >= 4) {digitalWrite(LED3, HIGH);}
```



After this I uploaded the new code into the microcontroller and began doing the set up for my circuit board. I found the soldering particularly challenging and had to start over as I was using too much lead solder. Part way through Elio noticed my battery holder was put in backwards, which reversed the flow of power, so I had to put the actual battery in upside down to get the power going to pin 4. In the end I managed, and miraculously got it done and working after the first go. Phew! I can't say my soldering job was elegant but not bad for a first project.



Getting the image to actually appear with some legibility was not so easy but you can kind of see it is there.

