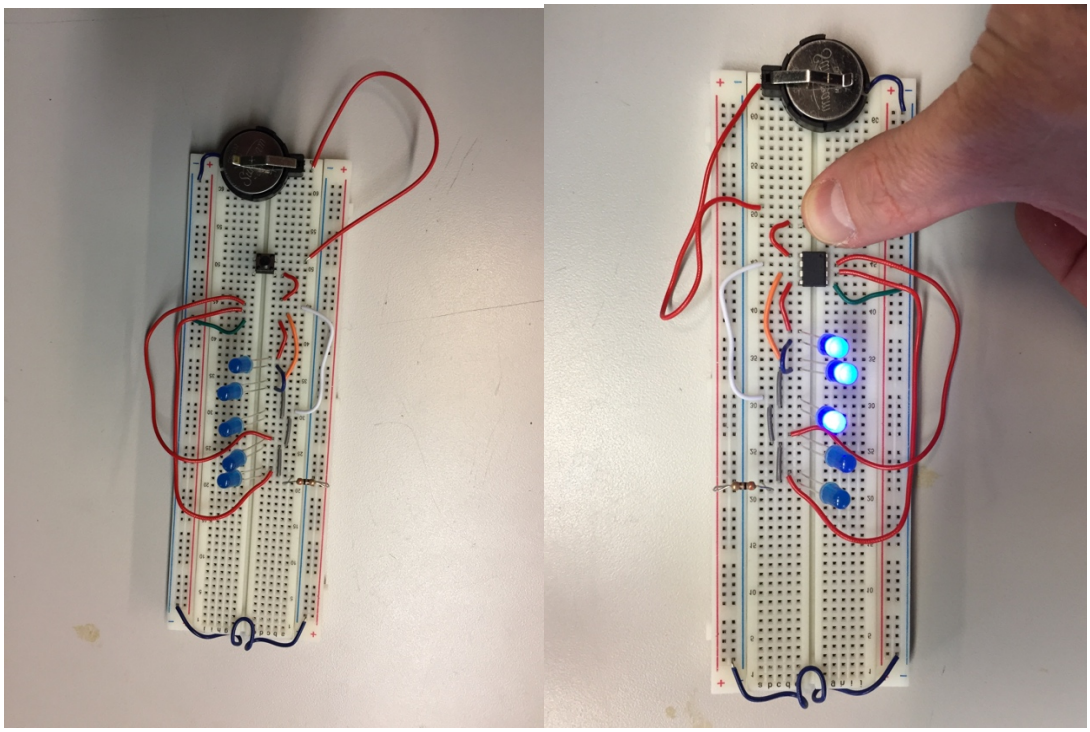
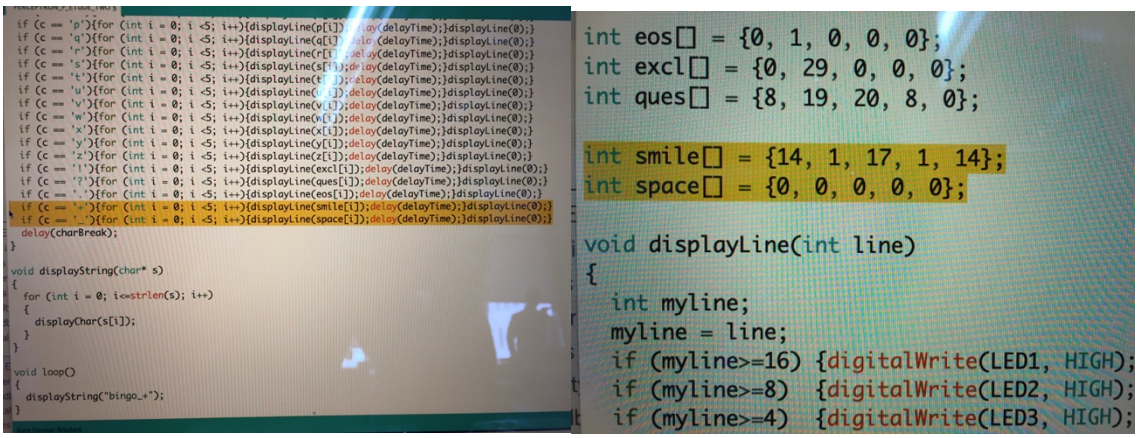
ETUDE TWO – MICHAEL WATTS - Submission

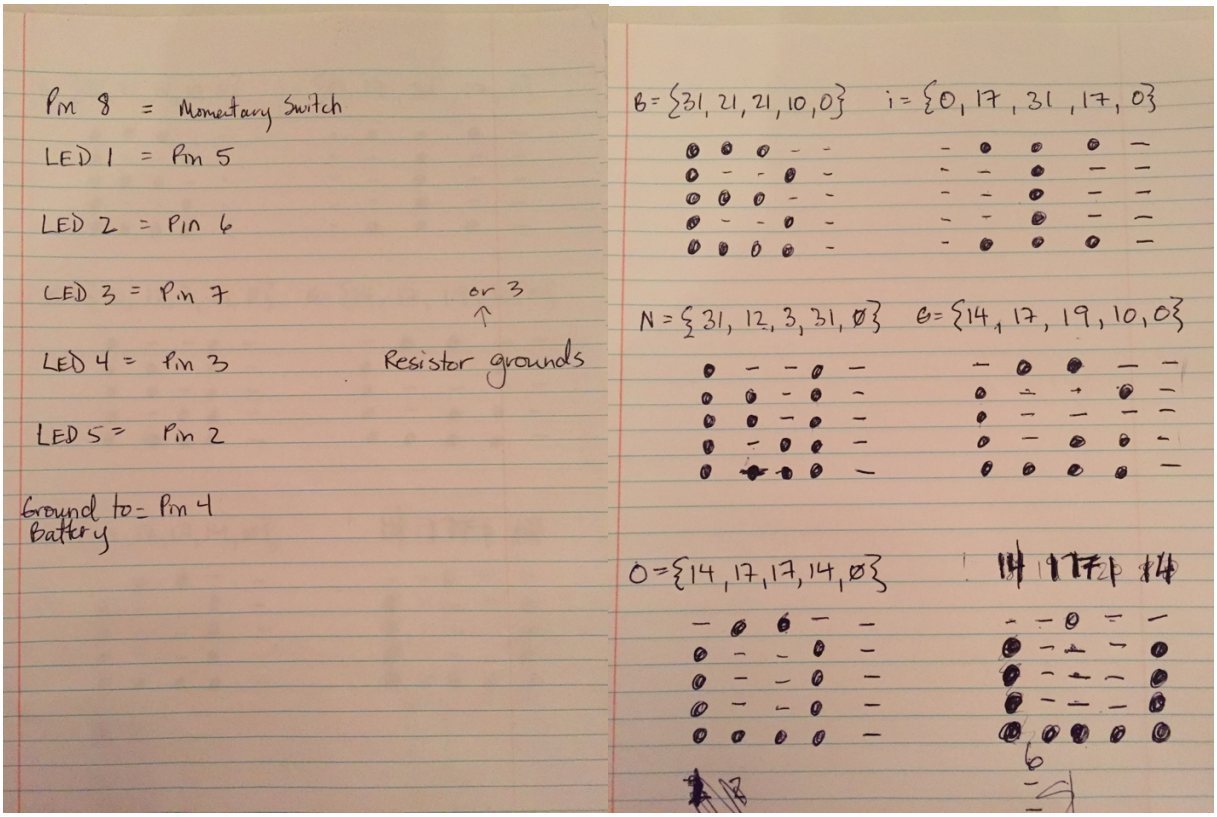
A) My strategy was to put together the bread board first to see make sure that power was flowing from the battery to all the LED lights.



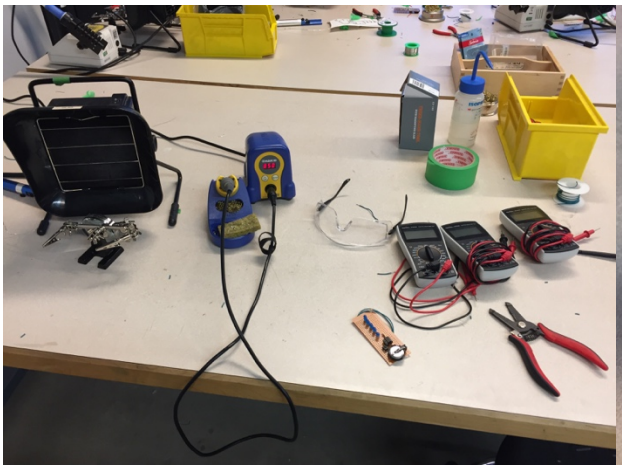
Then I uploaded the code of Elio into the microcontroller to see how that worked once in the bread board. After which I looked at the code to figure out how my chosen work “BINGO” is set up in the LED lights. Had I not asked about the grid on which they are created I would never have known where they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

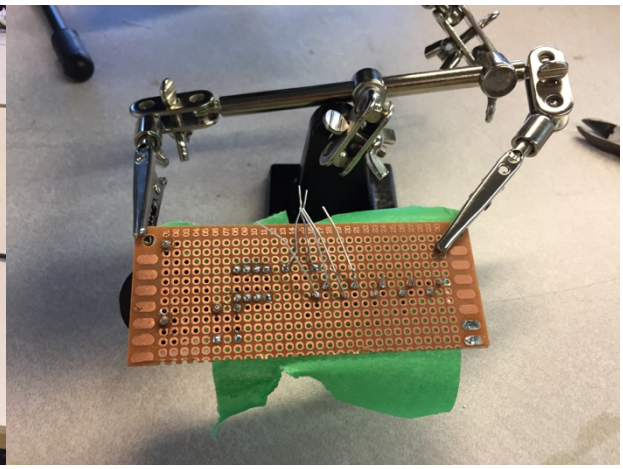


```
int eos[] = {0, 1, 0, 0, 0};
int excl[] = {0, 29, 0, 0, 0};
int ques[] = {8, 19, 20, 8, 0};

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.