
Intro to NeoMatrix

Week 3 Exercises

Building and Programming robots in TINKERCAD

This week you be continuing to program the NeoMatrix through TinkerCAD. This workshop aims to develop your text programming skills.

You should have completed silver from Week 2 before starting these challenges.

Please complete the bronze before starting the silver, and complete the silver before starting the gold.

Neopixel and GFX APIs

- NeoPixel:
https://adafruit.github.io/Adafruit_NeoPixel/html/class_adafruit_-_neo_pixel.html
- GFX API: http://adafruit.github.io/Adafruit-GFX-Library/html/class_adafruit___g_f_x.html#a59178a0e0c845a14a39b457c43567dd9

BRONZE Challenge:

Aims:

- Animate one or more of the pictures from Week 2 silver to move across the neomatrix from left to right
 - Remember to clear the screen between each step
 - Start with the picture just off the left edge, e.g. -4
 - Step through the x position until width is reached
- Additional challenges:
 - Add a 'bounce back' so that when it reaches the right edge, it then returns to the left
 - Add vertical movement to the animated picture to have it 'bounce' off the top and bottom as it moves from left to right

SILVER Challenge:

Aims:

- Draw text characters on the screen using the function:
- `matrix.drawChar (x, y, character, color, backgroundColor, size);`
 - You should draw characters at (0,0) and (6,0), e.g. 'a' and 'b'
 - One should have a background colour specified, the other can use 0 to leave the background blank
 - `size=1`

Additional challenges:

- Use the `randomColor()` from week 1 or `nextRainbow()` from week 2 to set colours
 - For the rainbow, you may wish to give a larger increment value to see the change
- Have a single character move from right to left of the display

GOLD Challenge:

Steps:

- Add a function to scroll messages across the display
 - Remember to set the text colour before trying to display any messages
- Additional challenges:
 - Add a default parameter to set the background colour for drawing the message

Extension Challenge:

What else can you add to this program?

- Produce a series of animations that combine drawing pictures, colour patterns and scrolling text

Thank You
