OBJECTIVE

In this project we are going to design a traffic control system for road works. There will be two sets of lights (red, amber and green), one at each end of the obstruction. The sets of lights will work counter to each other on a timer so that one direction of traffic will always be flowing. There needs to be a wait to ensure that all traffic gets through safely before the other direction starts to move. For the purposes of this example each direction of traffic will move for 5 seconds and the pause for safety will be 1 seconds. The signals are Amber = get ready to stop, Red = Stop, Red + Amber = get ready to go, Green = Go.

HARDWARE

For this project we will need two of each Red, Yellow and Green LED's and six 220Ω resistors arranged in two groups to represent the traffic lights. Also add the push buttons and 10k Ω resistors as we will expand the traffic light system once we have got the principle design working. Arrange the components as shown here.
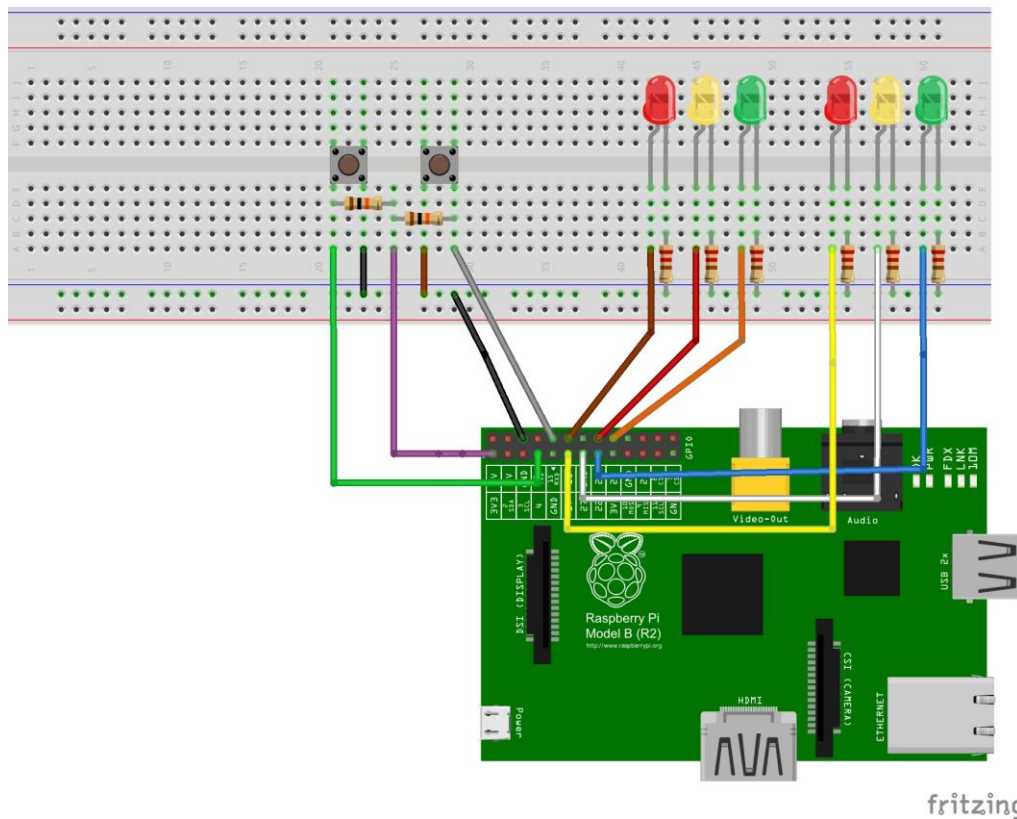
DEVELOPMENT

Now that you have a working version that goes through 10 cycles, see if you can make the program work indefinitely.

Use the push buttons to override the automatic signals and manually start and stop the traffic in both directions, this might be to allow works traffic to exit from the site or as happens at times the complete road is blocked.