Street Crossing Report

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OVERVIEW:

This program was created to simulate street lights and when people are able to cross the street or not. This program is written using the ARM architecture and a raspberry pi model 4B. After users run the program they will be able to press the button on the breadboard which will light the stop light (indicated by a red led) and the sign to cross (indicated by green light opposite of the three traffic lights). They will stay lit for ten seconds and then the cross sign and yellow light will begin to blink. After blinking the green light for cars to go will turn on and so will the sign to stop crossing (indicated by red led).

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***INPUT**

* START_PIN : Button that starts the lights

***OUTPUT**

* RED_PIN : Red light for cars

* GRN_PIN : Green light for cars

* YLW_PIN : Yellow light for cars

* WALK_PIN : Sign for pedestrians to cross

* STOP_CROSS : Sign for pedestrians to stop crossing

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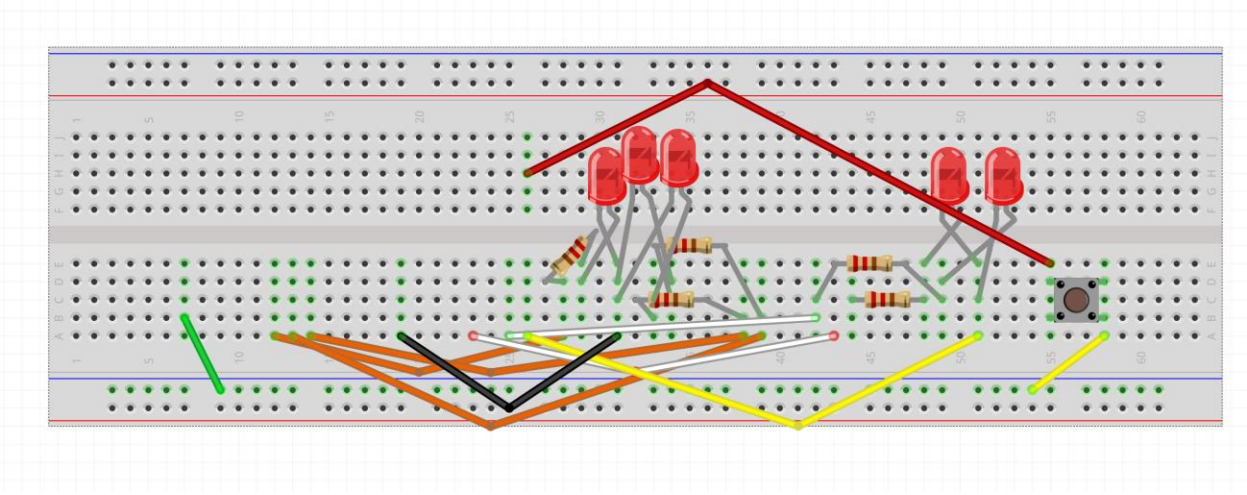
PROGRAM LOGIC:

In the beginning a series of .equ are used to set names to values. Then main is next which is where pins are set to either input or output. Afterwards, the program enters whl_loop where it will check for a high volt. The program passes the START_PIN into the label readStartButton which will return either a 1 or a 0 into register 0. Register 0 is then checked to see if it holds a high volt and if it does the program branches to lightsStart if not then it is sent back to the beginning of the loop. In lightsStart the program will turn on the red led and the crossing sign and the program will delay for 10 seconds. Afterwards, both lights turn off and then the cross sign and yellow led begin to turn on and off with 0.5 second intervals. Once the intervals are over the green led for cars lights and and the stop crossing sign turns on. After ten seconds both lights turn of and the program ends.

DIAGRAM:



To better understand the chart below know that input is where the volt comes from and output is where it goes for each component.

NAME	INPUT	OUTPUT
Power Rail	A7	+9
0 to GRN_PIN	A12	A28
2 to YLW_PIN resistor	A13	A38
3 to RED_PIN resistor	A14	A39
23 to WALK_PIN resistor	A23	A43
25 to STOP_PIN resistor	A25	B42
Power Rail to START_PIN	+54	A68
START_PIN to bridge	E55	H26
Resistor to WALK_PIN	B43	C48
Resistor to YLW_PIN	B38	B33
Resistor to STOP_PIN	C42	C49
Resistor to RED_PIN	B39	C34
Resistor to GRN_PIN	D28	E29
WALK_PIN to ground	E48	E51
YLW_PIN to ground	C33	C31
STOP_PIN to ground	D49	C51
RED_PIN to ground	D34	D31
GRN_PIN to ground	D29	E31
Traffic Lights to ground	A31	A19
Signs to ground	A51	A26