

TEJ3M Culminating Project Work Journal

Name: Student

Note: I didn't actually track the amount of minutes I spent on each activity as I was doing that activity, so each measure of time listed below is just an estimate.

Day 1: May 24	Time
Listened to the teacher as he introduced the culminating project. For this project I decided to work alone.	35 minutes
Started the traffic simulation program in Processing. Made a function that draws the static elements: grass, roads, lane dividers, curbs, and sidewalks.	20 minutes
Retrieved toolbox.	1 minute
Recorded entry in activity log.	5 minutes
Gathered some electrical components - LEDs, resistors, wires, push button.	5 minutes
Packing up.	3 minutes
Day 2: May 25	Time
Teacher briefed the class on what is expected to be accomplished today.	10 minutes
Retrieved half of a cardboard box from the teacher.	5 minutes
Composed a sketch of the intersection that will be made on the box. Includes dimensions and wiring. Sketch was done in MS Paint.	47 minutes
Continued work on the Processing program. Added more visual elements.	10 minutes
Packing up.	3 minutes
Day 3: May 26	Time
Briefing at start of class.	10 minutes
Created schematic for intersection circuit. Used online software, which was more time-consuming but better-looking than drawing it by hand. Had all of the pins, wires, LEDs, and resistors.	50 minutes

Teacher checked submission 1.	5 minutes
Packing up	5 minutes
Day 4: May 27	Time
Briefing at start of class, also took up the networking test.	20 minutes
Started building the model of the intersection. Glued green paper to form the grass, Cut and glued black construction paper to make the roads.	30 minutes
Did more work on the Processing program. Made the lights and glowing colours.	20 minutes
Packing up.	5 minutes
Day 5: May 30	Time
Briefing at start of class.	10 minutes
Gathered components for the test circuit of the traffic lights.	5 minutes
Built a working circuit using the components and the breadboard. Consisted of all 12 LEDs, 6 resistors, 6 pins, and 9 wires.	25 minutes
Programmed the code in Arduino that will make the lights flash. Lights will go from red to advance green to yellow and then red again. This code is probably complete enough to run the final model.	30 minutes
Packing up.	5 minutes
Day 6: May 31	Time
Briefing at start of class.	5 minutes
Fine-tuned the Arduino program. Made sure the code was free of errors.	10 minutes
Submission 2 check.	5 minutes
Worked on the traffic lights in the Processing program. I basically copied the code from the Arduino program over and adjusted the syntax. Also made a couple of functions to draw the flashing lights.	20 minutes
Washroom break	5 minutes
Continued work on the paper/cardboard model of the intersection. Added crosswalks and lane dividers made of paper	25 minutes.
Packing up.	5 minutes

Day 7: June 1	Time
Briefing at start of class.	5 minutes
Modified the test circuit to implement advance green lights. Since the lights flash one at a time, I had to hook up the green LEDs with individual pins, resistors, and wire paths. The same goes for the red LEDs, since one side is red while the other is flashing green.	30 minutes
Modified the Arduino program to accompany the change in the test circuit. Arduino now flashes green LEDs on and off repeatedly, one at a time, while making the red LED on the opposite end flash.	30 minutes
Packing up.	5 minutes
Day 8: June 2	
Briefing at start of class.	5 minutes
Got the circuit templates for the traffic lights. Cut them out and glued them onto cardboard.	10 minutes
Created poles for the traffic lights by taking a straw and putting it inside another straw and gluing them together. Did this 4 times.	10 minutes
Modified the Processing program. Incorporated the advance green lights as with the test circuit and Arduino program. Lights in test circuit and Processing program behave in the same way.	30 minutes
Washroom break.	10 minutes
Packing up.	5 minutes
Day 9: June 3	
Briefing at start of class	5 minutes
Began work on the traffic lights. Obtained the necessary electronic components (LEDs, resistors), poked holes in the cardboard with template, and put them in.	15 minutes
Soldered the traffic light circuits. Linked a bunch of components together using the soldering wire. Had some trouble because the melted wire would stick to the iron and not go onto the wires.	45 minutes
Packing up.	5 minutes
Day 10: June 6	Time

Briefing at start of class.	5 minutes
Updated schematic to include the push button and LEDs for the crosswalk.	10 minutes
Updated the Arduino program to make crosswalk lights turn on and flash at certain times.	15 minutes
Added the crosswalk lights to the Processing program. Lights flash when green lights in the same direction are on. Also added buttons that will cause the direction of traffic to change early when clicked.	35 minutes
Packing up.	5 minutes
Day 11: June 7	Time
Briefing at start of class.	5 minutes
Added paper elements to the model, including road curb and sidewalk.	20 minutes
Washroom break.	7 minutes
Added functions to the Processing program that will make “cars” (really just rectangles) appear and move and stop.	25 minutes
Packing up.	5 minutes
Left class early to attend school awards ceremony.	10 minutes
Day 12: June 8	Time
Briefing at start of class.	5 minutes
Gathered wires.	5 minutes
Updated activity log for the past few days.	10 minutes
Update the Arduino program to allow for the use of a push button to make lights change faster. Normally, it uses a delay function to make lights turn on for a certain amount of time. When the side lights are green, it now uses a counter and increases it by 1 each time the loop runs (every 100 milliseconds) and changes lights to yellow once it goes above a certain number. Pressing the button decreases that number. Furthermore, I added comments to both my Arduino and Processing programs.	50 minutes
Packing up.	5 minutes
Day 13: June 9	Time
Briefing at start of class	5 minutes

Troubleshooting errors in Arduino and Processing programs. Looked for anything that wasn't working correctly and adjusted the code if it was found, for example, the cars in traffic would sometimes overlap one another at a stop, so I adjusted the if statement condition so that a car would stop at a distance plus 75 pixels for every car ahead of it.	40 minutes
Soldered long wires to the traffic circuits, which will connect them to the Arduino pins.	20 minutes
Packing up.	5 minutes
Day 14: June 10	Time
Briefing at start of class.	5 minutes
Put the long wires through the traffic poles, bent the poles so the lights hang over the road, and hot-glued the traffic poles in place.	30 minutes
Because there weren't enough ground pins for each LED, I had to solder one wire from each pole (the one connected to all the resistors) to a separate wire which would then go into a ground pin. This way, every LED has a complete circuit for electricity to go through.	20 minutes
The yellow lights share the same pin, so I soldered the lead wires (the ones connected to the pin) together. At this point all of the wires made a bit of a mess, so this was kind of difficult.	10 minutes
Packing up.	5 minutes
Extension: June 14	Time
Taped the Arduino to the underside of the box.	5 minutes
Spent a bunch of time putting the wires into the pins, which was frustrating because they kept falling out. Instead I put them into the breadboard and then cut some shorter wires to connect the breadboard to the Arduino.	35 minutes
Adjusted the positions of the wires, since some exposed wires were touching and this often caused too many LEDs to light on at once due to the electricity having another path to go through. Spent a lot of time trying to fix errors.	35 minutes