Culminating Performance Task Course: TEJ2O1 Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Parent:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Due Date: Thurs. May. 11th, 2017 – outline black & white (leds of group shown) Signed\_\_\_\_\_\_\_\_\_\_\_\_\_

Ex: “R1” 🡪means “One red LED is in bank 1”

Tues. May. 9th, 2017 – workflow used to build code Signed\_\_\_\_\_\_\_\_\_\_\_\_\_

Thurs. May. 18th, 2017 – demonstration first thing in class Signed\_\_\_\_\_\_\_\_\_\_\_\_\_

Students will create an **outline sketch** of a basic design for building a motion type of cable car. They will utilize an Arduino Nano with Python coding to create an electrical display of their skills learned through out the year. Parts will include a Nano, LEDs, and Motors…

Explained:Your outline must include 3 groups called **banks** of LEDs. Use wisely 3-red,3-green, & 3-yellow The cable car runs in one direction with forward LEDs to light the path of travel. When the front bumper hits something the cable car turns off the forward LEDs and applies the brakes. Braking with stop the motors, and light the brake LEDs on the back of the cable car. After a brief time the cable car with operate in reverse, with reverse LEDs illuminate the path. When it hits something you follow the brake step, and then continue forward again. In each bank you may mix the colours if it is appealing to do so. LEDs will be arranged in banks of LEDs (white, red, yellows). ONLY 3 LEDs per bank!!!

This program never ends. You are only given one resistor and must not break any parts or else marks will be lost. Each light should use this resistor and all LED’s in a bank must be wired to have the same brightness. Your Arduino Nano and Python code, with a breadboard are to be used. Each LED should be of the same brightness in a group and follow proper wiring to ensure this occurs.

All wiring from the cable car into the breadboard is copper and NOT electrical kit wiring (silver) which means you will have to demonstrate your ability to fabricate technology through soldering…

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| Description | Level 4 (9-10) | Level 3 (7<8) | Level 2 (6<7) | Level 1 (5<6) |
| Knowledge  -electrical wiring  -label ground & each power wire with tape  -broken LEDs-0.5/ea | Successfully completed | Mostly correct | Partially correct | Attempted |
| Application  -proper demonstration of program  -1 second delays | Successfully completed | Mostly correct | Partially correct | Attempted |
| Thinking  -planned sketch  -followed outline  -workflow | Successfully completed | Mostly correct | Partially correct | Attempted |
| Communication  -quality finished product looks | Successfully completed | Mostly correct | Partially correct | Attempted |