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Lab Section: 1108

**Project 5**

The purpose of this program was to make a Vehicle and Car class, where the car was derived from the vehicle class. The main executable program was provided as a test driver to test the classes we make against it. The terminal output will be provided at the end of this document. The most challenging aspect of this project was getting the derived functionality correct. When I was writing all of the files for this, I normally compile each function along the way as I write the project. I found I needed to write a couple of functions first to make sure they worked before I could even test other functions of the classes. Once I figured out the friend functions, I was able to test the others against the program provided. One issue I was having was getting the coordinates to work correctly. I kept getting random junk printing for the coordinate values. One thing I tried doing was accessing the variables different since they were a part of a different class, but my efforts were for not as that just made the compile errors even worse.

Another issue I was having was with the Makefile structure using cmake. I had to download cmake on my own personal Ubuntu machine after trying to use it a couple of times. Once I got cmake installed, I had to figure out how to properly link the files together in all of the differing folders. After I had that figured out my program was working relatively well, all that needed to be changed after getting the files linked properly were the coordinates. I found that setting each position of LLA equal to 0 in the default constructor solved the problem of junk at the beginning of the program.

If I had more time, I would see how much more could be done with derived class variables. I looked at the project 5 main cpp file and it was slightly confusing seeing how the variables were being used. It started to make more sense what variables were being printed to the screen when I was trying to fix the default constructor, because when I set the coordinates to zero the variables at the start of the program were now zero. The variables changed as the program continued. To run this program go to the build folder and type cmake .. then “make all”, and finally “make install”. The project executable is named proj5.

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///// Base Tests /////

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Testing Base Default ctor

Vehicle #1: Default Ctor

Testing Base insertion operator

Vehicle #1 @ [0, 0, 0]

Base idgen: 2

Testing Base Parametrized ctor

Vehicle #99: Parametrized-ctor

Vehicle #99 @ [39.54, 119.82, 4500]

Base idgen: 3

Testing Base Copy ctor

Vehicle #3: Copy-ctor

Vehicle #3 @ [39.54, 119.82, 4500]

Base idgen: 3

Testing Base Assignment operator

Vehicle #1: Assignment

Vehicle #1 @ [39.54, 119.82, 4500]

Base idgen: 3

Testing Base Move Function

Vehicle #1: CAN’T MOVE - I DON'T KNOW HOW

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///// Derived Tests /////

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Testing Derived Default ctor

Vehicle #3: Default Ctor

Car #3: Default-ctor

Testing Derived insertion operator

Car #3 Plates: , Throttle: 0 @ [0, 0, 0]

Derived idgen: 4

Testing Derived Parametrized ctor

Vehicle #999: Parametrized-ctor

Car #999: Parametrized-ctor

Car #999 Plates: Gandalf, Throttle: 0 @ [39.54, 119.82, 4500]

Derived idgen: 5

Testing Derived Copy ctor

Vehicle #5: Copy-ctor

Car #5: Copy-ctor

Car #5 Plates: Gandalf, Throttle: 257116576 @ [39.54, 119.82, 4500]

Derived idgen: 5

Testing Derived Assignment operator

Vehicle #3: Assignment

Car #3: Assignment

Car #3 Plates: Gandalf, Throttle: 257116576 @ [39.54, 119.82, 4500]

Derived idgen: 5

Testing Derived Move Function

Car #3: DRIVE to destination, with throttle @ 75

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///// Tests Done /////

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Car #5: Dtor

Vehicle #5: Dtor

Car #999: Dtor

Vehicle #999: Dtor

Car #3: Dtor

Vehicle #3: Dtor

Vehicle #3: Dtor

Vehicle #99: Dtor

Vehicle #1: Dtor