**Proj6.cpp Documentation**

**Purpose:**

The purpose of this project was to be familiar constructors, inheritance, polymorphisms, pointers, references, and operators.

**Design:**

The design of this project was almost similar to project 5. Most of the code was already written because Papachristos made it for us to test against. All we had to do was make the Vehicle and Car files. I am slowly getting the hang of polymorphisms.

**Challenges:**

I did not have much of a challenge in this project like I did with project 4 and this project was very similar to project 5. I gave myself time to work on this project unlike project 3 and 4. I put more time into understanding what I was writing. Me and my friend did collaborate a little on the Car file because we were both a little stuck with polymorphism. It was much easier to this time to be able to use the <CSTRING> library.

**Changes:**

This project wasn’t as difficult as anticipated. Most of the code was already written and we just had to make it work with proj6.cpp. The only thing I would change is to NOT make it due the day before the exam.

**Observations:**

First are the constructor tests.

You can clearly see that when the object is initialized, the messages “**Vehicle: Default-ctor”** and **“Car: Default-ctor”** are initiated at the creation of the class. That is the end of the default constructor test.

The next test is the parameterized constructor test. There is not too much happening other than the print our is “**Vehicle: Parametrized-ctor”** and **“Car: Parametized-ctor”** which is expected. Then the copy constructor and assignment operator is tested and is successful by the output.

Next are the polymorphisms tests. The print outs of “**Car: DRIVE to destination, with throttle @ 75”** and “**Car: Throttle: 0 @ [39.54, 119.82, 4500]”** demonstrate successful methods.

Next are the **“Polymorphic Base Class Pointer Tests“** and then the deconstructors. I’m not going to go into detail with what is happening but you can see with the print out below the full output in the terminal.

**FULL OUTPUT:**

**////////////////////////////////**

**///// Constructor Tests /////**

**////////////////////////////////**

**Testing Derived Default ctor**

**Vehicle: Default-ctor**

**Car: Default-ctor**

**Testing Derived Parametrized ctor**

**Vehicle: Parametrized-ctor**

**Car: Parametized-ctor**

**Testing Derived Copy ctor**

**Vehicle: Copy-ctor**

**Car: Copy-ctor**

**Testing Derived Assignment operator**

**Car: Assignment**

**/////////////////////////////////**

**///// Polymorphism Tests /////**

**/////////////////////////////////**

**Testing VIRTUAL Move Function for DERIVED Class Objects**

**Car: DRIVE to destination, with throttle @ 75**

**Testing Insertion operator<< Overload for BASE Class Objects**

**Car: Throttle: 0 @ [39.54, 119.82, 4500]**

**///////////////////////////////////////////////////**

**///// Polymorphic Base Class Pointer Tests /////**

**///////////////////////////////////////////////////**

**Testing VIRTUAL Move Function on Base Class Pointers**

**Car: DRIVE to destination, with throttle @ 75**

**Car: DRIVE to destination, with throttle @ 75**

**Car: DRIVE to destination, with throttle @ 75**

**Testing Insertion operator<< Overload for Base Class Pointers**

**Car: Throttle: 75 @ [37.77, 122.42, 52]**

**Car: Throttle: 75 @ [37.77, 122.42, 52]**

**Car: Throttle: 75 @ [37.77, 122.42, 52]**

**////////////////////////////**

**///// Tests Done /////**

**////////////////////////////**

**Car: Dtor**

**Vehicle: Dtor**

**Car: Dtor**

**Vehicle: Dtor**

**Car: Dtor**

**Vehicle: Dtor**