Homework 6

Due April 1, 11:00am

50 points

CS 4499/5531

Scientific Computing

Dr. Leslie Kerby

1. **Create 5 more Trucks (for a total of 10).** Update the value of the previous 5 Trucks already created (from HW 5) to be current as of 4/1/2021, using the updateValue() method. Make sure to have a range of years, mileage, and models in your Truck vector.

2. **Find the total current value of all 10 Trucks.** Use accumulate, a lambda function, and the method getValue(). Print the total to the screen with text explaining it is the total.

3. **Find the total estimated value in 5 years.** Find the estimated value of all 10 trucks in 5 years, using the estimateVal() free function. Then use accumulate to find the total future value of all 10 trucks (the returned future_vals float vector). Print it to the screen with an explanation.

4. **Create a print method within the Truck class.** First create a Truck getter method called getName() which returns <Year> + <Manufacturer> + <Model> + <4x4--if it has it>. Use the ternary (or immediate if) operator to decide what to print for the 4x4. Then create a print method called printTruck() and give it the appropriate type. Have it print getName(). (Note: you may also overload the std::ostream& operator<< to print instead of creating printTruck().)

5. **Sort your 10 Trucks alphabetically.** Sort by getName(). Use a lambda in the sort method or overload the operator<. Using a ranged for loop, print out your 10 sorted Trucks using your print method.

6. **Now sort your vector of 10 Trucks by mileage.** Make sure to keep the alphabetical getName() order in the case of identical mileage. Use a lambda function or overload the operator<. Again print out the Trucks.

Attach your source code, screenshots of output, and header (if used) files. Include compiled executables if you wish.