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Project 2 Report

The main obstacle I had to overcome was trying to figure out what math mistake I had made. My program was running and working fine for most tests, but for a few tests I ran with different numbers/variables, the total rental charge price was slightly off. To figure out the problem, I started with the basic “Elon Musk” test example that was given in the Project 2 Directions. I slowly changed each variable to eliminate the possibilities of errors. For example, I first changed the luxury status from no to yes and checked if my answer was right, and it was. Then I changed rental days, winter/non-winter months, and so forth until I started changing the actual number of miles. Everything was working until I had the total miles traveled to over 400. That made it clear that there was some mathematical error in my calculation for prices over 400 miles.

Found the mistake!!

Originally had for total miles > 400:

else if (totalMiles > 400)

            rentalCharge = baseRate + (0.27\*100) + 0.27\*(totalMiles - 100)

+ 0.19\*(totalMiles-400);

instead of

rentalCharge = baseRate + (0.27\*100) + (0.27\*300) + 0.19\*(totalMiles-400);

Reason why this is an issue – for mileage between 100 and 400, it works to simply subtract 100 from the total value in order to get the next 300 miles after 100 to be $0.27 or $0.21 per mile (depending on month). But past 400, can’t have it be 0.27\*(totalMiles – 100) because that would be some 400+ value – 100 multiplied by $0.27 + $0.19(totalMiles – 400) 🡪 essentially it would be adding cost because it would still charge values past 400 with $0.27 or $0.21 when it should be at a fixed 300 miles \* either $0.27 or $0.21 because that value is no longer changing. That was my biggest obstacle and once I overcame it, everything seemed to be working smoothly!

Tested error messages by putting in wrong values (ALL OF THE CORRECT ERROR MESSAGES WERE DISPLAYED FOR THESE TESTS)

* Starting odometer negative – tried 0 and negative – rest of values correctly inputted.
* Ending odometer less than starting – rest of values correct.
* Number of rental days negative – tried 0 and negative number – rest of values correct.
* No customer name entered, rest of values correct
* Luxury status not y or n (entered Y & N & p to make sure lower case setting works). Rest of values correct.
* Month is not an integer between 1 & 12 – entered 13. Rest of values correct.
* Testing out multiple errors to make sure that only one line prints: Enter odometer start: 0; odometer end: -10; rental days: 5 (correct); customer name: (enter no customer name); luxury status: p; month: 20. Only first error message is printed: “The starting odometer reading must be nonnegative.” Can repeat with multiple errors throughout – still only prints first error.

Testing Correct Data

* Elon Musk Test variations:
  + (2417, 2754, 4, Elon Musk, n, 10)
  + (2417, 2754, 4, Elon Musk, y, 10)
  + (2417, 2754, 10, Elon Musk, n, 10)
  + (2417, 2754, 10, Elon Musk, y, 10)
  + (2417, 2754, 4, Elon Musk, n, 1)
  + (2417, 3000, 4, Elon Musk, n, 10)
  + (2417, 3000, 4, Elon Musk, n, 1)
  + (2417, 2450, 2, Elon Musk, n, 12)
  + ... etc, basically just changing all the different data sets to make sure everything works no matter if it’s under 100 miles, over 100, over 400, luxury/not luxury, winter/not winter