

CS 1050 Homework Assignment 1

Rental Car Billing

Spring 2019

Due: Friday, February 15, 2019 at 5:00 PM (No Extension). Submission system shuts off at 5pm.

Directions

Complete the following homework assignment using the description given in each section.

Purpose

- Perform basic I/O operations using scanf and printf functions.
- Use conditional statements.
- Perform simple mathematical calculations.
- Use loops.

Submission information:

Submit this assignment by following the instructions given below. SUBMIT ONLY the .c file (no a.out or executable file is required). Use the following submit command.

Filename must be: *sectionletter-hw1.c* (Include your respective lab section)

e.g.: c-hw1.c

\$ submit <class> <assignment> <filename>

e.g.: \$ submit CS1050 HW1 c-hw1.c

Description

You have been asked to create a simple billing system for customers of Interpedia. Interpedia is a one-stop shop to find a rental car from a variety of companies. For the Columbia market, Interpedia offers 3 rental car companies (Hurts, Mavis, and International). Each rental car company offers cars in the Economy, Mid-Size, Full-Size, Luxury, SUV, and Minivan categories.

Your job is to create a program that allows a customer of Interpedia to calculate the cost to rent their desired type of car from the company they select. The customer will want to enter a number corresponding to the rental company they prefer, and then enter another number corresponding to the type of car they desire. Finally, the customer will indicate how many days they will be renting the car. Your program will determine the cost per day and will then calculate the sub-total amount that will be owed by the customer.

The following table details the daily rates for each of the different types of cars and vendors.

	Hurts	Mavis	International
Economy	\$24	\$24	\$28
Mid-Size	\$31	\$24	\$30
Full-Size	\$64	\$65	\$67
Luxury	\$97	\$98	\$89
SUV	\$75	\$50	\$50
Minivan	\$79	\$77	\$75

For example, if a customer wished to rent a Luxury car from Mavis for 3 days, the cost would be \$98 per day times 3 days = \$294.

After calculating the rental subtotal, your program should also compute an 8% rental car tax to be added to the subtotal for a final total. Tax should be computed in even cents, and then rounded to the nearest dollar (50 cents or more should round up). Use all integer math (no floating point variables). Example: $\$294 * 8\% = \$23.60 = 2,360$ cents, so tax = \$24 (rounded up because 60 cents is greater than or equal to 50 cents). Grand total in this case would be $\$294 + \$24 = \$318$.

Finally, you should ask the user if they want to rent additional cars (keep going). Keep track of a running total owed for all cars rented, and print a grand total at the end.

Hint: If you feel comfortable writing functions, you may certainly do that. However, we have not discussed functions in detail yet, so this assignment may be implanted with only main() if you prefer.

Bonus: In addition to tracking the total due for all cars rented, also track the sub-total of all cars rented (prior to tax) and the total of all tax paid as well.

Sample Output

Character in **bold** are inputs from the user

**** Interpedia Car Rental System ****

1. Hurts
2. Mavis
3. International
Please select a rental company (1-3): **-1**

1. Hurts
2. Mavis
3. International
Please select a rental company (1-3): **0**

1. Hurts
2. Mavis
3. International
Please select a rental company (1-3): **7**

1. Hurts
2. Mavis
3. International
Please select a rental company (1-3): **1**

1. Economy
2. Mid-Size
3. Full-Size
4. Luxury
5. SUV
6. Minivan
Please select a car type (1-6): **-1**

1. Economy
2. Mid-Size
3. Full-Size

4. Luxury
5. SUV
6. Minivan

Please select a car type (1-6): 0

1. Economy
2. Mid-Size
3. Full-Size
4. Luxury
5. SUV
6. Minivan

Please select a car type (1-6): 7

1. Economy
2. Mid-Size
3. Full-Size
4. Luxury
5. SUV
6. Minivan

Please select a car type (1-6): 6

Enter the number of days you will rent the car: 11

Daily rate = \$79

Sub-total = \$869

Tax = \$70

Total = \$939

Keep going (1 to continue or 2 to quit)? 1

BONUS: Running sub-total = \$869

BONUS: Running tax = \$70

Running total = \$939

1. Hurts
2. Mavis
3. International

Please select a rental company (1-3): 3

1. Economy
2. Mid-Size
3. Full-Size
4. Luxury
5. SUV
6. Minivan

Please select a car type (1-6): 4

Enter the number of days you will rent the car: 3

Daily rate = \$89

Sub-total = \$267

Tax = \$21

Total = \$288

Keep going (1 to continue or 2 to quit)? 1

BONUS: Running sub-total = \$1136

BONUS: Running tax = \$91

Running total = \$1227

1. Hurts
2. Mavis
3. International

Please select a rental company (1-3): 1

1. Economy
2. Mid-Size
3. Full-Size
4. Luxury
5. SUV
6. Minivan

Please select a car type (1-6): 4

Enter the number of days you will rent the car: 1

Daily rate = \$97

Sub-total = \$97

Tax = \$8

Total = \$105

Keep going (1 to continue or 2 to quit)? 2

BONUS: Running sub-total = \$1233

BONUS: Running tax = \$99

Running total = \$1332

*** Grand total = \$1332 ***

Guidelines for Grading Homework-1

60 Points Possible (+5 bonus)

20 points – Displaying the company and car type menus, performing the error check to make sure valid data is entered, and reading the company and car types correctly.

10 points – Calculating the daily rate correctly.

10 points – Calculating tax correctly, including rounding.

10 points – Keeping a running total.

5 points – Program loops accordingly and prints grand total.

5 points – Displaying all the outputs as shown in the sample output above, writing comments in the code where it is necessary, using proper headers (name and pawprint), and general coding style.