

Problem Set – More on Functions

The usual naming rules for the folder and files still apply to your IPOs and programs. Remember to post your github link in both the logic and program upload areas.

1. Prompt the user to repeatedly to do the program input (Yes or No)). If they respond Yes, go into the loop and prompt them for last name, month and sales. Write a function to compute next month's forecast. Pass to the function month and sales. Determine the forecast percent (see below) and compute next month's sales to be $\text{sales} \times (1 + \text{forecast percent})$. Return next month's sales and display the value.

Month	Forecast Percent
Jan, Feb, Mar	0.10
Apr, May, Jun	0.15
Jul, Aug, Sep	0.20
Oct, Nov, Dec	0.25

Input	Process	Output
Month, sales	Compute forecast: $(1 + \text{forecast percent}) \times \text{sales}$	Next month sales
Lastname, month, sales	Read user input and compute next month sales	Next month sales

2. Prompt the user to repeatedly to do the program input (Yes or No)). If they response Yes go into the loop and prompt the user for length, width, and height of a room. Write a function to compute the wall square footage of the room. The function should receive the length, width and height of the room and return wall square footage $2 \times \text{length} \times \text{height}$ (2 of the walls) + $2 \times \text{width} \times \text{height}$ (the other 2 walls). A gallon of paint covers 50 square feet. Compute the number of gallons needed to paint the walls of the room (square footage of the room / 50). Display the number of gallons needed.

input	process	Output
Length, width, height	Compute square footage of the wall: $(2 \times L \times H) + (2 \times W \times H)$	Sq feet
Length, width, height	Return the sq feet. $\text{Sq feet} / 50 = \text{gallons}$	Gallons of paint

Note: the computation can be any algebraic equivalent as long as the computation is correct.

Bonus: Add the following

- a. A function to compute the area of the ceiling or floor (length x width).
 - b. Use the function to get the area of the ceiling or floor.
 - c. Determine the number of gallons of ceiling paint or floor varnish
 - d. Display the number of gallons for the ceiling or floor.
3. Prompt the user to repeatedly to do the program (input (Yes or No)). If they response Yes go into the loop and prompt the user for make, model, electric vehicle code (Y or N) and MSRP (sticker price) of an automobile. Write a function to compute the out the door price. Pass to the function the MSRP, make, model and electric vehicle code. Determine the percent off the MSRP then compute the new MSRP and finally add 7% sales tax to the total. Return and display the total. Also sum all MSRP's and sum of all sales price of the cars (MSRP – discount + tax).

To determine percent off MSRP

Percent off MSRP

Honda Accord	0.10
Toyota Rav4	0.15
All electric vehicles	0.30
All other vehicles	0.05

Input	Process	Output
Make, model, evc, msrp	Compute out door price: Honda accord: msrp * .1 Toyota Rav4: msrp * .15 Evc = Y: msrp * .3 Else: msrp * .05	Out door price
Make, model, evc, msrp	Read user input, compute out door price. New msrp: Out door price * .07	Total Sum of all the sales price of cars

4. Prompt the user to repeatedly to do the program input (Yes or No)). If they response Yes go into the loop and prompt the user for last name and miles from downtown Chicago. Write a function to compute the train ticket price. Pass to the function the miles from downtown Chicago and determine the ticket price. Return the ticket price. Sum price of all tickets.

Miles from Downtown Chicago	Ticket Price
30 or more	\$12
20 to 29	\$10
10 to 19	\$8
All others	\$5

input	process	Output
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Miles	Compute ticket price: if miles >= 30: \$12 If miles >= 20 : \$10 If miles >= 10: \$8 Else: \$ 5	Ticket price
Lastname, miles	Read user input, compute ticket price	Ticket price Sum of all ticket prices

5. Prompt the user to repeatedly to do the program input (Yes or No)). If they response Yes go into the loop and prompt the user for county and market value of a home. Write a function to compute the assessed value. Pass to the function the county and market value. The function will determine the assessed value percent then compute and return the assessed value. (Multiply the market value by assessed value percent. Sum and display all market values and assessed values.

Input	process	Output
County, market value	Compute assessed value: Assessed value percent * market value	Assessed value
County, market value	Read user input and compute assessed value.	Sum of all market values Sum of all assessed values

County	Assessed Value Percent
Cook	0.90
DuPage	0.80
McHenry	0.75
Kane	0.60
All others	0.70