Problem Set – More on Functions

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 sales x (1+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

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| Input | Process | Output |
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| User response  (Yes/No) | Check if the user wants to continue and input data | Program continues or exits. |
| Last Name | Collect the user's last name. | None |
| Month | Determine the forecast percent based on the month. | None |
| Sales value (numeric) | Calculate next month's forecasted sales using the formula. | Display next month's forecasted sales. |
|  | If user answers 'No', exit the program. |  |

1. 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 square footage of the room. The function should receive the length, width and height of the room and return square footage (2 x length x width (floor and ceiling) + 2 x length x height (2 of the walls) + 2 x width x height (the other 2 walls). A gallon of paint covers 50 square feet. Compute the number of gallons needed to paint the room (square footage of the room / 50). Display the number of gallons needed.

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| Input | Process | Output |
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| 1.User response  (Yes/No) | Check if the user wants to continue and input data | Program continues or exits. |
| 2.Room Dimensions: | Calculate the square footage of the room using the formula. | Square footage of the room. |
| - Length | Calculate the number of gallons of paint needed using: | Number of gallons needed to paint the room. |
| - Width | |  | | --- | | Gallons Needed=(Square Footage​ |   /50   |  | | --- | | ) | |  | |  | |  |
| - Height |  |  |
| 3.Prompt for room details again (Yes/No) |  |  |

1. 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

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| Input | Process | Output |
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| User Response: Yes or No | Check if the user wants to continue and input data | Program continues or exits. |
| Car Details: | Determine the discount based on make, model, and electric vehicle status. | Display the final "out-the-door" price of the car. |
| Make | Apply the discount to the MSRP. |  |
| Model | Add 7% sales tax to the discounted price |  |
| Electric Vehicle Code (Y/N) | Update running totals of all MSRPs and sales prices. |  |
| MSRP (sticker price) |  |  |
| User Response: Yes or No | If "Yes", continue prompting for new cars. If "No", exit the program and display totals. | Total sum of all MSRPs and sales prices displayed when the user exits. |

1. 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 down town Chicago and determine the ticket price. Return the ticket price. Sum price of all tickets.

Miles from Down Town Chicago Ticket Price

30 or more $12

20 to 29 $10

10 to 19 $8

All others $5

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| Input | Process | Output |
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| User Response: Yes or No | Check if the user wants to continue and input data | Program continues or exits. |
| User Information: | Determine the ticket price based on miles from downtown Chicago. | Display ticket price for each passenger. |
| Last Name | Calculate ticket price based on these conditions: | Display total ticket price when the program exits. |
| Miles from Downtown Chicago | 30 or more miles: $12, 20-29 miles: $10, 10-19 miles: $8, Less than 10 miles: $5. |  |
|  | Add the ticket price to the running total of all ticket prices. |  |
| Exit Condition: Yes or No | If the user responds "No", exit the program and display the total price of all tickets. |  |

1. 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. (Multiple the market value by assessed value percent. Sum and display all market values and assessed values.

County Assessed Value Percent

Cook 0.90

DuPage 0.80

McHenry 0.75

Kane 0.60

All others 0.70

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| Input | Process | Output |
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| User Response: Yes or No | Check if the user wants to continue and input data | Program continues or exits. |
| Home Details: | Determine the assessed value percentage based on the county. | Display the assessed value for each home. |
| County | Apply the corresponding assessed value percent to the market value. | Display total market value and assessed value when the program exits. |
| Market Value | Compute the assessed value by multiplying market value by the assessed value percent |  |
|  | Update the total sums of market values and assessed values. |  |
| Exit Condition: Yes/No | If the user responds "No", display the total market and assessed values and exit the program. |  |