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 |
| Last Name, Month, Sales | Define a function to compute next month's forecast: next\_month\_sales = sales \* (1 + forecast\_percent) based on the month. | Next Month's Sales |
|  | Determine forecast percent based on month and apply it to sales. |  |
|  | Return next month's sales. Display next month's sales value. |  |

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 |
| Length, Width, Height | Define a function to compute square footage: square\_footage = 2 \* length \* width + 2 \* length \* height + 2 \* width \* height | Number of gallons needed for painting |
|  | Compute the number of gallons needed: gallons\_needed = square\_footage / 50. | Display the number of gallons needed |
| User prompt (Yes/No) | Return and display the number of gallons needed. |  |

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 |
| Make, Model, EV Code, MSRP | Define a function to compute out-the-door price: discounted\_price = MSRP \* (1 - discount\_percent) and tax = discounted\_price \* 0.07 | Total Price (after discount and tax) |
|  | Apply the discount based on the car's make, model, and EV status, then compute the final price with tax. | Display MSRP, Discounted Price, and Total Price |
| User prompt (Yes/No) | Return and display the total. | Sum of all MSRP and sum of all sales prices |

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 |
| Last Name, Miles from Chicago | Define a function to compute the train ticket price based on distance: ticket\_price according to the chart. | Ticket Price |
| User prompt (Yes/No) | Return and display the ticket price for each person. | Sum of all ticket prices |

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 |
| County, Market Value | Define a function to compute the assessed value: assessed\_value = market\_value \* assessed\_percent | Assessed Value for the Home |
|  | Apply the assessed value percent based on county. | Sum of all market values and assessed values |
| User prompt (Yes/No) | Return and display the assessed value. Sum and display all market values and assessed values. |  |