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 |
| User Response | sk the user if they want to run the program (Yes or No). | Continue or stop the program. |
| Last Name | Ask the user for their last name. | Store the last name. |
| Month | Ask the user for the month. | Store the month. |
| Sales | Ask the user for the sales amount. | Store the sales amount. |
| Month and Sales | Check the month to find the forecast percent: | Forecast percent. |
|  | - Jan, Feb, Mar → 0.10 |  |
|  | - Apr, May, Jun → 0.15 |  |
|  | - Jul, Aug, Sep → 0.20 |  |
|  | - Oct, Nov, Dec → 0.25 |  |
|  | Calculate: Next Month Sales = Sales × (1 + Forecast Percent) | Next month sales. |
| Display Result | Show the next month’s sales forecast. | Display the result. |

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 |
| User's response: "Yes" or "No" | If the response is "Yes", the program asks for room measurements (length, width, height). | Display result or prompt again. |
| Length of the room | Get the room’s length from the user. | Store the length value |
| Width of the room | Get the room’s width from the user | Store the width value. |
| Height of the room | Get the room’s height from the user. | Store the height value. |
| Square footage formula | Calculate the total square footage using this formula: 2×(length×width)+2×(length×height)+2×(width×height)2 × (length × width) + 2 × (length × height) + 2 × (width × height)2×(length×width)+2×(length×height)+2×(width×height). | Square footage of the room. |
| Gallons of paint formula: | Divide square footage by 50 to get the number of gallons needed. | Display 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 |
| User's response: "Yes" or "No" | If the user inputs "Yes", the program asks for car details (make, model, electric vehicle code, MSRP). | Repeat or end the program. |
| Car make (e.g., Honda, Toyota, etc.) | Determine discount percentage based on the make/model or electric vehicle status (Y/N). | Apply the correct discount and compute new MSRP. |
| Car model (e.g., Accord, Rav4, etc.) | Calculate the discount price based on the percentage off the MSRP. | Compute and return the "out-the-door price" (MSRP - discount + tax). |
| Electric vehicle code (Y/N) | If electric vehicle code is "Y", apply 30% discount; otherwise, apply the discount based on make/model. | Display the "out-the-door price" and add to the total sum of all prices. |
| MSRP (sticker price of the car) | Calculate the sales tax (7%) and add it to the new discounted price to get the final price. | Display the sum of all MSRP’s 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 |
| User's response: "Yes" or "No" | If the user inputs "Yes", the program asks for the last name and miles from downtown Chicago. | Repeat or end the program. |
| Last name of the person | Get the last name of the person from the user (optional, just for info). | Store the last name. |
| Miles from downtown Chicago | Get the miles from downtown Chicago. Based on miles, calculate the ticket price. | Return and display the ticket price. |
| Ticket price based on miles | Use the following rules to determine the ticket price: | Display the ticket price and sum it with all previous prices. |
|  | 30 miles or more: $12 | Sum the total of all ticket prices. |
|  | 20 to 29 miles: $10 |  |
|  | 10 to 19 miles: $8 |  |
|  | Less than 10 miles: $5 |  |

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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| User's response: "Yes" or "No" | If the user inputs "Yes", the program asks for the county and market value of the home. | Repeat or end the program. |
| County (e.g., Cook, DuPage, McHenry, Kane) | Determine the assessed value percent based on the county. | Display the assessed value for the home. |
| Market value of the home | Multiply the market value by the county’s assessed value percent to calculate the assessed value. | Return and display the assessed value. |
| Assessed value percent for the county | Sum the market values and assessed values of all homes. | Display the sum of all market values and assessed values. |
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