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 |
| response | Def compute\_forecast(month, sales)  Forecast = 0  If month == “Jan” or month == “feb” or month == “mar”  Forecast == 0.10  Elif month == “apr” or “may” or “June”  Forecast == 0.15  Elif month == “Jul” or “Aug” or “Sep”  Forecast == 0.20  Elif month == “oct” or “nov” or “dec”  Forecast == 0.25  Next month = sales \* (1 + forecast)  **Return next month** | Lname |
| Lname  Month  sales | While response == “yes”  Sales\_forecast = compute\_forecast(month, sales) | Month |
| response |  | sales |
|  |  | Sales\_forecast |

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 |
| Response | Def compute\_square\_footage(length, width, height)  Floor ceiling = 2 \* length \* width  Walls length= 2 \* length height  Walls width = 2 \* width \* height  Total\_square\_footage = floor ceiling + walls length + walls width  **Return total\_square\_footage** |  |
| Length  Width  height | While response == “yes”  Square footage = compute\_square\_footage(length, width, height)  Gallons = square\_footage / 50 | Square\_footage  gallons |
| response |  |  |
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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 |
| Response | Total msrp = 0  Total sales price = 0 |  |
|  | Def compute\_price(msrp, make, model, ev)  Disc = 0  If make == “honda” and model == “accord”  Disc = 0.10  Elif make == “Toyota” and model == “rav4”  Disc = 0.15  Elif ev == “yes”  Disc = 0.20  Else:  Disc = 0.05  Disc\_price = msrp \* (1-disc)  Final\_price = disc\_price \* 1.07  **Return final\_price** |  |
| Make  Model  Ev  msrp | While response == “yes”  Out\_the\_door = compute\_price(msrp, make, model, ev) | Total msrp |
|  | Total msrp += msrp  Total sales price += out\_the\_door | Total sales price |

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 |
| Response | Def compute\_ticket\_price(miles)  If miles > 30  Price = 12  Elif Miles >= 20  Price = 10  Elif Miles >= 10  Price = 8  Else  Price = 5 |  |
| Lname  miles | Total price = 0  While response == “yes”  Ticket\_price = compute\_ticket\_price(miles)  Total price += ticket\_price | Lname  Miles  Ticket\_price |
| Response |  | Total price |
|  |  |  |

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 |
| response | Def compute\_assessed\_value(county, market\_value)  If county == “Cook”  Percent = 0.90  Elif county == “dupage”  Percent = 0.80  Elif county == “mchenry”  Percent = 0.75  Elif county == “Kane”  Percent = 0.60  Else:  Percent = 0.70  Assessed\_value = market\_value \* percent  Return **assessed\_value** |  |
| County  Market\_value | Total market = 0  Total assessed = 0  While response == “yes”  Assessed\_value = compute\_assessed\_value(county, market\_value) | County  Market\_value  Assessed\_value |
| response |  | Total market |
|  |  | Total assessed |