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’s choice whether to do the program (yes/no) | def compute forecast sales (month, sales)  if month == Jan or month == Feb or month == Mar  Forecast percent = 0.1  elif month == Apr or month ==May or month == Jun  Forecast percent = 0.15  elif month == Jul or month ==Aug or month == Sep  Forecast percent = 0.2  Elif month == Oct or month ==Nov or month == Dec  Forecast percent = 0.25  Else print you must enter month.  Next month sales = sales x (1 + forecast percent)  Return next month sales | Last name  Month  Next month's forecasted sales |
| Last name | User’s choice whether to do the program (yes/no)  While user’s choice is yes  Input last name  Input month  Input sales  Next month sales = compute forecast sales |  |
| Month | Print last name  Print month  Print next month sales |  |
| sales | User’s choice whether to. do the program again (yes/no) |  |
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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 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 choice whether they want to do the program (yes/no) | def square footage (length, width, height):  square footage = (2 x length x width + 2 x length x height + 2 x width x height  return square footage | Square footage of the room  Number of gallons needed |
| Length | User’s choice whether to do the program (yes/no)  While user’s choice is yes  Input length  Input width  Input height  Number of gallons = square footage (length, width, height) / 50 |  |
| Width | Print square footage of the room  Print number of gallons needed |  |
| Height | User’s choice whether to do the program again (yes/no) |  |
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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 |
| User’s choice whether they want to do the program (yes/no) | def compute out the door price (make, model, MSRP, electric vehicle code  if make == Honda and model == Accord  percent off = 0.1  elif make == Toyota and model == Rav4  percent off = 0.15  elif electric vehicle code == Y  percent off = 0.3  else: percent off MSRP = 0.05  discount=percent\_off \* msrp newmsrp = msrp - discount msrpwtax = newmsrp\*1.07  return newmsrp, msrpwtax | Discounted MSRP  MSRP with tax  Total MSRP sum  Sum of sale price |
| Make | Total MSRP sum = 0  Sum of sales price = 0  User’s choice whether to do the program (yes/no) |  |
| Model | While user’s choice is yes  Input make  Input model  Input electric vehicle code  msrp = float(input("MSRP:"))  newmsrp, msrpwtax = compute\_out\_the\_door\_price(make, model, msrp, electric\_vehicle\_code)  Total MSRP sum = total MSRP sum + MSRP  Sum of sales price = Sum of sales price + MSRP with tax  Print MSRP  Print discounted MSRP  Print MSRP with tax |  |
| Electric vehicle code (Y or N) | User’s choice whether to do the program again (yes/no) |  |
|  | Print MSRP  Print total MSRP sum  Print sum of sale price |  |
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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 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 choice whether they want to do the program (yes/no) | def compute the train ticket price (miles from downtown Chicago)  if miles from downtown Chicago >=30  ticket price = 12  elif miles from downtown Chicago is 20-29  ticket price=10  elif miles from downtown Chicago is 10-19  ticket price = 8  Else, ticket price = 5  Return ticket price | Ticket price  Sum price of all tickets |
| Last name | Sum price of ticket= 0  User’s choice whether they want to do the program (yes/no) |  |
| Miles from downtown Chicago | While user’s choice is yes  Input last name  Input miles  ticket price = Compute the train ticket price (miles from downtown Chicago)  Sum price of ticket = sum price of ticket + ticket price  Print last name  Print miles from downtown Chicago  Print ticket price |  |
|  | User’s choice whether they want to do the program again (yes/no) |  |
|  | Print sum price of all tickets |  |
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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 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 |
| User’s choice whether they want to do the program (yes/no) | def compute assessed value (country, market value):  if county = cook  assessed value percent = 0.9  elif county = DuPage  assessed value percent = 0.8  elif county = McHenry  assessed value percent = 0.75  elif county = Kane  assessed value percent = 0.6  else: assessed value percent = 0.7 | All market values  Assessed values |
| County name | Assessed value = market value x assessed value percent  Return assessed value |  |
| Market value | Total market value = 0  Total assessed value = 0  User’s choice whether they want to do the program (yes/no) |  |
|  | While user’s choice is yes  Input county  Input market value  Assessed value = compute assessed value (country, market value)  Total market value = total market value + market value  Total assessed value = total assessed value + assessed value  Print county  Print market value  Print assessed value |  |
|  | Print total market value  Print total assessed value |  |
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