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 |
|  | CompForecast(month, sales)  forecastPercent = DetermineForecastPercent(month)  NextMonthSales = sales \* (1+forecastPercent)  return NextMonthSales |  |
| LastName,  Month,  Sales | Main  Do you want to do this program (Yes or No)  While (Yes)  Input LastName, month, sales  NextMonthSales = CompForecast(month, sales)  Display NextMonthSales  Do you want to continue with this program? | NextMonthSales |
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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 |
|  | CompSquareFootage(length, width, wall1length, wall1height, wall2length, wall2height, ceilinglength, ceilingwidth, floorlength, floorwidth):  ceiling\_area = 2 \* floorlength \* ceilingwidth  wall1\_area = 2 \* wall1length \* wall1height  wall2\_area = 2 \* wall2length \* wall2height  SquareFootage = ceiling\_area + wall1\_area + wall2\_area  return SquareFootage |  |
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| Length,  Width,  Height,  wall1length, wall1height, wall2length, wall2height, ceilinglength, ceilingheight, floorlength, floorwidth | Main  Do you want to do this program? (Yes or No)  While (Yes)  Input length, width, height, wall1length, wall1height, wall2length, wall2height, ceilinglength, ceilingheight, floorlength, floorwidth  SquareFootage = CompSquareFootage(length, width, wall1length, wall1height, wall2length, wall2height, ceilinglength, ceilingwidth, floorlength, floorwidth)  Gallons = SquareFootage / 50  Display SquareFootage, Gallons  Do you want to run the program again? | Gallons, SquareFootage |

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).

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| Input | Process | Output |
|  | CompOutTheDoorPrice(msrp, make, model, electric\_vehicle\_code):  percent\_off = 0  if make == "Honda" and model == "Accord":  percent\_off = 0.10  elif make == "Toyota" and model == "Rav4":  percent\_off = 0.15  elif electric\_vehicle\_code == "Y":  percent\_off = 0.30  else:  percent\_off = 0.05  new\_msrp = msrp \* (1 - percent\_off)  sales\_tax = 0.07 \* new\_msrp  total = new\_msrp + sales\_tax  return total |  |
| Msrp  Make  Model  electricvehiclecode | Main  TotalMSRP = 0  TotalSalesPrice = 0  Do you want to do this program (Yes or No)  While (Yes)  Input make, model, electricvehiclecode, msrp  OutTheDoorPrice = CompOutTheDoorPrice(msrp, make, model, electric\_vehicle\_code)  TotalMSRP = TotalMSRP + MSRP  TotalSalesPrice = TotalSalesPrice + OutTheDoorPrice  Do you want to run this program again? | TotalMSRP  TotalSalesPrice |
|  | Display TotalMSRP, TotalSalesPrice |  |

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 |
|  | CompTrainTicket(Miles):  if Miles >= 30:  TicketPrice = 12  else:  if Miles >= 20:  TicketPrice = 10  else:  if Miles >= 10:  TicketPrice = 8  else:  TicketPrice = 5  return TicketPrice |  |
| Miles  LastName | Main  TotalTicketPrice = 0  Do you want to do this program? (Yes or No)  While (Yes)  Input miles, LastName  TrainTicketPrice = CompTrainTicket(Miles)  Display TrainTicketPrice  TotalTicketPrice = TotalTicketPrice + TrainTicketPrice  Do you want to run this program again? | TrainTicketPrice |
|  | Display TotalTicketPrice | TotalTicketPrice |

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.

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| Input | Process | Output |
|  | CompAssessedValue(County, MarketValue):  if County == "Cook":  AssessedValue = MarketValue \* 0.90  elif County == "DuPage":  AssessedValue = MarketValue \* 0.80  elif County == "McHenry":  AssessedValue = MarketValue \* 0.75  elif County == "Kane":  AssessedValue = MarketValue \* 0.60  else:  AssessedValue = MarketValue \* 0.70  return AssessedValue |  |
| MarketValue  County | Main  TotalMarketValue = 0  TotalAssessedValue = 0  Do you want to do this program? (Yes or No)  While (Yes)  Input County, MarketValue  AssessedValue= CompAssessedValue(County, MarketValue)  Display AssessedValue  TotalMarketValue = TotalMarketValue + MarketValue  TotalAssessedValue = TotalAssessedValue + AssessedValue  Do you want to run this program again? | AssessedValue |
|  |  |  |
|  | Display TotalAssessedValue, TotalMarketValue | TotalAssessedValue  TotalMarketValue |