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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| Insert | Process | Output |
| Prompt | #Function  Def compute(month, sale)  If month == Jan or Feb or Mar  Forecast percent = .1  Elif month == Apr or May or Jun  Forecast percent = .15  Elif month == Jul or Aug or Sep  Forecast percent = .2  Else  Forecast percent = .25  Next month sale = sales \* (1 + forecast percent)  Return next month sale | Last name + next month sale |
| Last Name | #main  Prompt  While prompt == Y  Last name  Month  Sales  Next month sale  Print last name + next month sale  Prompt |  |
| Month |  |  |
| Sales |  |  |

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 | #Function  Compute(length, width, height)  Square footage = (2\*L\*W) + (2\*L\*H) + (2\*W\*H)  Gallons needed = square footage / 50  Return gallons needed | Gallons Needed |
| Width | #main  Prompt  While prompt = Y  Length  Width  Height  Gallons needed = compute (L, W, H)  Print Gallons needed  Prompt |  |
| Height |  |  |
| Prompt |  |  |

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 |
| Prompt | #function  Compute(msrp, make, model, electric)  If make = honda and model = accord  Percent off = 0.10  Elif make = Toyota and model = rav4  Percent off = 0.15  Elif electric = y  Percent off = 0.30  Else  Percent off = 0.05  New msrp = msrp – (percent off \* msrp)  Total = new msrp + (new msrp \* 0.07)  Return total | Total |
| Make | Sum msrp = 0 | Sum MSRP |
| Model | Sum total = 0 | Sum Total |
| Electric | Prompt |  |
| Total | While prompt = y  Make  Model  Electric  Msrp  Total = compute(make, msrp, model, electric  Sum msrp = sum msrp + msrp  Sum total = sum total + total  Print total  prompt |  |

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 |
| Prompt | #function  Def compute(miles Chicago)  If miles Chicago >= 30  Ticket price = 12  elif miles Chicago >= 20  Ticket price = 10  elif miles Chicago >= 10  Ticket price = 8  else  Ticket price = 5  Return ticket price | Last name + ticket price |
| Last name | Sum tickets = 0 | Sum tickets |
| Miles chicago | While prompt = Y  Last name  Miles Chicago  Ticket price = compute(miles Chicago)  Sum tickets = sum tickets + ticket price  Last name + ticket price  prompt |  |

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 |
| prompt | Def compute (county, market value)  If county == Cook  Assessed value percent = 0.90  Elif county == DuPage  Assessed value percent = 0.80  Elif county == McHenry  Assessed value percent = 0.75  Elif county == Kane  Assessed value percent = 0.60  Else  Assessed value percent = 0.70  Assessed value = market value \* assessed value percent  Return assessed value | Assessed value |
| County | All market = 0 | All market |
| Market value | All assessed = 0 | All assessed |
|  | While prompt = Y  County  Market value  Assessed value = compute(county, market value)  All market = all market + market value  All assessed = all assessed + assessed value  Assessed value  prompt |  |