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

|  |  |  |
| --- | --- | --- |
| Input | Process | Output |
| Response | User input response  while response == “Yes”  Do loop |  |
| lname | User input string |  |
| month | User input string |  |
| sales | User input float |  |
| Percent | Def comppercent(month, sales)  If month == “Jan, Feb, Mar”  Percent = 0.10  elIf month == “Apr, May, June”  Percent = 0.15  elIf month == “Jul, Aug, Sep”  Percent == 0.20  Elif month == “Oct, Nov, Dec”  Percnet == “0.25”  Else  Print (error message)  Exit()  Return float(percent) |  |
| nextmonthsales | Call comppercent(month,sales)  Nextmonthsales = (percent \* sales) + sales | Print nextmonthsales  Print percent  Print lname |
| response | Response = str(input(“run loop again? (yes/no)”))  Input response  response == “no”  Exit() |  |
|  |  |  |
|  |  |  |
|  |  |  |

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.

|  |  |  |
| --- | --- | --- |
| Input | Process | Output |
| response | User input response  While Response == “yes”  Do loop |  |
| length | User input int |  |
| width | User input int |  |
| height | User input int |  |
| Sqft (function) | Def sqft(length,width,height)  (2\*length\*width)+(2\*length\*height)+(2\*width\*height)  Return int(sqft) |  |
| paint | Call sqft(length,width,height)  Paint = sqft//50 (floored quotient) | Print (paint) |
| response | Input response  response == “no”  Exit() |  |
|  |  |  |
|  |  |  |

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

|  |  |  |
| --- | --- | --- |
| Input | Process | Output |
| Response  sum | Summsrp = 0  Sumtotal = 0  User input response  While response == “yes”  Do loop |  |
| make | User input string |  |
| model | User input string |  |
| evcode | User input string (yes/no) |  |
| msrp | User input float |  |
| Odprice  Precentoff  discount | Def odprice(msrp,make,model,evcode)  If make == “Honda” and model == “Accord”  Percentoff = 0.1  Elif make == “Toyota” and model == “Rav4”  Percentoff = 0.15  Elif evcode == “Yes”  Percentoff = 0.3  Else  Percentoff = 0.05  Discount = percentoff \*msrp  Return discount |  |
| newmsrp  Msrpwtax | Call odprice(msrp,make,modle,evcode)  Newmsrp = msrp-discount  Msrpwtax = (msrp-discount)\*1.07 | Print (msrpwtax) |
| Summsrp  sumtotal | Summsrp = summsrp + newmsrp  Sumtotal = sumtotal + msrpwtax  Input response  If response == “no”  Exit loop | Print (summsrp)  Print(sumtotal) |
|  |  |  |

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

|  |  |  |
| --- | --- | --- |
| Input | Process | Output |
| Response  tsum | Tsum = 0  User input string response (yes or no)  While response == “yes”  Do loop |  |
| lname | User input string lname |  |
| miles | User input integer miles |  |
| Tprice (function) | Def tprice (miles)  If miles <10  Tprice = 5  Elif miles <20  Tprice = 8  Elif miles <30  Tprice = 10  Else  Tprice = 12  Return tprice |  |
|  | Call tprice  Tsum = tsum + tprice | Print (tprice) |
| response | User input string response  Response = “no”  Exit() | Print(tsum) |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

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

|  |  |  |
| --- | --- | --- |
| Input | Process | Output |
| Response  Summv  sumav | Summv = 0  Sumav =0  User input string response  While response == “yes”  Do loop |  |
| county | User input string county |  |
| mvh | User input float mvh |  |
|  | Call assessvalue(mvh,county)  Summv=summv+mvh  Sumav=sumav+assessedvalue  User input string response  Response==”no”  Exit() | Print(summv)  Print(sumav) |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
| assessvalue | Def assessvalue(mvh,county)  If county == “cook”  Avp = 0.9  Elif county == “DuPage”  Avp = 0.8  Elif county == “McHenry”  Avp = 0.75  Elif county == “Kane”  Avp = 0.6  Else  Avp = 0.7  Assessedvalue = avp\*mvh  Return assessedvalue |  |
|  |  |  |