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
continuee = str(input("Would you like to continue the program? (y/n)"))		

Function	def forcast(month,sales):
	  if month == "Jan" or "Feb" or "Mar":
	  forcastpercent = .1
	  elif month == "Apr" or "May" or "Jun":
	  forcastpercent = .15
	  elif month == "Jul" or "Aug" or "Sep":
	  forcastpercent = .2
	  elif month == "Oct" or "Nov" or "Dec":
	  forcastpercent = .25
	  else:
	  print("Invalid month")
	  sales = sales * (1+forcastpercent)
	  return sales	

While loop	while continuee == "y":
	  lname = str(input("What is your last name?"))
	  month = str(input("What is the current month?"))
	  sales = float(input("How much money earned in sales?"))
	  sales = forcast(month,sales)	

		print("Next months sales are expected to be: $", sales) continuee = str(input("Would you like to continue the program? (y/n)"))

2. 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
continuee = str(input("Would you like to continue the program? (y/n")) paintrequired = 0		
Fuction	def squarefootage(roomlength,roomheight,roomwidth): squarefeet = (2 * roomlength * roomwidth) + (2 * roomlength * roomheight) +\ (2 * roomwidth * roomheight) paintrequired = squarefeet / 50 return paintrequired	
While Loop	while continuee == "y": roomlength = float(input("What is the length of the room?")) roomheight = float(input("What is the height of the room?")) roomwidth = float(input("What is the width of the room?")) paintrequired = squarefootage(roomlength,roomheight,roomwidth)	

		print("The amount of gallons of paint required is: ",paintrequired) continuee = str(input("Would you like to continue the program? (y/n)"))

3. 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).

Input	Process	Output
continuee = str(input("Would you like to continue the program? (y/n")) MSRPtotal=0 alltotal=0		

Function	def outthedoor(MSRP,make,model,electricvehiclecode):
	global MSRPtotal
	global alltotal
	
	if make == "Honda" and model == "Accord":
	discount = .1
	elif make == "Toyota" and model == "Rav4":
	discount = .15
	elif electricvehiclecode == "y":
	discount = .3
	else:
	discount = .05
	
	total = (MSRP - (MSRP * discount)) + (MSRP * .07)
	MSRPtotal = MSRPtotal + MSRP
	alltotal = alltotal + total	

	return (total, MSRPtotal, alltotal)	
While loop	while continuee == "y": make = str(input("What is the make of the vehicle?")) model = str(input("What is the model of the vehicle?")) electricvehiclecode = str(input("Is the vehicle electric? (y/n)")) MSRP = float(input("What is the MSRP of the vehicle?")) total = outthedoor(MSRP,make,model,electricvehiclecode)	
		print("The price out the door ",total[0]) continuee = str(input("Would you like to continue the program? (y/n)")) print("The sum of all MSRP's",total[1]) print("The sum of all final totals",total[2])

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

4. 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
continuee = str(input("Would you like to continue the program? (y/n)")) totalticketprice = 0		

Function	def trainticket(milesfromdowntown):
	  if milesfromdowntown >= 30:
	  trainticketprice = 12
	  elif milesfromdowntown >= 20:
	  trainticketprice = 10
	  elif milesfromdowntown >= 10:
	  trainticketprice = 8
	  else:
	  trainticketprice = 5
	
	  return trainticketprice	

While	while continuee == "y":
	  lname = str(input("Please enter your last name: "))
	  milesfromdowntown = int(input("Please enter the miles from downtown: "))
	  trainticketprice = trainticket(milesfromdowntown)	

		print("The train ticket price is: $",trainticketprice)
		  totalticketprice = totalticketprice + trainticketprice
		  continuee = str(input("Would you like to continue the program? (y/n)"))

		print("Your total for all tickets is: $", totalticketprice)

5. 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
continuee = str(input("Would you like to continue the program? (y/n)")) totalsofmarketvalue = 0 totalassessedvalue = 0		

Function	def process(county,marketvalue) :
	  if county == "Cook":
	  valuepercent = .9
	  elif county == "Dupage":
	  valuepercent = .8
	  elif county == " McHenry":
	  valuepercent = .75
	  elif county == "Kane":
	  valuepercent = .6
	  else:
	  valuepercent = .7	

	assessedvalue = marketvalue * valuepercent return assessedvalue	
While	while continuee == "y": county = str(input("What county is the property in?")) marketvalue = int(input("What is the market value of the property?")) assessedvalue = process(county,marketvalue) print("The assessed value of the property is: $",assessedvalue) totalsofmarketvalue = totalsofmarketvalue + marketvalue totalassessedvalue = totalassessedvalue + assessedvalue	
		continuee = str(input("Would you like to continue the program? (y/n)")) print("The total market value of all properties is: $",totalsofmarketvalue) print("The total assessed value of all properties is: $",totalassessedvalue)