

## 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

<b>Input</b> Start	<b>Process</b> start = input("Would you like to start the program(Yes or No): ")	<b>Output</b> Start the program
Function	def forecast(month, sales):  If month == "Jan" or "Feb" or "Mar": Percent = 0.10 Elif month == "Apr" or "May" or "Jun": Percent = 0.15 Elif == "Jul" or "Aug" or "Sep": Percent = 0.20 Elif == "Oct" or "Nov" or "Dec": Percent = 0.25  Total = float(sales) * (1 + percent)  Return total	Total Percent

Code	<pre> If start == "yes":     Lastname =     input("Enter     Lastname: ")     Month = input     ("Enter month")     Sales =     float(input("Enter     sales for the month: ")) Else:      Start = input("Would     you like to start the     program(Y or N): ") </pre>	Lastname Month Sales
Display	Print(total)	Display total

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.

<b>Input</b> Start	<b>Process</b> S = input("Would you like to start the program(Y or N): ")	<b>Output</b> Start the program
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Function	<pre> Def square (length, width, height): Square = 2 (float(length) * float (width)) + 2 (float(width) * float(height)) + 2 (float(height) * float(length))  Gallons = square / 50  Return gallons </pre>	Square
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Input	Process	Output
Code	<pre> While s == "Y": Length = float(input("Enter the length: ")) Width = float(input("Enter the width: ")) Height = float(input("Enter the height: ")) S = input("Would you like to start the program(Y or N): ")  gallons = square(length, width, height) </pre>	
Display	<pre> Print("Number of gallons: ", gallons) </pre>	Gallons

- 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
Start	S = input("Would you like to start the program(Y or N): ")	Start the program

Input	Process	Output
Function	<pre>Def (MSRP, Make, Model, Electric) If model == "Honda Accord": Discount = 0.10 Elif model == "Toyota RAV4": Discount = 0.15 Elif model == "Electric": Discount = 0.30 Else: Discount = 0.05  Total = MSRP / discount *0.07  Return total</pre>	New MSRP Discount Total

Code	<pre> While s = "Y":     Make = input("car make: ")     Model = input("car model: ")     Electric = input(" is it electric (Y or N): ")     MSRP = float(input("Sticker price: "))     S = input("Would you like to start the program(Y or N): ") </pre>	Make Model Electric MSRP
Display	Total	Total

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

<b>Input</b> Start	<b>Process</b> <pre> S = input("Would you like to start the program(Y or N): ") </pre>	<b>Output</b> Start the program
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Function	Def ticket (miles): If miles >= 30: Price = 12 Elif miles >= 20 and == 29: Price = 10 Elif miles >= 10 and == 19: Price = 8 Else: Price = 5  Return price	Price
Code	While s == "Y": Lastname = input("Enter the last name: ") Miles = float(input("miles traveled: ")) S = input("Would you like to start the program(Y or N): ")  Price = ticket(miles)	Lastname Miles
Display	Ticket price	Ticket price

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

<b>Input</b> Start	<b>Process</b> S = input("Would you like to start the program(Y or N): ")	<b>Output</b> Start the program
Function	Def value(county, market): If county == "cook": Value = 0.90 Elif county == "dupage": Value = 0.80 Elif county == "mchenry": Value = 0.75  Total = market * Value  Return total	
Code	While s == "Y": County = input("Enter the county you live in: ") Market = float(input("Enter the market: ")) S = input("Would you like to start the program(Y or N): ")  Total = value(county)	County Market
<b>Display</b>	Total	Total