Assignment 2

Question 1

Please answer the following using ONE Python Program. When the question tells that a variable or a list is given, you need to define that variable or list and initialize with a value or elements.

a) Assume there is a variable , h already assigned a positive integer value. Write the code necessary to assign its square to the variable g. For example, if h had the value 8 then g would get the value 64.

b) Assume that price is an integer variable whose value is the price (in US currency) in cents of an item. Write a statement that prints the value of price in the form "X dollars and Y cents" on a line by itself. So, if the value of price was 4321, your code would print "43 dollars and 21 cents". If the value was 501 it would print "5 dollars and 1 cents". If the value was 99 your code would print "0 dollars and 99 cents". Write an **expression** that computes the **average** of the variables exam1 and exam2 (both already assigned values).

c) Assume that name is a variable of type String that has been assigned a value. Write an expression whose value is the second **character** of the value of name. So if the value of name were **"Smith"** the expression's value would be **'m'**.

d) Given that s refers to a string, write an **expression** that evaluates to a string that is a substring of s and that consists of all the characters of s from its start through its ninth character.

e) Given three **String** variables that have been given values, **firstName**, **middleName**, and **lastName**, write an **expression** whose value is the initials of the three names: the first letter of each, joined together. So if **firstName**, **middleName**, and **lastName**, had the values "John", "Fitzgerald", and "Kennedy", the expression's value would be JFK". Alternatively, if **firstName**, **middleName**, and **lastName**, had the values "Franklin", "Delano", and "Roosevelt", the expression's value would be "FDR".

f) Assume that sentence is a variable that has been associated with a string consisting of words separated by single space characters with a period at the end. For example: "This is a possible value of sentence." Write the statements needed so that the variable secondWord is associated with the second word of the value of sentence . So, if the value of sentence were "Broccoli is delicious." your code would associate secondWord with the value "is" .

g) Assume that given, middle and family are three variables of type **String** that have been assigned values. Write an expression whose value is a **String** consisting of the first character of given followed by a period followed by the first character of middle followed by a period followed by the first character of family followed by a period: in other words, the *initials* of the name. So if the values of these three variables were "John" "Fitzgerald" "Kennedy", then the expression's value would be **"J.F.K."**.

h) Given three **int** variables that have been given values, **areaCode**, **exchange**, and **lastFour**, write a **string expression** whose value is the string equivalent of each these variables joined by a single hyphen (-) So if **areaCode**, **exchange**, and **lastFour**, had the values 800, 555, and 1212, the expression's value would be "800-555-1212". Alternatively, if **areaCode**, **exchange**, and **lastFour**, had the values 212, 867 and 5309 the expression's value would be "212-867-5309".

i) Write some code that reads in a name and an age into the variables **name** and **age**. It then prints the message "The age of *NAME* is *AGE*" on a line by itself, where *NAME* and *AGE* represent the values read into the variables **name** and **age** respectively.
For example, if your code read in "Rohit" and 70 then it would print out "The age of Rohit is 70" on a line by itself. There should NOT be a period in the output.

j) Write some code that reads a value representing a name into the variable **name** then prints the message "Greetings, NAME!!!" on a line by itself where NAME is replaced the value that was read into **name**. For example, if your code read in "Hassan" it would print out "Greetings, Hassan!!!" on a line by itself.

k) You have two siblings, Josh and Cindy, and you want to find the average of your three ages. Write a program that takes your ages as integer values from standard input and stores them in the variables josh, cindy, and me, then prints the average of the three numbers to standard output.

l) Assume that a variable named plist refers to a list with 12 elements, each of which is an int. Assume that the variable k refers to a value between 0 and 6. Write a **statement** that assigns 15 to the list element whose index is k.

m) Assume that play_list refers to a non-empty list, and that all its elements refer to values of type int. Write a **statement** that associates a new value with the **first** element of the list. The new value should be equal to **twice** the value of the **last** element of the list.

n) Given a variable named plist that refers to a list, write a **statement** that adds another element, 5 to the end of the list.

o) Given that k refers to a non-negative int and that alist has been defined to be a list with at least k+1 elements, write a **statement** that removes the element at index k.

p) Given that alist has been defined to be a non-empty list (that is with at least one element), write a **statement** that removes its first element.

q) Given that alist has been defined to be a list with at least 4 elements, write a **statement** that removes its 4th element.

r) Given that plist1 and plist2 both refer to lists, write a **statement** that defines plist3 as a new list that is the concatenation of plist1 and plist2. Do not modify plist1or plist2.

s) Given a list named alist, write an **expression** that removes the last element of alist.

t) Given a variable alist that refers to a list, remove the list's last element and associates its value with a variable k.

u) Given that play_list has been defined to be a list, write a **statement** that sorts the list.

v) Given that play_list has been defined to be a list, write a **statement** that sorts the list.

w) Given that play_list has been defined to be a list, write a **statement** that makes the first 3 elements of play_list be **"spam"**, **"eggs"** and **"vikings"** (in that order).

x) Given that L1 and L2 both refer to lists, write a **statement** that replaces the elements in L1 from index 5 through (and including) index 8 with all the elements ofL2.

y) Given that k refers to a non-negative int value and that t has been defined and refers to a tuple with at least **k+1** elements, write an expression that evaluates to the kth element of t.

z) Given that t has been defined and refers to a tuple write a **statement** that associates play_list with a **list** containing the same elements as t.

Question 2

Please write a separate Python Program for each of the following:

a) Write a program that prompts the user to enter an amount of change (between 0 and 99) and prints out how many coins of each denomination are needed to make that change. The program should always try to make change using the higest denomination coin possible. ex. 25 should be 1 quarter rather than 2 dimes and 1 nickel.

b) Write a program that prompts the user to enter an amount of change (between 0 and 99) and prints out how many coins of each denomination are needed to make that change. The program should always try to make change using the higest denomination coin possible. ex. 25 shoud be 1 quarter rather than 2 dimes and 1 nickel.

c) Write a program that prompts the user to enter the price and weight of an item in pounds and ounces. Prompt the user to enter pounds and ounces as seperate numbers. If the user enters a value larger than 15 for ounces, remind them that there are 16 ounces in 1 pound, and any values greater than 15 should be entered as pounds. Then, calculate and display the price per ounce of the item in the format $0.00. HINT: There are 16 ounces in 1 pound.

d) Write a program that prompts the user to enter the amount of money invested in four different stocks: SPY, QQQ, EEM, VXX. Print the name of the stock and what percentage of the user's total portfolio that stock represents. Format all percentages to two places after the decimal. Finally, print the total amount of money invested in stocks.

e) Write a program that prompts the user for a length in miles, yards, feet, and inches and converts it to the metric system (kilometers, meters, and centimeters). To accomplish this, first convert everything to inches. Then, convert inches to meters. Use the int() function to break the total number of meters into a whole number of kilometers and meters. Format the remaining centimeters to one decimal place.

   Formulas:
   total inches = 63,360 * miles + 36 * yards + 12 * feet + inches
   total meters = inches/39.37
   1 kilometer = 1000 meters
   1 meter = 100 centimeters

Submission:

- Please write your code, run it and paste a screen shot of the output and paste a copy of your code (not an image).
- One word document for the whole assignment.
- Copying code from someone will get both people a BIG zero and an F. DON'T DO IT. DON'T SHARE YOUR CODE – you will hurt yourself. If someone asks you for code – say NO.
- Copying code or solutions from the Internet (even if you change variable names) is detectable with a 100% certainty and will get you a zero.
- You can research things but you can't copy – you must do it yourself.
- Please don't try this. It just does not work with this Professor – and if you are here to test the Professor, I am up for the test – and I will give you an F if the slightest hint of cheating or plagiarizing from any source is discovered.