1. The math.pow(x,y) function returns the value of x raised to the y power. For example, math.pow(2,3) returns 8.0. Complete the function that takes in the x and y values, and returns the result of calling math.pow(x,y).

import math

def power\_function():

value = math.pow(x,y)

print("The result is: ",value)

x = eval(input("Enter the value of X: "))

y = eval(input("Enter the value of Y: "))

power\_function() # calling the function

2. A checksum is a single number that can act as a kind of “digital signature” of a long string. Just like how two people will have different handwritten signatures, two strings can have two different digital signatures. There are many ways to calculate the checksum of any arbitrary string; the more complex the calculation, the less likely it is for two strings to have the same checksum value.   
Complete the function that takes a string of characters as input and returns the checksum. The checksum for this program should simply be the sum of the ord() values of each character, modulo 10. For example, the checksum for the word “cat” would be (99 + 97 + 116) % 10 which is 2. [2 points]

def check\_sum():

string\_name = input("Enter the string: ")

total = 0

for i in range(len(string\_name)):

string\_new = ord(string\_name[i])

total = string\_new + total

check\_sum = total % 10

print("The Check sum value is: ",check\_sum)

check\_sum()

1. You’ve been hired to help write the software for an automatic change dispenser, the kind you see on a self-checkout machine at a supermarket, that automatically dispenses the right coins depending on the amount of change that’s owed to the customer. Complete the function that takes in a number from 0 to 99 (representing the amount of change that’s due) as a parameter and then returns, in the following order as individual variables, the number of one penny, two pence, 5 pence, 10 pence, 20 pence, and 50 pence pieces that should be dispensed. Your function should be as efficient as possible and dispense the fewest coins possible. [2 points]

def dispenser():

money\_to\_give = float(input("Enter the number between 0 and 99: "))

if money\_to\_give >=0 and money\_to\_give<=99:

print("Balance is: ", round(money\_to\_give,2))

fifty\_pence\_change = int(money\_to\_give / 50) # calculates fifty pence

print("The number of 50 pence to be given : ",fifty\_pence\_change, "\ntotal : ",fifty\_pence\_change\*50,"p")

balance = round(money\_to\_give -(fifty\_pence\_change \*50),2)

twenty\_pence = int(balance / 20)# calculates twnety pence

print("The number of 20 pence to be given : ",twenty\_pence,"\ntotal : ",twenty\_pence\*20,"p")

twenty\_pence\_balance = round(balance - (twenty\_pence \* 20),2)

ten\_pence\_balance = int(twenty\_pence\_balance / 10)# calculates ten pence

print("The number of 10 pence to be given : ",ten\_pence\_balance, "\ntotal : ",ten\_pence\_balance\* 10,"p")

ten\_pence\_balance = round(twenty\_pence\_balance - ((ten\_pence\_balance \* 10)),2)

five\_pence\_balance = int(ten\_pence\_balance / 5)# calculates five pence

print("The number of 5 pence to be given : ",five\_pence\_balance, "\ntotal : ",five\_pence\_balance\*5,"p")

five\_pence\_balance = round(ten\_pence\_balance - (five\_pence\_balance \* 5),2)

two\_pence\_balance = int(five\_pence\_balance / 2)# calculates two pence

print("The number of 2 pence to be given : ",two\_pence\_balance , "\ntotal : ",two\_pence\_balance\*2,"p")

two\_pence\_balance = round(five\_pence\_balance - (two\_pence\_balance \* 2),2)

one\_penny\_balance = int(two\_pence\_balance / 1)# calculates one penny

print("The number of 1 penny to be given : ",one\_penny\_balance, "\ntotal : ",one\_penny\_balance\*1,"p" )

one\_pence\_balance = round(two\_pence\_balance - (one\_penny\_balance \* 1),2)

print("Please enter the value between 0 and 99") # Executes when we enter out of range values

dispenser()

4. Complete the function that takes a filename and a word as the parameters and consequently will determine the number of times that the particular word appears in the file. Your program should be able to work on a text file with any number of lines. You should return the number of times the word appears in the file. [2 points]

def word\_search():

file\_name = input("Enter file name: ")

word = input("Enter the word to search: ")

word = word.lower() # converts the string into lower case if we give the input in uppercase

f = open(file\_name) # opening file

f\_content = f.read() # reading the content of the file

f\_case = f\_content.lower() # changing the contents to lower case

count = f\_case.count(word) # finding the count of the word

print("The number of occurrances of ",word ,"is: ",count)

word\_search() # Used the file name as “C:\Users\urshe\OneDrive - University of Birmingham\Programming for DS\Assignment 1 support files\test.txt “

5. In the game of Scrabble, players score points determined by the words they put on the board. Each letter is assigned a certain value, and the word score is the sum of the letter values. Complete the function that allows the user to evaluate the score of any word. For this exercise, assume that the value of any character is the ord() value minus 97. Your program should also only consider the lowercase version of the given word (*Hint:* there is a specific inbuilt Python function you can use for this). If a string is not entered, you should handle this gracefully and prompt for a string. Finally, your function must use a sentinel loop to allow the user to evaluate as many words as they would like until they enter the word “quit.” [2 points]

#. Complete the function that allows the user to evaluate the score of any word. your function must use a sentinel

#loop to allow the user to evaluate as many words as they would like until they enter the word “quit

def scrabble():

char\_sum = 0

word = input("Enter the words on the board: << quit to exit >> : ")

word = word.lower()

while word != "quit":

for i in range(len(word)): # calculating the value of each character and iterating until the "while" condition is true

word = word.lower()

letter\_ord\_count = ord(word[i])- 97

char\_sum = char\_sum + letter\_ord\_count

print("The final word score is : ",char\_sum)

word = input("Enter the words on the board: << quit to exit >>")

while word == "":

print("You have not entered any value. Kindly enter the word : ")

word = input("Enter the words on the board: << quit to exit >>")

while word.isalpha() != True:

print("The word is not valid. Enter the word: ")

word = input("Enter the words on the board: << quit to exit >>")

print("Good Bye!")

scrabble()