Quiz 1- var1 - (5 points) – 40min

#1(String) – 1,5 points

A simple way of encrypting a message is to rearrange its characters. One way to rearrange the characters is to pick out the characters at even indices, put them first in the encrypted string, and follow them by the odd characters. For example, the string message would be encrypted as msaeesg because the even characters are m, s, a, e (at indices 0, 2, 4, and 6) and the odd characters are e, s, g (at indices 1, 3, and 5).
(a)Writeaprogramthatastheuserforastringandusesthismethodtoencryptthestring.
(b) Write a program that decrypts a string that was encrypted with this method.

#2(List) – 1 points

Write a program that rotates the element so that the element at the first index moves to the second index, the element in the second index moves to the third index, etc., and the element in the last index moves to the first index. Print out result.

#3(Dictionary) – 1 points

Suppose you are given the following list of strings:
L = ['aabaabac', 'cabaabca', 'aaabbcba', 'aabacbab', 'acababba']
Patterns like this show up in many places, including DNA sequencing. The user has a string of their own with only some letters filled in and the rest as asterisks.
An example is a**a****. The user would like to know which of the strings in the list fit with their pattern. In the example just given, the matching strings are the first and fourth.
One way to solve this problem is to create a dictionary whose keys are the indices in the user's string of the non-asterisk characters and whose values are those characters.
Write a program implementing this approach (or some other approach) to find the strings that match a user-entered string.

#4 (Input/Output file) – 0.75 points
You are given a file called students.txt. A typical line in the file looks like:

ira menina mnina@email.msmary.edu 555-3141

There is a name, an email address, and a phone number, each separated by tabs. Write a program that reads through the file line-by-line, and for each line, capitalizes the first letter of the first and last name and adds the area code 301 to the phone number. Your program should write this to a new file called students2.txt. Here is what the first line of the new file should look like:
Ira Menina mnina@email.msmary.edu 301-555-314

#5 (math) – 0.5 points
Linear function is defined by an equation:

$y(x) = ax + b$
Where a and b are some constants.
For example, with a=3, b=2 function will yield values y = 2, 5, 8, 11...

for x = 0, 1, 2, 3...

Your task is to determine a and b by two points, belonging to the function.
I.e. you are told two pairs of values (x1, y1), (x2, y2) which satisfy the function equation - and you should restore the equation itself.

Input data have the number of test-cases in the first line
and then test-cases themselves in separate lines.
Each case contains 4 integers (x1 y1 x2 y2).
Answers should be integer too and you are to write them in line, separating with spaces and enclosing each pair in parenthesis, for example:

input data:
2
0 0 1 1
1 0 0 1

answer: (1 0) (-1 1)

#6 (List) – 0.25 points
Create a list by picking an odd-index items from the first list and even index items from the second
Example:
l1 = [3, 6, 9, 12, 15, 18, 21]
l2 = [4, 8, 12, 16, 20, 24, 28]
Element at odd-index positions from list one
[6, 12, 18]
Element at even-index positions from list two
[4, 12, 20, 28]

Printing Final third list
[6, 12, 18, 4, 12, 20, 28]