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Test Name:

CS 101 - LW13 - Fall 23

Taken On:

11 Nov 2023 12:29:08 PKT

Time Taken:

9 min 45 sec/ 180 min

Section:

N/A

Invited by:

Aisha

Skills Score:

Tags Score:

CS101

50/50

Lists

40/40

NestedLists

20/20

Python 3

10/10

Strings

20/20

100%

60/60

scored in CS 101 - LW13 - Fall 23 in 9 min 45 sec on 11 Nov 2023 12:29:08 PKT

Recruiter/Team Comments:

No Comments.

Plagiarism flagged

We have marked questions with suspected plagiarism below. Please review it in detail here - <https://www.hackerrank.com/x/tests/1747060/candidates/57932558/report>

	Question Description	Time Taken	Score	Status
Q1	Compute My Bill > Coding	1 min 32 sec	10/ 10	✔
Q2	Count Characters > Coding	41 sec	10/ 10	✔
Q3	Matrix Addition > Coding	1 min 21 sec	10/ 10	✔
Q4	Pick a column, any column (no comprehension needed) > Coding	3 min 41 sec	10/ 10	⚠
Q5	Dude, where's my char? > Coding	1 min 41 sec	10/ 10	⚠
Q6	The Collatz family > Coding	29 sec	10/ 10	⚠
Q7	Difficulty Meter > Multiple Choice	8 sec	0/ 0	✔

QUESTION DESCRIPTION

Problem

You've got everything that you need on your shopping list. The grocery store management system needs your help in computing a bill. The IT department has generated a list containing details of all the items you have bought. However, they are having trouble computing the bill. See if you can help the IT department by using your exceptional programming skills.

Write a function 'compute_my_bill()' that takes as parameter a list 'lst' and returns a receipt.

Sample interaction

```
>>> lst = [ ['Milk' , 10.99 , 2],['Cake' , 12.50 , 5],['Tapal Family Mixture' , 450 , 1], ['Shan Bombay Biryani' , 70 , 2]]

>>> compute_my_bill(lst)

[ ['Milk', 10.99, 2, 21.98], ['Cake', 12.5, 5, 62.5], ['Tapal Family Mixture', 450, 1, 450], ['Shan Bombay Biryani', 70, 2, 140], ['Quantity ', 10, 'Total Bill', 674.48] ]
```

Input/Output

Your function will be provided the list that contains nested lists, each of which contains ItemName, followed by Unit Price and Quantity of each item Your function should return a receipt that contains nested lists, each of which contains ItemName, Unit Price, Quantity, and Total Price of an item and one nested list that contains total items bought and the total amount that a customer has to pay.

INTERVIEWER GUIDELINES

```
def compute_my_bill(lst):
    r = []
    totalBill = 0
    qty = 0
    for i in lst:
        itemtotalamount = i[1] * i[2]
        totalBill += itemtotalamount
        r.append([i[0] , i[1], i[2] , itemtotalamount])
        qty += i[2]
    r.append( ['Quantity ', qty , 'Total Bill', totalBill])
    return(r)
```

CANDIDATE ANSWER

Language used: **Python 3**

```
1 def compute_my_bill(lst):
2     r = []
3     totalBill = 0
4     qty = 0
5     for i in lst:
6         itemtotalamount = i[1] * i[2]
7         totalBill += itemtotalamount
8         r.append([i[0] , i[1], i[2] , itemtotalamount])
9         qty += i[2]
10    r.append( ['Quantity ', qty , 'Total Bill', totalBill])
11    return(r)
```

TESTCASE	DIFFICULTY	TYPE	STATUS	SCORE	TIME TAKEN	MEMORY USED
Testcase 0	Easy	Sample case	✔ Success	5	0.0161 sec	9.36 KB
Testcase 1	Easy	Hidden case	✔ Success	5	0.0163 sec	9.27 KB

No Comments

QUESTION 2



Correct Answer

Score 10

Count Characters > Coding

Strings

Lists

CS101

QUESTION DESCRIPTION

Write a function `count_char` that takes a parameter `s` as a string and returns a list containing nested-list pairs of the count (frequency) of each character, including special characters and spaces.

```
>>> count_char("This is easier than it looks")
[['t', 3], ['h', 2], ['i', 4], ['s', 4], [' ', 5], ['e', 2], ['a', 2],
 ['r', 1], ['n', 1], ['l', 1], ['o', 2], ['k', 1]]
>>> count_char(["Don't be foolish"])
"Error: bad argument. Function 'count_char' only accepts strings."
```

INTERVIEWER GUIDELINES

Solution

```
def count_char(text):
    if not isinstance(text, str):
        return "Error: bad argument. Function 'count_char' only accepts
strings."
    unique_char = []
    count_char = []
    # Convert text to lower case, keep track of the unique characters,
    # and save their count.
    text = text.lower()
    for c in text:
        if c not in unique_char:
            unique_char.append(c)
            count_char.append([c, text.count(c)])
    return count_char
```

CANDIDATE ANSWER

Language used: Python 3

```
1
2 def count_char(text):
3     if not isinstance(text, str):
4         return "Error: bad argument. Function 'count_char' only accepts
5 strings."
6     unique_char = []
7     count_char = []
8     # Convert text to lower case, keep track of the unique characters,
9     # and save their count.
```

```

10 text = text.lower()
11 for c in text:
12     if c not in unique_char:
13         unique_char.append(c)
14         count_char.append([c, text.count(c)])
15 return count_char

```

TESTCASE	DIFFICULTY	TYPE	STATUS	SCORE	TIME TAKEN	MEMORY USED
Testcase 0	Easy	Sample case	✔ Success	2.5	0.0199 sec	10.1 KB
Testcase 1	Easy	Hidden case	✔ Success	2.5	0.0214 sec	10.3 KB
Testcase 2	Easy	Hidden case	✔ Success	2.5	0.0227 sec	10.1 KB
Testcase 3	Easy	Sample case	✔ Success	2.5	0.0629 sec	10.1 KB

No Comments

QUESTION 3



Correct Answer

Score 10

Matrix Addition > Coding

QUESTION DESCRIPTION

Challenge

Write a function, `matrix_addition`, that takes two integer matrices `A` and `B` and returns a matrix whose entries are the sum of the corresponding entries in matrices `A` and `B`.

Sample

```

>>> matrix_addition( [[4,8],[3,7]] , [[1,0],[5,2]] )
[[5,8],[8,9]]
>>> matrix_addition( [[5,2],[0,1],[1,9]] , [[2,3],[4,1],[0,2]] )
[[7,5],[4,2],[1,11]]
>>> matrix_addition([[1],[2]],[[3,5],[4,6]])
Matrices A and B don't have the same dimension required for matrix
addition.

```

INTERVIEWER GUIDELINES

```

def matrix_addition(X, Y):
    # add matrices X and Y
    # return the resulting matrix

    size1 = (len(X), len(X[0]))
    size2 = (len(Y), len(Y[0]))

    if size1 != size2:
        return("Matrices A and B don't have the same dimension required
for matrix addition.")

    Z = []

    for i in range(len(X)):
        list = []

```

```

        for j in range(len(X[i])):
            list.append(X[i][j] + Y[i][j])
        Z.append(list)

    return Z

```

CANDIDATE ANSWER

Language used: **Python 3**

```

1
2 def matrix_addition(X, Y):
3     # add matrices X and Y
4     # return the resulting matrix
5
6     size1 = (len(X), len(X[0]))
7     size2 = (len(Y), len(Y[0]))
8
9     if size1 != size2:
10         return("Matrices A and B don't have the same dimension required for
11 matrix addition.")
12
13     Z = []
14
15     for i in range(len(X)):
16         list = []
17         for j in range(len(X[i])):
18             list.append(X[i][j] + Y[i][j])
19         Z.append(list)
20
21     return Z

```

TESTCASE	DIFFICULTY	TYPE	STATUS	SCORE	TIME TAKEN	MEMORY USED
Testcase 0	Easy	Sample case	✔ Success	1	0.023 sec	9.97 KB
Testcase 1	Easy	Sample case	✔ Success	1	0.0189 sec	10.3 KB
Testcase 3	Easy	Sample case	✔ Success	1	0.0223 sec	9.76 KB
Testcase 4	Easy	Sample case	✔ Success	1	0.0199 sec	10.1 KB
Testcase 5	Easy	Sample case	✔ Success	1	0.0213 sec	9.98 KB
Testcase 6	Easy	Sample case	✔ Success	1.25	0.019 sec	9.93 KB
Testcase 7	Easy	Sample case	✔ Success	1.25	0.0216 sec	9.93 KB
Testcase 7	Easy	Sample case	✔ Success	1.25	0.0194 sec	10 KB
Testcase 8	Easy	Sample case	✔ Success	1.25	0.0184 sec	10.3 KB

No Comments

QUESTION 4



Needs Review

Pick a column, any column (no comprehension needed) > Coding

Lists

NestedLists

CS101

QUESTION DESCRIPTION

Challenge

To represent a matrix, such as a spreadsheet or a collection of records, a common practice in Python is to use a list of lists. Each inner list represents a row within the matrix.

For example, the following matrix:

$$\mathbf{A} = \begin{pmatrix} 2 & 3 & 5 \\ 4 & 1 & 6 \\ 1 & 3 & 0 \end{pmatrix}$$

has the representation:

```
>>> mat_a = [[2, 3, 5], [4, 1, 6], [1, 3, 0]]
```

It is often useful to pick a column from the matrix.

Write a function called `pick` that takes a list `t` and an index `col` as its arguments, and returns a list containing values from each row's index `col`. The function leaves list `t` unmodified.

Sample interaction

```
>>> t = [[1, 2, 3], [4, 5, 6], [7, 8, 9]]
>>> pick(t, 1)
[2, 5, 8]
>>> pick(t, 0)
[1, 4, 7]
>>> pick(t, -1)
[3, 6, 9]
>>> t
[[1, 2, 3], [4, 5, 6], [7, 8, 9]]
```

Input/Output

Your function will be provided the list and the column index arguments, `t` and `col`, respectively. The returned value from your function, as well as its side-effect on the list `t`, will be checked by HackerRank.

Constraints

`-len(r) <= col < len(r)` where `isinstance(r, list)` and `r in t` is `True`.

INTERVIEWER GUIDELINES

```
# Using a list comprehension:
def pick(t, col):
    return [v[col] for v in t]

# Using the list.append method and a for loop:
def pick(t, col):
    u = []
    for v in t:
        u.append(v[col])
    return u
```

CANDIDATE ANSWER

Language used: **Python 3**

```
1 # Using a list comprehension:
2 def pick(t, col):
3     return [v[col] for v in t]
```

```

4
5 # Using the list.append method and a for loop:
6 def pick(t, col):
7     u = []
8     for v in t:
9         u.append(v[col])
10    return u
11

```

TESTCASE	DIFFICULTY	TYPE	STATUS	SCORE	TIME TAKEN	MEMORY USED
Testcase 0	Easy	Sample case	✔ Success	1	0.0141 sec	9.53 KB
Testcase 1	Easy	Sample case	✔ Success	1	0.017 sec	9.52 KB
Testcase 2	Easy	Sample case	✔ Success	1	0.0159 sec	9.65 KB
Testcase 3	Easy	Hidden case	✔ Success	1	0.0163 sec	9.61 KB
Testcase 4	Easy	Hidden case	✔ Success	1	0.018 sec	9.6 KB
Testcase 5	Easy	Hidden case	✔ Success	1	0.0152 sec	9.55 KB
Testcase 6	Easy	Hidden case	✔ Success	1	0.0144 sec	9.61 KB
Testcase 7	Easy	Sample case	✔ Success	1	0.0228 sec	9.67 KB
Testcase 8	Easy	Sample case	✔ Success	1	0.0165 sec	9.69 KB
Testcase 9	Easy	Sample case	✔ Success	1	0.0146 sec	9.69 KB

No Comments

QUESTION 5



Needs Review

Score 10

Dude, where's my char? > Coding Lists Strings CS101

QUESTION DESCRIPTION

Background

Crossword puzzles are published in many daily newspapers. They can be represented as a grid, or matrix, of letters. They can also be represented as a single string, with each row delineated by a newline character '\n'. For example, the following puzzle:

L	I	K	E
O	D	I	N
V	O	C	E
E	L	K	S

can be represented by the string 'LIKE\nODIN\nVOICE\nELKS'.

Challenge

Write a function named `crossword_positions` that accepts a string `puzzle` as an argument, which represents a crossword. It returns a list of nested lists, each of which contains a letter, followed by its row number and column number in the crossword grid. Row numbering begins with zero from the top, and column numbering begins with zero from the left. Letters should appear in the same order in the returned list as in `puzzle`.

Sample interaction

```

>>> print(crossword_positions('LIKE\nODIN\nVOICE\nELKS'))
[[['L', 0, 0], ['I', 0, 1], ['K', 0, 2], ['E', 0, 3], ['O', 1, 0], ['D', 1, 1], ['I', 1, 2], ['N', 1, 3], ['V', 2, 0], ['O', 2, 1], ['C', 2, 2], ['E', 2, 3], ['E', 3, 0], ['L', 3, 1], ['K', 3, 2], ['S', 3, 3]]

```

Input/Output

Constraint

```
isinstance(puzzle, str)
```

INTERVIEWER GUIDELINES

```
def crossword_positions(puzzle):
    """Saves the row and column position for each letter in puzzle.

    Args:
        - puzzle (str): 4 rows of 4 letters joined by '\n'




    Observations:
        - The rows in puzzle are separated by '\n'.
        - The index of each letter in its row gives its column number for
          that row.

    Returns:
        [[str,int,int]]: the letters of puzzle along with their row and
          column
          numbers.
    """
    positions = []
    for i, row in enumerate(puzzle.split('\n')):
        for j, c in enumerate(row):
            positions.append([c, i, j])
    return positions
```

CANDIDATE ANSWER

Language used: **Python 3**

```
1 def crossword_positions(puzzle):
2     """Saves the row and column position for each letter in puzzle.
3
4     Args:
5         - puzzle (str): 4 rows of 4 letters joined by '\n'
6
7     Observations:
8         - The rows in puzzle are separated by '\n'.
9         - The index of each letter in its row gives its column number for that
10    row.
11
12    Returns:
13        [[str,int,int]]: the letters of puzzle along with their row and column
14        numbers.
15    """
16    positions = []
17    for i, row in enumerate(puzzle.split('\n')):
18        for j, c in enumerate(row):
19            positions.append([c, i, j])
20    return positions
```

TESTCASE	DIFFICULTY	TYPE	STATUS	SCORE	TIME TAKEN	MEMORY USED
Testcase 0	Easy	Sample case	 Success	1	0.0153 sec	9.3 KB
Testcase 1	Easy	Sample case	 Success	1	0.0174 sec	9.34 KB
Testcase 2	Easy	Sample case	 Success	1	0.0156 sec	9.23 KB

Testcase 3	Easy	Sample case	✔ Success	1	0.0174 sec	9.2 KB
Testcase 4	Easy	Sample case	✔ Success	1	0.0163 sec	9.44 KB
Testcase 5	Easy	Hidden case	✔ Success	1	0.0159 sec	9.29 KB
Testcase 6	Easy	Hidden case	✔ Success	1	0.0145 sec	9.22 KB
Testcase 7	Easy	Hidden case	✔ Success	1	0.014 sec	9.59 KB
Testcase 8	Easy	Hidden case	✔ Success	1	0.0138 sec	9.56 KB
Testcase 9	Easy	Hidden case	✔ Success	1	0.0148 sec	9.36 KB

No Comments

QUESTION 6



Needs Review

Score 10

The Collatz family > Coding CS101 Python 3

QUESTION DESCRIPTION

Background

In 1937, Lothar Collatz presented the following conjecture. Pick any positive integer x . If it is even, divide it into two to get $x/2$; otherwise, triple it and add one to get $3x + 1$. Conjecture states that if you repeatedly perform this operation on the resulting number, eventually you will reach the number 1 (alternatively, the numbers cycle: 1, 4, 2, 1, 4, 2, 1, ...). This conjecture has not been proved or disproved. This is also known as the $3x + 1$ conjecture.

In fact, there is a family of conjectures of the form $3x + 2n + 1$, where n is any integer (it may be negative). For each value of n , there are different cycles. There may be more than one cycle for a given value of n . For example, the main Collatz conjecture ($n = 0$) cycles after reaching number 1. The sequence with $n = 1$ cycles after reaching 3. The sequence with $n = 2$ cycles after reaching either 1, 5, 19, 23, or 187.

Task

Given the family number n between -2 and 2 inclusive, for each number between a starting and ending number inclusive, display the sequence obtained by the Collatz algorithm outlined above. See examples below. Cycle numbers for each n are given in the table below.

n	cycle numbers
-2	0, 3, 15, 51
-1	1, 5, 17
0	1
1	3
2	1, 5, 19, 23, 187

Function Description

To implement the given task, write the following function:

1. **collatz_cousin** that takes three arguments: ***n***, ***start***, ***stop***. The function should **display** the sequence generated by the Collatz algorithm for the given ***n*** and for each number between ***start*** and ***stop***, including the boundary values,

Constraints

- Input will be handled by HackerRank--you should not read input yourself.
- ***n***, ***start***, and ***stop*** are integers, and $0 < start \leq stop$.

▼ Input Format For Custom Testing

The first line contains n , an integer.

The second line contains *start*, a positive integer.

The third line contains *stop*, a positive integer at least as large as *start*.

▼ Sample Case 0

Sample Input For Custom Testing

```
0
1
20
```

Sample Output

```
1, 4, 2, 1
2, 1
3, 10, 5, 16, 8, 4, 2, 1
4, 2, 1
5, 16, 8, 4, 2, 1
6, 3, 10, 5, 16, 8, 4, 2, 1
7, 22, 11, 34, 17, 52, 26, 13, 40, 20, 10, 5, 16, 8, 4, 2, 1
8, 4, 2, 1
9, 28, 14, 7, 22, 11, 34, 17, 52, 26, 13, 40, 20, 10, 5, 16, 8, 4, 2, 1
10, 5, 16, 8, 4, 2, 1
11, 34, 17, 52, 26, 13, 40, 20, 10, 5, 16, 8, 4, 2, 1
12, 6, 3, 10, 5, 16, 8, 4, 2, 1
13, 40, 20, 10, 5, 16, 8, 4, 2, 1
14, 7, 22, 11, 34, 17, 52, 26, 13, 40, 20, 10, 5, 16, 8, 4, 2, 1
15, 46, 23, 70, 35, 106, 53, 160, 80, 40, 20, 10, 5, 16, 8, 4, 2, 1
16, 8, 4, 2, 1
17, 52, 26, 13, 40, 20, 10, 5, 16, 8, 4, 2, 1
18, 9, 28, 14, 7, 22, 11, 34, 17, 52, 26, 13, 40, 20, 10, 5, 16, 8, 4, 2, 1
19, 58, 29, 88, 44, 22, 11, 34, 17, 52, 26, 13, 40, 20, 10, 5, 16, 8, 4, 2, 1
20, 10, 5, 16, 8, 4, 2, 1
```

Explanation

For each number between 1 and 20, a sequence is displayed following the Collatz algorithm with $n = 0$.

For example, the sequence beginning with **5** -> $5 \times 3 + 1 = 16$ -> $16 / 2 = 8$ -> $8 / 2 = 4$ -> $4 / 2 = 2$ -> $2 / 2 = 1$. Since 1 begins a cycle for $n = 0$, stop.

▼ Sample Case 1

Sample Input For Custom Testing

```
2
41
60
```

Sample Output

```
41, 128, 64, 32, 16, 8, 4, 2, 1
42, 21, 68, 34, 17, 56, 28, 14, 7, 26, 13, 44, 22, 11, 38, 19
43, 134, 67, 206, 103, 314, 157, 476, 238, 119, 362, 181, 548, 274, 137, 416, 208, 104, 52, 26, 13, 44, 22, 11, 38, 19
44, 22, 11, 38, 19
45, 140, 70, 35, 110, 55, 170, 85, 260, 130, 65, 200, 100, 50, 25, 80, 40, 20, 10, 5
46, 23
47, 146, 73, 224, 112, 56, 28, 14, 7, 26, 13, 44, 22, 11, 38, 19
48, 24, 12, 6, 3, 14, 7, 26, 13, 44, 22, 11, 38, 19
49, 152, 76, 38, 19
50, 25, 80, 40, 20, 10, 5
```

```

51, 158, 79, 242, 121, 368, 184, 92, 46, 23
52, 26, 13, 44, 22, 11, 38, 19
53, 164, 82, 41, 128, 64, 32, 16, 8, 4, 2, 1
54, 27, 86, 43, 134, 67, 206, 103, 314, 157, 476, 238, 119, 362, 181, 548,
274, 137, 416, 208, 104, 52, 26, 13, 44, 22, 11, 38, 19
55, 170, 85, 260, 130, 65, 200, 100, 50, 25, 80, 40, 20, 10, 5
56, 28, 14, 7, 26, 13, 44, 22, 11, 38, 19
57, 176, 88, 44, 22, 11, 38, 19
58, 29, 92, 46, 23
59, 182, 91, 278, 139, 422, 211, 638, 319, 962, 481, 1448, 724, 362, 181,
548, 274, 137, 416, 208, 104, 52, 26, 13, 44, 22, 11, 38, 19
60, 30, 15, 50, 25, 80, 40, 20, 10, 5

```

Explanation

For each number between 41 and 60, a sequence is displayed following the Collatz algorithm with $n = 2$.

For example, the sequence beginning with **58** -> $58 / 2 = 29$ -> $29 \times 3 + 2 \times 2 + 1 = 92$ -> $92 / 2 = 46$ -> $46 / 2 = 23$. Since 23 begins a cycle for $n = 2$, stop.

INTERVIEWER GUIDELINES

```

def collatz_cousin(n, start, stop):
    cycles = [[1], [3], [1, 5, 19, 23, 187], [0, 3, 15, 51], [1, 5, 17]]
    for x in range(start, stop + 1):
        t = x
        print(t, end='')
        while True:
            if t % 2 == 0:
                t = t // 2
            else:
                t = 3 * t + 2 * n + 1
            print(',', t, end='')
            if t in cycles[n]:
                break
        print()

```



CANDIDATE ANSWER

Language used: **Python 3**

```

1 def collatz_cousin(n, start, stop):
2     cycles = [[1], [3], [1, 5, 19, 23, 187], [0, 3, 15, 51], [1, 5, 17]]
3     for x in range(start, stop + 1):
4         t = x
5         print(t, end='')
6         while True:
7             if t % 2 == 0:
8                 t = t // 2
9             else:
10                t = 3 * t + 2 * n + 1
11                print(',', t, end='')
12                if t in cycles[n]:
13                    break
14        print()
15

```

TESTCASE	DIFFICULTY	TYPE	STATUS	SCORE	TIME TAKEN	MEMORY USED
Testcase 0	Easy	Sample case	 Success	1	0.0184 sec	9.49 KB
Testcase 1	Easy	Sample case	 Success	1	0.0262 sec	9.66 KB

TestCase 1	Easy	Sample case	✔ Success	1	0.0202 sec	9.00 KB
TestCase 2	Easy	Sample case	✔ Success	1	0.0165 sec	9.52 KB
TestCase 3	Easy	Sample case	✔ Success	1	0.0156 sec	9.6 KB
TestCase 4	Easy	Sample case	✔ Success	1	0.02 sec	9.52 KB
TestCase 5	Easy	Hidden case	✔ Success	1	0.0147 sec	9.66 KB
TestCase 6	Easy	Hidden case	✔ Success	1	0.0155 sec	9.68 KB
TestCase 7	Easy	Hidden case	✔ Success	1	0.0154 sec	9.51 KB
TestCase 8	Easy	Hidden case	✔ Success	1	0.0145 sec	9.98 KB
TestCase 9	Easy	Hidden case	✔ Success	1	0.0205 sec	9.77 KB

No Comments

QUESTION 7



Correct Answer

Score 0

Difficulty Meter > Multiple Choice

QUESTION DESCRIPTION

On a scale of 1 to 5, with 1 being very easy and 5 being extremely challenging, how would you rate this worksheet?

CANDIDATE ANSWER

Options: (Expected answer indicated with a tick)

- ✔ ☒ 1
- ✔ ☐ 2
- ✔ ☐ 3
- ✔ ☐ 4
- ✔ ☐ 5

No Comments

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