<u>Help</u> sh

shengtatng ~

☆ Course / Final Exam (8 hour time limit) / Final Exam (8 hour time limit)

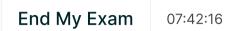
**Discussion** 

(3)

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#### **Problem 6**

<u>Course</u>

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Final due Dec 14, 2022 07:30 +08

#### Problem 6

20/20 points (graded)

Write a function that meets the specifications below. You do not have to use dynamic programming.

Hint: You might want to use <code>bin()</code> on an int to get a string, get rid of the first two characters, add leading 0's as needed, and then convert it to a numpy array of ints. Type <code>help(bin)</code> in the console.

For example,

```
If choices = [1,2,2,3] and total = 4 you should return either [0 1 1 0] or [1 0 0 1]
If choices = [1,1,3,5,3] and total = 5 you should return [0 0 0 1 0]
If choices = [1,1,1,9] and total = 4 you should return [1 1 1 0]
```

More specifically, write a function that meets the specifications below:

```
def find_combination(choices, total):
    """
    choices: a non-empty list of ints
    total: a positive int

Returns result, a numpy.array of length len(choices)
such that
    * each element of result is 0 or 1
    * sum(result*choices) == total
    * sum(result) is as small as possible
In case of ties, returns any result that works.
If there is no result that gives the exact total,
pick the one that gives sum(result*choices) closest
to total without going over.
"""
```

Paste your entire function (including the definition) in the box.

**Note:** If you want to use numpy arrays, you should add the following 3 lines before your code:

```
import os
os.environ["OPENBLAS_NUM_THREADS"] = "1"
import numpy as np
```

And use np.METHOD\_NAME in your code. Unfortunately, pylab does not work with the grader.

```
1 import numpy as np
 2 import itertools
 4 def find_combination(choices, total):
6
      choices: a non-empty list of ints
7
      total: a positive int
8
9
      Returns result, a numpy.array of length len(choices)
10
      such that
11
          * each element of result is 0 or 1
12
          * sum(result*choices) == total
13
          * sum(result) is as small as possible
14
      In case of ties, returns any result that works.
15
      If there is no result that gives the exact total,
```

Press ESC then TAB or click outside of the code editor to exit

See full output

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