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SOLUTIONS TO ASSIGNMENT ONE

In [ ]:

QUESTION ONE

In [1]:
```
def weekly_overtime_pay():
    standard_work_hours = 40
    regular_hourly_pay = 45
    over_time_pay_rate = 50
    total_hour_worked = float(input("Enter the total number of hours you worked in the week:"))
    base_pay = standard_work_hours * regular_hourly_pay
    over_time_hours = total_hour_worked - standard_work_hours
    over_time_pay = over_time_hours * over_time_pay_rate
    gross_pay = base_pay + over_time_pay
    if total_hour_worked < standard_work_hours:
        print("Standard number of weekly work hours: " "{}hrs".format(standard_work_hours))
        print("Total number of hours worked: " "{}hrs".format(total_hour_worked))
        print("You worked less than the required number of hours this week.")
        print("Your pay this week is: " + "$" + str(total_hour_worked * regular_hourly_pay))
    elif total_hour_worked > standard_work_hours:
        print("Standard number of weekly work hours: " "{}hrs".format(standard_work_hours))
        print("Total number of hours worked: " "{}hrs".format(total_hour_worked))
        print("This week you have an overtime of: " "{}hrs.".format(over_time_hours),\
            "Your pay this week is: " "${}.".format(gross_pay))
    else:
        print("Standard number of weekly work hours: " "{}hrs".format(standard_work_hours))
        print("Total number of hours worked: " "{}hrs".format(total_hour_worked))
        print("You do not have an overtime this week.",\
            "Your pay this week is: " "${}.".format(base_pay))
```

In [2]:
```
weekly_overtime_pay()
```

```
Standard number of weekly work hours: 40hrs
Total number of hours worked: 65.0hrs
This week you have an overtime of: 25.0hrs. Your pay this week is: $3050.0.
```

In [ ]:

In [ ]:

QUESTION TWO

In [3]:
```
# Requesting user to input 10 float values which is stored in a variable.

mylist1 = []
m = 10
for num in range(m):
    fig = float(input("Enter a float value"))
    mylist1.append(fig)
print(mylist1)
```

```
[23.5, 14.8, 65.4, 74.3, 7.0, 2.0, 6.0, 98.6, 60.5, 100.4]
```

In [4]:
```
# List comprehension of mylist1

mylist2 = [mylist1 for item in range(1)]
print(mylist2)
```

```
[[23.5, 14.8, 65.4, 74.3, 7.0, 2.0, 6.0, 98.6, 60.5, 100.4]]
```

In [5]:
```
mylist3 = mylist2[0]
```

In [6]:
```
# Sorting of mylist3

mylist3
```

Out[6]:
```
[23.5, 14.8, 65.4, 74.3, 7.0, 2.0, 6.0, 98.6, 60.5, 100.4]
```

In [7]:
```
mylist3.sort()
```

In [8]:
```
mylist3
```

Out[8]:
```
[2.0, 6.0, 7.0, 14.8, 23.5, 60.5, 65.4, 74.3, 98.6, 100.4]
```

In [ ]:

QUESTION THREE

In [9]:
```
# Write a program that creates a single dictionary containing the following key-value pairs

mydict1 = {"School":"MTSU", "Textbooks":14, "Level":"Elementary", "Hobby":"Dancing", "Height":"4.5 inch", "Food":"Amala"}
```

In [10]:
```
mydict1
```

Out[10]:
```
{'School': 'MTSU',
 'Textbooks': 14,
 'Level': 'Elementary',
 'Hobby': 'Dancing',
 'Height': '4.5 inch',
 'Food': 'Amala'}
```

In [11]:
```
# Update the dictionary with your credentials

mydict1.update({"School":"Nnamdi Azikiwe University, Awka","Textbooks":10,"Level":"Masters","Hobby":"Coding","Height":"5.2 inch",
```

In [12]:
```
mydict1
```

Out[12]:
```
{'School': 'Nnamdi Azikiwe University, Awka',
 'Textbooks': 10,
 'Level': 'Masters',
 'Hobby': 'Coding',
 'Height': '5.2 inch',
 'Food': 'Fried rice and chicken'}
```

In [13]:
```
# Add new key-value pairs

mydict1["Is_location_USA"] = "True"
```

In [14]:
```
mydict1
```

Out[14]:
```
{'School': 'Nnamdi Azikiwe University, Awka',
 'Textbooks': 10,
 'Level': 'Masters',
 'Hobby': 'Coding',
 'Height': '5.2 inch',
 'Food': 'Fried rice and chicken',
 'Is_location_USA': 'True'}
```

In [15]:
```
mydict1["Is_graduated"] = "No"
```

In [16]:
```
mydict1
```

Out[16]:
```
{'School': 'Nnamdi Azikiwe University, Awka',
 'Textbooks': 10,
 'Level': 'Masters',
 'Hobby': 'Coding',
 'Height': '5.2 inch',
 'Food': 'Fried rice and chicken',
 'Is_location_USA': 'True',
 'Is_graduated': 'No'}
```

In [17]:
```
# Remove the key-value pair Hobby:Dancing

mydict1.pop("Hobby")
```

Out[17]:
```
'Coding'
```

In [18]:
```
mydict1
```

Out[18]:
```
{'School': 'Nnamdi Azikiwe University, Awka',
 'Textbooks': 10,
 'Level': 'Masters',
 'Height': '5.2 inch',
 'Food': 'Fried rice and chicken',
 'Is_location_USA': 'True',
 'Is_graduated': 'No'}
```

In [19]:
```
# Delete last entry of the updated dictionary

mydict1.popitem()
```

Out[19]:
```
('Is_graduated', 'No')
```

In [20]:
```
mydict1
```

Out[20]:
```
{'School': 'Nnamdi Azikiwe University, Awka',
 'Textbooks': 10,
 'Level': 'Masters',
 'Height': '5.2 inch',
 'Food': 'Fried rice and chicken',
 'Is_location_USA': 'True'}
```

In [ ]:

QUESTION FOUR

In [21]:
```
import numpy as np
```

In [22]:
```
# Create an Array of ones of size 20 by 11 called myarray1

myarray1 = np.ones((20,11),dtype = float)
```

In [23]:
```
myarray1
```

Out[23]:
```
array([[1., 1., 1., 1., 1., 1., 1., 1., 1., 1., 1.],
       [1., 1., 1., 1., 1., 1., 1., 1., 1., 1., 1.],
       [1., 1., 1., 1., 1., 1., 1., 1., 1., 1., 1.],
       [1., 1., 1., 1., 1., 1., 1., 1., 1., 1., 1.],
       [1., 1., 1., 1., 1., 1., 1., 1., 1., 1., 1.],
       [1., 1., 1., 1., 1., 1., 1., 1., 1., 1., 1.],
       [1., 1., 1., 1., 1., 1., 1., 1., 1., 1., 1.],
       [1., 1., 1., 1., 1., 1., 1., 1., 1., 1., 1.],
       [1., 1., 1., 1., 1., 1., 1., 1., 1., 1., 1.],
       [1., 1., 1., 1., 1., 1., 1., 1., 1., 1., 1.],
       [1., 1., 1., 1., 1., 1., 1., 1., 1., 1., 1.],
       [1., 1., 1., 1., 1., 1., 1., 1., 1., 1., 1.],
       [1., 1., 1., 1., 1., 1., 1., 1., 1., 1., 1.],
       [1., 1., 1., 1., 1., 1., 1., 1., 1., 1., 1.],
       [1., 1., 1., 1., 1., 1., 1., 1., 1., 1., 1.],
       [1., 1., 1., 1., 1., 1., 1., 1., 1., 1., 1.],
       [1., 1., 1., 1., 1., 1., 1., 1., 1., 1., 1.],
       [1., 1., 1., 1., 1., 1., 1., 1., 1., 1., 1.],
       [1., 1., 1., 1., 1., 1., 1., 1., 1., 1., 1.],
       [1., 1., 1., 1., 1., 1., 1., 1., 1., 1., 1.]])
```

In [24]:
```
# Multiply scalar of 0.5 by the array

myarray1 = myarray1 * 0.5
```

In [25]:
```
myarray1
```

Out[25]:
```
array([[0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5],
       [0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5],
       [0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5],
       [0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5],
       [0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5],
       [0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5],
       [0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5],
       [0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5],
       [0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5],
       [0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5],
       [0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5],
       [0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5],
       [0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5],
       [0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5],
       [0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5],
       [0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5],
       [0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5],
       [0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5],
       [0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5],
       [0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5]])
```

In [26]:
```
# Update the 6th row with a value of 10.5

myarray1[5] = 10.5
```

In [27]:
```
myarray1
```

Out[27]:
```
array([[ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [10.5, 10.5, 10.5, 10.5, 10.5, 10.5, 10.5, 10.5, 10.5, 10.5, 10.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5]])
```

In [28]:
```python
# Update the 7th row with a value of 11.5

myarray1[6] = 11.5
```

In [29]:
```python
myarray1
```

Out[29]:
```
array([[ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [10.5, 10.5, 10.5, 10.5, 10.5, 10.5, 10.5, 10.5, 10.5, 10.5, 10.5],
       [11.5, 11.5, 11.5, 11.5, 11.5, 11.5, 11.5, 11.5, 11.5, 11.5, 11.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5]])
```

In [30]:
```
# Update the 1st column with a value of 9.5

myarray1[:,0] = 9.5
```

In [31]:
```
myarray1
```

Out[31]:
```
array([[ 9.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 9.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 9.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 9.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 9.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 9.5, 10.5, 10.5, 10.5, 10.5, 10.5, 10.5, 10.5, 10.5, 10.5, 10.5],
       [ 9.5, 11.5, 11.5, 11.5, 11.5, 11.5, 11.5, 11.5, 11.5, 11.5, 11.5],
       [ 9.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 9.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 9.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 9.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 9.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 9.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 9.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 9.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 9.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 9.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 9.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 9.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 9.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5]])
```

In [32]:
```python
# Slice the 5th row to the 11st row in myarray1

myarray1[4:11,:]
```

Out[32]:
```
array([[ 9.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 9.5, 10.5, 10.5, 10.5, 10.5, 10.5, 10.5, 10.5, 10.5, 10.5, 10.5],
       [ 9.5, 11.5, 11.5, 11.5, 11.5, 11.5, 11.5, 11.5, 11.5, 11.5, 11.5],
       [ 9.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 9.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 9.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5],
       [ 9.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5]])
```

In [33]:
```python
# Slice the 6th column to 9th column in myarray1

myarray1[:,5:9]
```

Out[33]:
```
array([[ 0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5],
       [10.5, 10.5, 10.5, 10.5],
       [11.5, 11.5, 11.5, 11.5],
       [ 0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5],
       [ 0.5,  0.5,  0.5,  0.5]])
```

In [34]:
```
# Merge the 6th column with the 8th column using np.hstack

myarray1_col6 = myarray1[:,5]
```

In [35]:
```
myarray1_col6
```

Out[35]:
```
array([ 0.5,  0.5,  0.5,  0.5,  0.5, 10.5, 11.5,  0.5,  0.5,  0.5,  0.5,
        0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5])
```

In [36]:
```
myarray1_col6 = myarray1_col6.reshape(-1,1)
```

In [37]:
```
myarray1_col6
```

Out[37]:
```
array([[ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [10.5],
       [11.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5]])
```

In [38]:
```
myarray1_col8 = myarray1[:,8]
```

In [39]:
```
myarray1_col8
```

Out[39]:
```
array([ 0.5,  0.5,  0.5,  0.5,  0.5, 10.5, 11.5,  0.5,  0.5,  0.5,  0.5,
        0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5])
```

In [40]:
```
myarray1_col8 = myarray1_col8.reshape(-1,1)
```

In [41]:
```
myarray1_col8
```

Out[41]:
```
array([[ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [10.5],
       [11.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5]])
```

In [42]:
```
myarray1_hstack = np.hstack((myarray1_col6,myarray1_col8))
```

In [43]:
```
myarray1_hstack
```

Out[43]:
```
array([[ 0.5,  0.5],
       [ 0.5,  0.5],
       [ 0.5,  0.5],
       [ 0.5,  0.5],
       [ 0.5,  0.5],
       [10.5, 10.5],
       [11.5, 11.5],
       [ 0.5,  0.5],
       [ 0.5,  0.5],
       [ 0.5,  0.5],
       [ 0.5,  0.5],
       [ 0.5,  0.5],
       [ 0.5,  0.5],
       [ 0.5,  0.5],
       [ 0.5,  0.5],
       [ 0.5,  0.5],
       [ 0.5,  0.5],
       [ 0.5,  0.5],
       [ 0.5,  0.5],
       [ 0.5,  0.5]])
```

In [44]:
```
# Merge the 5th column with the 10th column using np.vstack

myarray1_col5 = myarray1[:,4]
```

In [45]:
```
myarray1_col5
```

Out[45]:
```
array([ 0.5,  0.5,  0.5,  0.5,  0.5, 10.5, 11.5,  0.5,  0.5,  0.5,  0.5,
        0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5])
```

In [46]:
```
myarray1_col5 = myarray1_col5.reshape(-1,1)
```

In [47]:
```
myarray1_col5
```

Out[47]:
```
array([[ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [10.5],
       [11.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5]])
```

In [48]:
```
myarray1_col10 = myarray1[:,9]
```

In [49]:
```
myarray1_col10
```

Out[49]:
```
array([ 0.5,  0.5,  0.5,  0.5,  0.5, 10.5, 11.5,  0.5,  0.5,  0.5,  0.5,
        0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5])
```

In [50]:
```
myarray1_col10 = myarray1_col10.reshape(-1,1)
```

In [51]:
```
myarray1_col10
```

Out[51]:
```
array([[ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [10.5],
       [11.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5]])
```

In [52]:
```
myarray1_vstack = np.vstack((myarray1_col5,myarray1_col10))
```

In [53]:
```
myarray1_vstack
```

Out[53]:
```
array([[ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [10.5],
       [11.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [10.5],
       [11.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5],
       [ 0.5]])
```