

AUTHOR: OLADOYIN OLANREWAJU

QUESTION 1 A program that calculates the overtime pay using the following steps: Ask the user the total number of hours per week Ask the user the base salary per week Assume 40hours per week and \$45.00 per hour

```
#Calculating overtime pay
def overtime_pay():

    hrs_per_week = 0
    base_salary_per_week = 0
    actual_hrs_per_week = 40
    totalhrs_per_week = float(input("Enter the number of hours worked per week: "))
    base_salary_per_week = float(input("Enter the amount paid per week: "))

    overtime_hrs_per_week = totalhrs_per_week - actual_hrs_per_week
    print("The number of hours worked overtime is {}hrs".format(overtime_hrs_per_week))

    overtime_pay_per_hour = 50
    overtime_pay_per_week = overtime_pay_per_hour * overtime_hrs_per_week
    print("The amount paid overtime per week is ${:.2f}".format(overtime_pay_per_week))

    total_pay_per_week = base_salary_per_week + overtime_pay_per_week
    print("The total amount paid per week is ${:.2f}".format(total_pay_per_week))

overtime_pay()

    Enter the number of hours worked per week: 60
    Enter the amount paid per week: 2500
    The number of hours worked overtime is 20.0hrs
    The amount paid overtime per week is $1000.00
    The total amount paid per week is $3500.00
```

QUESTION 2 Write a program that requests the user to enetr a list of float values stored in a variable name called mylist1

```
#A) program that requests users to enter a list of 10 float numbers (mylist1)
mylist1 = []
num = 10
for i in range(num):
    inp = float(input("Please enter float number {} \t".format(i+1)))
    mylist1.append(inp)

print(mylist1)

    Please enter float number 1      5.1
    Please enter float number 2      2.8
    Please enter float number 3      4.9
    Please enter float number 4      6.7
    Please enter float number 5      8.2
    Please enter float number 6      7.3
    Please enter float number 7      9.6
    Please enter float number 8      3.5
    Please enter float number 9      8.4
    Please enter float number 10     10.2
    [5.1, 2.8, 4.9, 6.7, 8.2, 7.3, 9.6, 3.5, 8.4, 10.2]

mylist1

    [5.1, 2.8, 4.9, 6.7, 8.2, 7.3, 9.6, 3.5, 8.4, 10.2]

#B) List comprehension to create a new list (mylist2) from mylist1
mylist2 = [items for items in mylist1]
print(mylist2)

    [5.1, 2.8, 4.9, 6.7, 8.2, 7.3, 9.6, 3.5, 8.4, 10.2]

#Ci) Sorting the values in mylist2 in ascending order
mylist2.sort()
print(mylist2)

    [2.8, 3.5, 4.9, 5.1, 6.7, 7.3, 8.2, 8.4, 9.6, 10.2]
```

QUESTION 3 A program that creates a single dictionary consisting of the following key-pair values (name of dictionary- my_dict1)

```
#A) A program that creates a single dictionary
my_dict1 = {"School": "MTSU", "Textbooks": 14, "Level": "Elementary", "Hobby": "Dancing", "Height": "4.5inch", "Food": "An
my_dict1

    {'School': 'MTSU',
     'Textbooks': 14,
     'Level': 'Elementary',
     'Hobby': 'Dancing',
     'Height': '4.5inch',
     'Food': 'Amala'}

#B) Update the dictionary. Changing school from MTSU to Univerdity of Ibadan
my_dict1["School"] = "University of Ibadan"
my_dict1

    {'School': 'University of Ibadan',
     'Textbooks': 14,
     'Level': 'Elementary',
     'Hobby': 'Dancing',
     'Height': '4.5inch',
     'Food': 'Amala'}

#C) Adding new key-pair values
my_dict1["Is_location_USA"] = "False"
my_dict1["Is_graduated"] = "Yes"
my_dict1

    {'School': 'University of Ibadan',
     'Textbooks': 14,
     'Level': 'Elementary',
     'Hobby': 'Dancing',
     'Height': '4.5inch',
```

```
'Food': 'Amala',
'Is_location_USA': 'False',
'Is_graduated': 'Yes'}
```

```
#D) Removing the key-pair value Hobby
my_dict1.pop("Hobby")
```

```
'Dancing'
```

```
my_dict1

{'School': 'University of Ibadan',
 'Textbooks': 14,
 'Level': 'Elementary',
 'Height': '4.5inch',
 'Food': 'Amala',
 'Is_location_USA': 'False',
 'Is_graduated': 'Yes'}
```

```
#Deleting the last entry of the updated dictionary
my_dict1.popitem()
my_dict1
```

```
{'School': 'University of Ibadan',
 'Textbooks': 14,
 'Level': 'Elementary',
 'Height': '4.5inch',
 'Food': 'Amala',
 'Is_location_USA': 'False'}
```

QUESTION 4 Question Numpy

```
#A) Creating an array of ones of size 20 by 11 called myarray1
import numpy as np
myarray1 = np.ones((20,11), dtype=float)
```

```
myarray1

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.]])
```

```
#B) Multiplying scalar of 0.5 by the array
myarray1 = 0.5*myarray1
myarray1
```

```
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]])
```

```
#C) Updating the 6th row with the value of 10.5
myarray1[5, :] =10.5
```

```
myarray1

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],
       [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],
       [ 0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5,  0.5]])
```

```
#D) Updating the 7th row with the value of 11.5
myarray1[6, :] = 11.5
```

```
myarray1
```

[illegible]

```
#E) Updating the 1st column with the value of 9.5
```

```
myarray1[:, 0] = 9.5
```

```
myarray1
```

[illegible]

```
#F) Slicing the 5th row to the 11th in myarray1
```

```
myarray1[4:11, :]
```

```
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]])
```

```
#G) Slicing the 6th column to 9th column in myarray1
```

```
myarray1[:, 5:9]
```

[illegible]

```
#H) Merging the 6th column with 8th column using np.hstack
```

```
h_array = np.hstack((myarray1[:,5], myarray1[:, 7]))
```

h_array

```
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])
```

```
#I) Merging the 5th column with 10th column using np.vstack
```

```
v_array = np.vstack((myarray1[:,4], myarray1[:, 9]))
```

v_array

```
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]])
```

[Colab paid products](#) - [Cancel contracts here](#)

✓ 0s completed at 10:32 AM



Could not connect to the reCAPTCHA service. Please check your internet connection and reload to get a reCAPTCHA challenge.