

Exercise 8

#difference between each number in the array and the average of all numbers.

```
def diff_avg(arr):  
    avg = sum(arr) / len(arr)  
    return [abs(num - avg) for num in arr]  
  
arr = [2, 4, 6, 8, 10]  
result1 = diff_avg(arr)  
print("1. Difference Between Each Number and Average:", result1)  
print()
```

#convert a string in an array.

```
def str_to_array(s):  
    return list(s)  
  
s = "exercise8"  
result2 = str_to_array(s)  
print("2. Convert String to Array:", result2)  
print()
```

#split an array in two and store even numbers in one array and odd numbers in the other.

```
def split_array(arr):  
    evens = [x for x in arr if x % 2 == 0]  
    odds = [x for x in arr if x % 2 != 0]  
    return evens, odds  
  
arr = [2, 5, 14, 18, 23]  
even_numbers, odd_numbers = split_array(arr)  
print("3. Split Array into Even and Odd:")  
print("Even numbers:", even_numbers)  
print("Odd numbers:", odd_numbers)  
print()
```

#insertion sort on an array.

```
def insertion_sort(arr):  
    for i in range(1, len(arr)):  
        j = i - 1  
        nxt_element = arr[i]  
        while (arr[j] > nxt_element) and (j >= 0):  
            arr[j + 1] = arr[j]  
            j -= 1  
        arr[j + 1] = nxt_element  
    return arr
```

```
arr = [2, 5, 14, 18, 21, 23]  
result4 = insertion_sort(arr)  
print("4. Insertion Sort on an Array:", result4)
```

The screenshot shows the Programiz Python Online Compiler interface. The left pane contains a Python script with the following code:

```
1 # Exercise 8  
2  
3 #Difference between each number in the array and  
  the average of all numbers.  
4 def diff_avg(arr):  
5     avg = sum(arr) / len(arr)  
6     return [abs(num - avg) for num in arr]  
7  
8 arr = [2, 4, 5, 8, 10]  
9 result1 = diff_avg(arr)  
10 print("1. Difference Between Each Number and  
   Average:", result1)  
11 print()  
12  
13 #convert a string in an array.  
14 def str_to_array(s):  
15     return list(s)  
16  
17 s = "exercise8"  
18 result2 = str_to_array(s)  
19 print("2. Convert String to Array:", result2)  
20 print()  
21  
22 #split an array in two and store even numbers in  
  one array and odd numbers in the other.  
23 def split_array(arr):  
24     evens = [x for x in arr if x % 2 == 0]  
25     odds = [x for x in arr if x % 2 != 0]  
26     return evens, odds  
27  
28 arr = [2, 5, 14, 18, 23]  
29 even_numbers, odd_numbers = split_array(arr)  
30 print("3. Split Array into Even and Odd:")  
31 print("Even numbers:", even_numbers)  
32 print("Odd numbers:", odd_numbers)  
33 print()  
34  
35 #insertion sort on an array.  
36 def insertion_sort(arr):  
37     for i in range(1, len(arr)):  
38         j = i - 1  
39         nxt_element = arr[i]  
40         while (arr[j] > nxt_element) and (j >= 0):  
41             arr[j + 1] = arr[j]  
42             j -= 1  
43         arr[j + 1] = nxt_element  
44     return arr  
45  
46 arr = [2, 5, 14, 18, 21, 23]  
47 result4 = insertion_sort(arr)  
48 print("4. Insertion Sort on an Array:", result4)
```

The right pane shows the output of the script:

```
1. Difference Between Each Number and Average: [4.0, 2.0,  
0.0, 2.0, 4.0]  
2. Convert String to Array: ['e', 'x', 'e', 'r', 'c', 'i',  
, 's', 'e', '8']  
3. Split Array into Even and Odd:  
Even numbers: [2, 14, 18]  
Odd numbers: [5, 23]  
4. Insertion Sort on an Array: [2, 5, 14, 18, 21, 23]  
+ )
```

At the bottom right, there is a small advertisement for a Python course.