 # 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)
```