

The screenshot shows the Visual Studio Code interface with a dark theme. The left sidebar has icons for file operations like Open, Save, and Close. The main editor area displays Python code for exercises 1 through 4. The terminal at the bottom shows the output of running the script.

```
grp7_tiqui_ex8.py
# Exercise 8
# 1. Python program find 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 = [5, 6, 7, 8, 9]
result1 = diff_avg(arr)
print("1. Difference Between Each Number and Average:", result1)
print()

# 2. Python program to convert a string in an array.
def str_to_array(s):
    return list(s)

s = "helloworld"
result2 = str_to_array(s)
print("2. Convert String to Array:", result2)
print()

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
```

PS C:\Python> & C:/Users/18kgo/AppData/Local/Programs/Python/Python312/python.exe c:/Python/grp7_tiqui_ex8.py

1. Difference Between Each Number and Average: [2.0, 1.0, 0.0, 1.0, 2.0]

2. Convert String to Array: ['h', 'e', 'l', 'l', 'o', 'w', 'o', 'r', 'l', 'd']

3. Split Array into Even and Odd:
Even numbers: [22, 44]
Odd numbers: [11, 33, 55]

4. Insertion Sort on an Array: [1, 2, 3, 4, 5, 6, 7, 8, 9]

PS C:/Python>

The screenshot shows the Visual Studio Code interface with a dark theme. The left sidebar has icons for file operations like Open, Save, and Close. The main editor area displays Python code for exercises 3 and 4. The terminal at the bottom shows the output of running the script.

```
grp7_tiqui_ex8.py
# 3. Python program to 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 = [11, 22, 33, 44, 55]
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()

# 4. Python program to perform 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):
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

PS C:\Python> & C:/Users/18kgo/AppData/Local/Programs/Python/Python312/python.exe c:/Python/grp7_tiqui_ex8.py

1. Difference Between Each Number and Average: [2.0, 1.0, 0.0, 1.0, 2.0]

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Even numbers: [22, 44]
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4. Insertion Sort on an Array: [1, 2, 3, 4, 5, 6, 7, 8, 9]

PS C:/Python>

The screenshot shows a Microsoft Visual Studio Code (VS Code) interface. The left sidebar contains various icons for file operations, search, and other development tools. The main editor area displays a Python script named `grp7_tiqui_ex8.py`. The script includes a function for insertion sort and demonstrates its use on an array of numbers. Below the editor, the terminal window shows the execution of the script and its output, which includes the difference between each number and the average, conversion of a string to an array, splitting an array into even and odd numbers, and performing insertion sort on an array.

```
grp7_tiqui_ex8.py
grp7_tiqui_ex8.py > ...
31 print("Odd numbers: ", odd_numbers)
32 print()
33
34 # 4. Python program to perform insertion sort on an array.
35 def insertion_sort(arr):
36     for i in range(1, len(arr)):
37         j = i - 1
38         nxt_element = arr[i]
39         while (arr[j] > nxt_element) and (j >= 0):
40             arr[j + 1] = arr[j]
41             j -= 1
42         arr[j + 1] = nxt_element
43     return arr
44
45 arr = [1, 2, 3, 4, 5, 6, 7, 8, 9]
46 result4 = insertion_sort(arr)
47 print("4. Insertion Sort on an Array:", result4)
48

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
```

PS C:\Python> & C:/Users/18kgo/AppData/Local/Programs/Python/Python312/python.exe c:/Python/grp7_tiqui_ex8.py
1. Difference Between Each Number and Average: [2.0, 1.0, 0.0, 1.0, 2.0]
2. Convert String to Array: ['h', 'e', 'l', 'l', 'o', 'w', 'o', 'r', 'l', 'd']
3. Split Array into Even and Odd:
Even numbers: [22, 44]
Odd numbers: [11, 33, 55]
4. Insertion Sort on an Array: [1, 2, 3, 4, 5, 6, 7, 8, 9]