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	Due Date:	31 Mach, 2024
	Section:	AI Lab F11 Wednesday

Kindly solve here any 4 Question from each topic in Python coding and past the screen shoot of this code:

Note: Students must mention their Name in every function neither the assignment will not be acceptable.

List:

1. Write a function to reverse a list in Python.
2. How can you concatenate two lists in Python?
3. How do you remove duplicates from a list in Python?
4. Write a Python program to find the largest element in a list.
5. Implement a Python function to find the sum of all elements in a list.
6. Implement a Python program to sort a list of integers in ascending order.

Tuple:

1. Write a Python program to slice a tuple.
2. How do you find the length of a tuple in Python?
3. How can you convert a tuple into a list in Python?
4. Write a program to convert a tuple of strings into a single string.
5. Create a Python function to merge two tuples into a single tuple.
6. Write a program to find the index of a specific element in a tuple.

Dictionary:

1. Write a program to sort a dictionary by its values.
2. Implement a function to find the length of a dictionary.
3. Implement a Python function to merge two dictionaries.
4. Write a Python program to remove a key from a dictionary.
5. Create a function to check if a given value exists in a dictionary.
6. Write a Python program to iterate over a dictionary and print its key-value pairs.

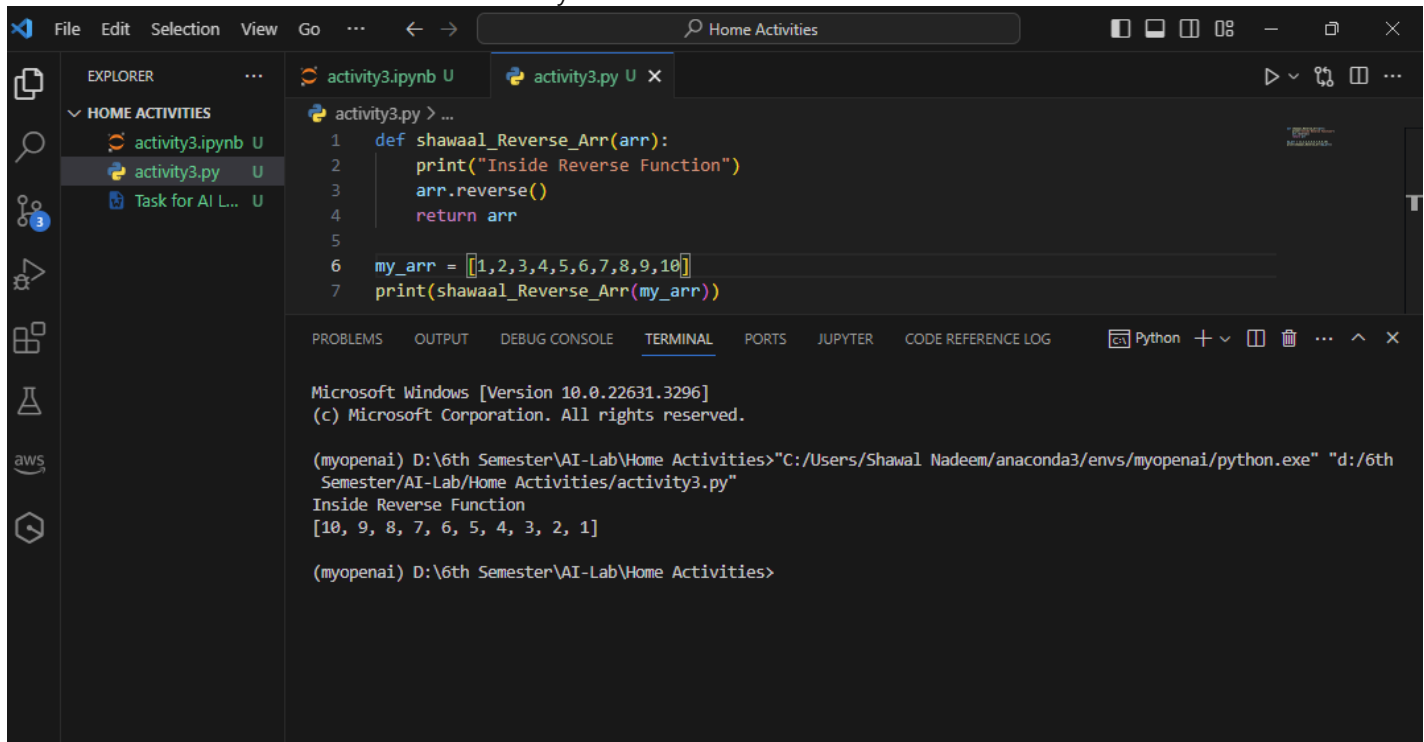
Set:

1. Write a program to find the union of two sets.
2. How do you add elements to a set in Python?
3. Write a Python program to create an empty set.
4. Implement a function to remove an element from a set.
5. Create a Python function to find the intersection of two sets.
6. Implement a function to find the difference between two sets.

Solution Start from Here:

List:

1. Write a function to reverse a list in Python.



The screenshot shows the Visual Studio Code editor with a file named `activity3.py` open. The code defines a function `shawaal_Reverse_Arr(arr)` that prints "Inside Reverse Function", reverses the list `arr` using `arr.reverse()`, and returns `arr`. Below the function, a list `my_arr = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]` is created, and the function is called with `print(shawaal_Reverse_Arr(my_arr))`. The terminal output shows the function being executed, printing "Inside Reverse Function" and the reversed list `[10, 9, 8, 7, 6, 5, 4, 3, 2, 1]`.

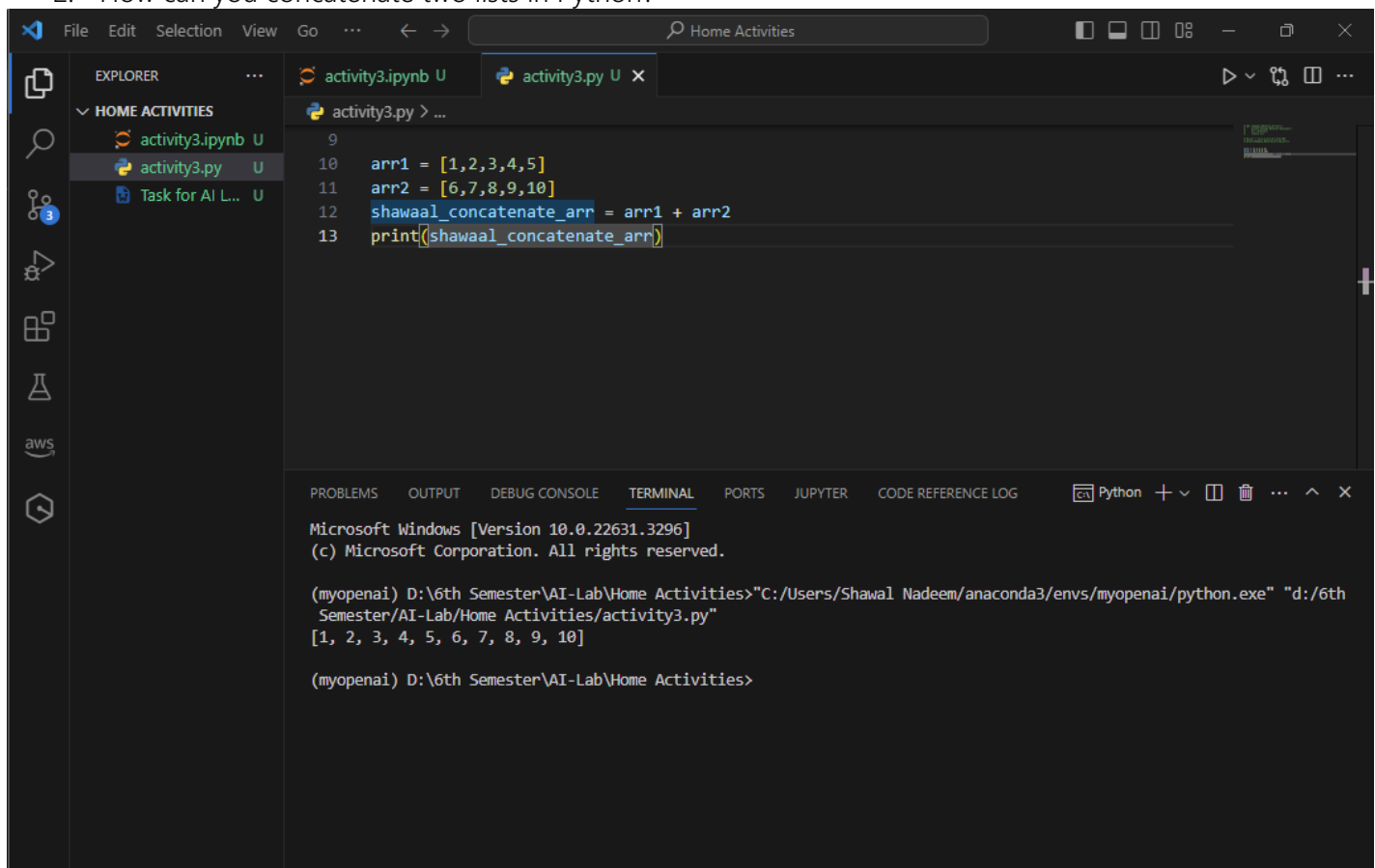
```
1 def shawaal_Reverse_Arr(arr):
2     print("Inside Reverse Function")
3     arr.reverse()
4     return arr
5
6 my_arr = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]
7 print(shawaal_Reverse_Arr(my_arr))
```

```
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(myopenai) D:\6th Semester\AI-Lab\Home Activities>"C:/Users/Shawal Nadeem/anaconda3/envs/myopenai/python.exe" "d:/6th Semester/AI-Lab/Home Activities/activity3.py"
Inside Reverse Function
[10, 9, 8, 7, 6, 5, 4, 3, 2, 1]

(myopenai) D:\6th Semester\AI-Lab\Home Activities>
```

2. How can you concatenate two lists in Python?



The screenshot shows the Visual Studio Code editor with a file named `activity3.py` open. The code defines two lists, `arr1 = [1, 2, 3, 4, 5]` and `arr2 = [6, 7, 8, 9, 10]`, and concatenates them using `shawaal_concatenate_arr = arr1 + arr2`. The result is printed using `print(shawaal_concatenate_arr)`. The terminal output shows the function being executed, printing the concatenated list `[1, 2, 3, 4, 5, 6, 7, 8, 9, 10]`.

```
9
10 arr1 = [1, 2, 3, 4, 5]
11 arr2 = [6, 7, 8, 9, 10]
12 shawaal_concatenate_arr = arr1 + arr2
13 print(shawaal_concatenate_arr)
```

```
Microsoft Windows [Version 10.0.22631.3296]
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(myopenai) D:\6th Semester\AI-Lab\Home Activities>"C:/Users/Shawal Nadeem/anaconda3/envs/myopenai/python.exe" "d:/6th Semester/AI-Lab/Home Activities/activity3.py"
[1, 2, 3, 4, 5, 6, 7, 8, 9, 10]

(myopenai) D:\6th Semester\AI-Lab\Home Activities>
```

3. How do you remove duplicates from a list in Python?

The screenshot shows the Visual Studio Code editor with a file named `activity3.py` open. The Explorer sidebar on the left shows the file structure under 'HOME ACTIVITIES'. The code in the editor is as follows:

```
14
15
16 shawaal_arr = [1,1,2,3,4,5,5,6,7,7]
17 print(list(set(shawaal_arr)))
```

The bottom panel shows the TERMINAL output, indicating the program was executed successfully in a Python environment:

```
Microsoft Windows [Version 10.0.22631.3296]
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(myopenai) D:\6th Semester\AI-Lab\Home Activities>"C:/Users/Shawal Nadeem/anaconda3/envs/myopenai/python.exe" "d:/6th Semester/AI-Lab/Home Activities/activity3.py"
[1, 2, 3, 4, 5, 6, 7]

(myopenai) D:\6th Semester\AI-Lab\Home Activities>
```

4. Write a Python program to find the largest element in a list.

The screenshot shows the Visual Studio Code editor with a file named `activity3.py` open. The Explorer sidebar on the left shows the file structure under 'HOME ACTIVITIES'. The code in the editor is as follows:

```
19
20 shawaal_arr = [1,2,3,4,5,6,7,8,9,10,11,12,13,14,15]
21 print(max(shawaal_arr))
```

The bottom panel shows the TERMINAL output, indicating the program was executed successfully in a Python environment:

```
Microsoft Windows [Version 10.0.22631.3296]
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(myopenai) D:\6th Semester\AI-Lab\Home Activities>"C:/Users/Shawal Nadeem/anaconda3/envs/myopenai/python.exe" "d:/6th Semester/AI-Lab/Home Activities/activity3.py"
15

(myopenai) D:\6th Semester\AI-Lab\Home Activities>
```

Tuple:

1. Write a Python program to slice a tuple.

The screenshot shows the Visual Studio Code interface. The Explorer panel on the left shows a file named 'activity3.py' under the 'HOME ACTIVITIES' folder. The main editor window displays the following Python code:

```
25  
26 ## Tuple  
27 shawaal_tuple = (1,2,3,4,5,6,7,8,9,10)  
28 print(shawaal_tuple[:3])  
29 print(shawaal_tuple[3:])
```

The bottom panel shows the 'TERMINAL' output, which includes the command prompt and the execution of the script:

```
Microsoft Windows [Version 10.0.22631.3296]  
(c) Microsoft Corporation. All rights reserved.  
  
(myopenai) D:\6th Semester\AI-Lab\Home Activities>"C:/Users/Shawal Nadeem/anaconda3/envs/myopenai/python.exe" "d:/6th Semester/AI-Lab/Home Activities/activity3.py"  
(1, 2, 3)  
(4, 5, 6, 7, 8, 9, 10)  
  
(myopenai) D:\6th Semester\AI-Lab\Home Activities>
```

2. How do you find the length of a tuple in Python?

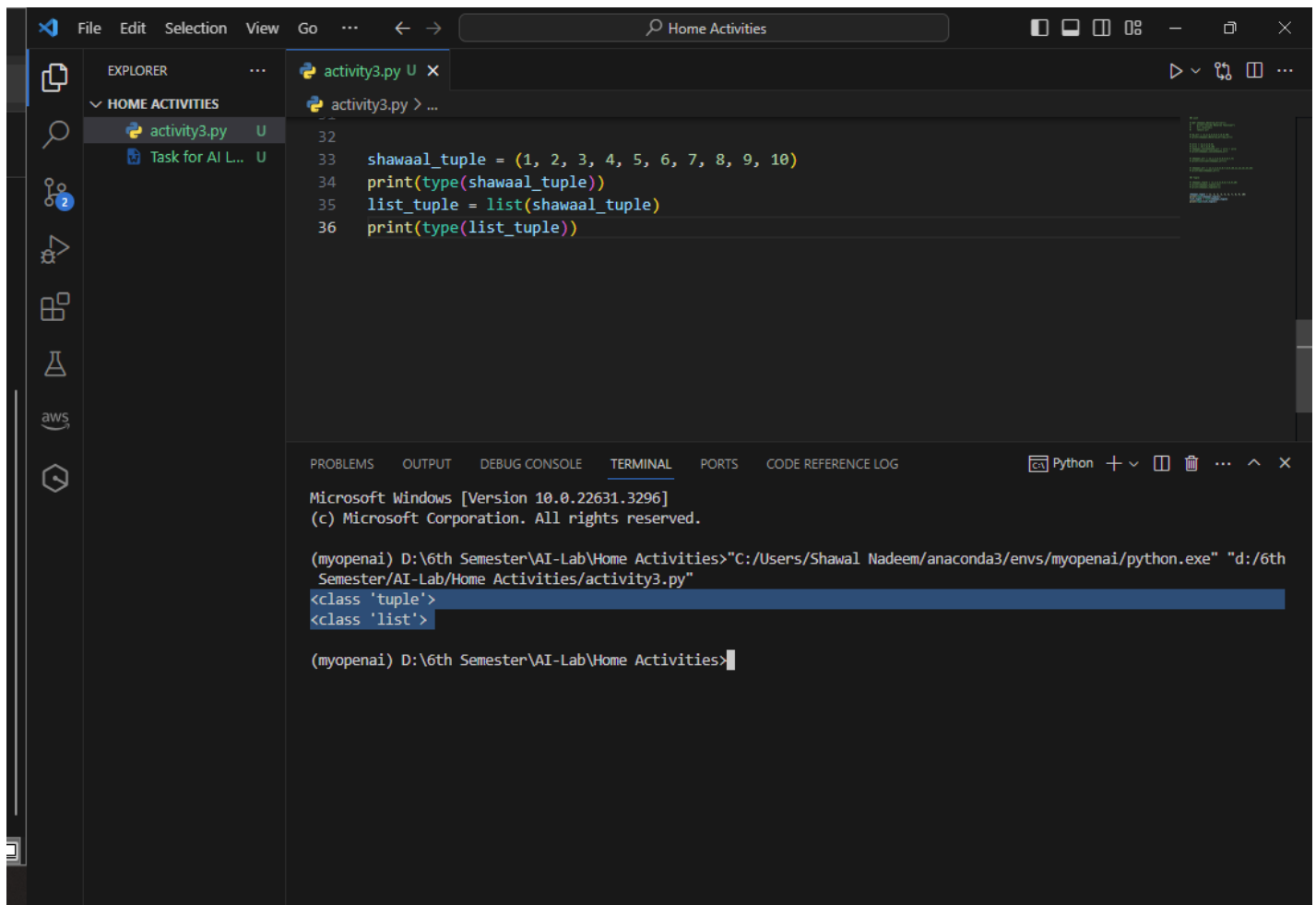
The screenshot shows the Visual Studio Code interface. The Explorer panel on the left shows a file named 'activity3.py' under the 'HOME ACTIVITIES' folder. The main editor window displays the following Python code:

```
32  
33 shawaal_tuple = (1, 2, 3, 4, 5, 6, 7, 8, 9, 10)  
34 print(len(shawaal_tuple))
```

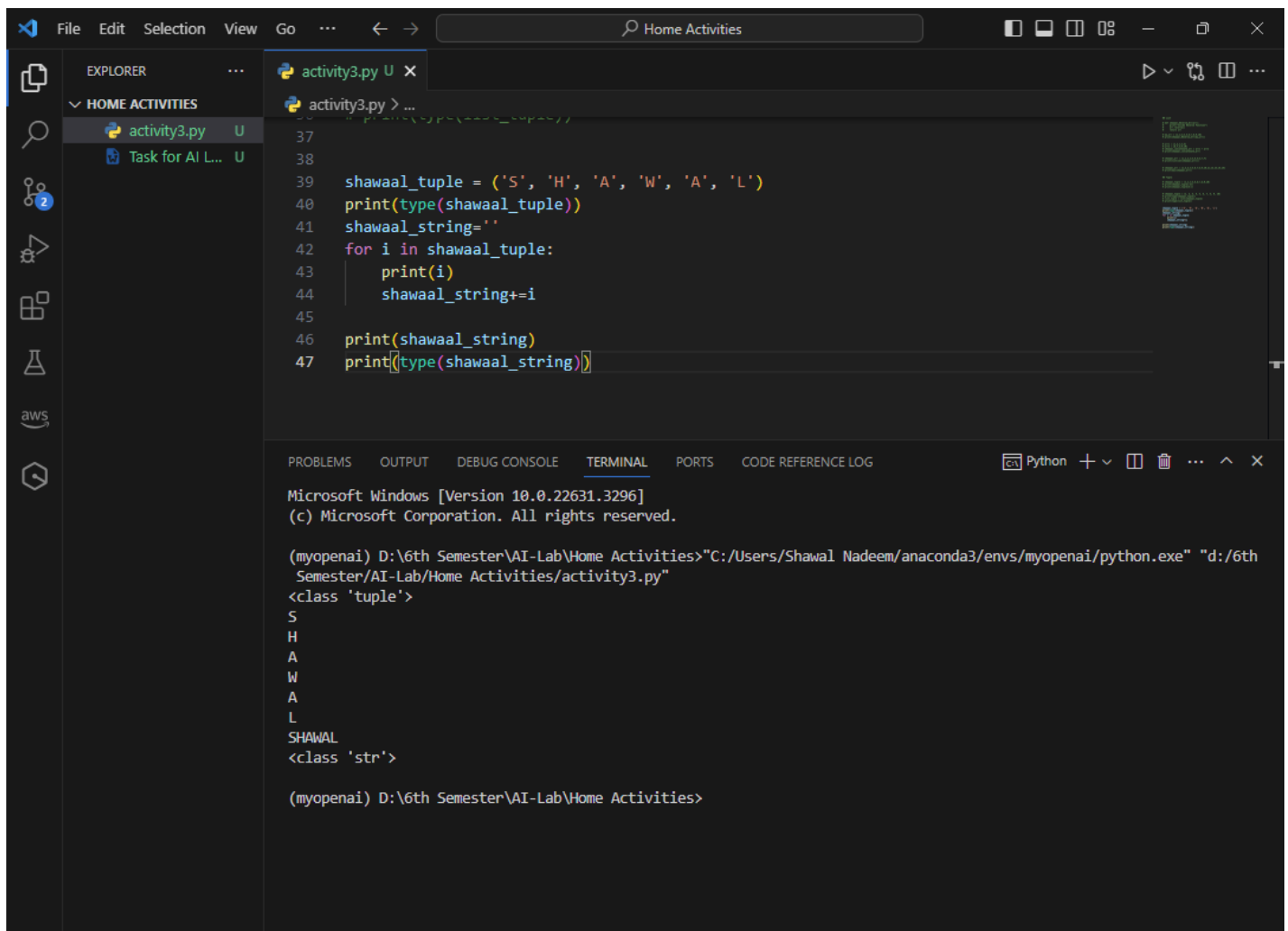
The bottom panel shows the 'TERMINAL' output, which includes the command prompt and the execution of the script:

```
Microsoft Windows [Version 10.0.22631.3296]  
(c) Microsoft Corporation. All rights reserved.  
  
(myopenai) D:\6th Semester\AI-Lab\Home Activities>"C:/Users/Shawal Nadeem/anaconda3/envs/myopenai/python.exe" "d:/6th Semester/AI-Lab/Home Activities/activity3.py"  
10  
  
(myopenai) D:\6th Semester\AI-Lab\Home Activities>
```

3. How can you convert a tuple into a list in Python?



4. Write a program to convert a tuple of strings into a single string.



The image shows a Visual Studio Code (VS Code) editor window with a dark theme. The Explorer sidebar on the left shows a project named 'HOME ACTIVITIES' containing two files: 'activity3.py' and 'Task for AI L...'. The main editor area displays the contents of 'activity3.py', which is a Python script. The script defines a tuple 'shawaal_tuple' with the characters 'S', 'H', 'A', 'W', 'A', 'L', prints its type, then iterates over each character to build a string 'shawaal_string', and finally prints the string and its type. The output window at the bottom shows the execution of the script using the Python interpreter. The output confirms the tuple type and lists the characters S, H, A, W, A, L, followed by the string 'SHAWAL' and its type 'str'.

```
37
38
39 shawaal_tuple = ('S', 'H', 'A', 'W', 'A', 'L')
40 print(type(shawaal_tuple))
41 shawaal_string=''
42 for i in shawaal_tuple:
43     print(i)
44     shawaal_string+=i
45
46 print(shawaal_string)
47 print(type(shawaal_string))
```

Microsoft Windows [Version 10.0.22631.3296]
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(myopenai) D:\6th Semester\AI-Lab\Home Activities>"C:/Users/Shawal Nadeem/anaconda3/envs/myopenai/python.exe" "d:/6th Semester/AI-Lab/Home Activities/activity3.py"

```
<class 'tuple'>
S
H
A
W
A
L
SHAWAL
<class 'str'>
```

(myopenai) D:\6th Semester\AI-Lab\Home Activities>

Dictionary:

1. Write a program to sort a dictionary by its values.

The screenshot shows a Visual Studio Code editor with a file named `activity3.py` open. The Explorer sidebar on the left shows the file structure under 'HOME ACTIVITIES'. The code in the editor defines a function `sort_dict_by_values_shawaal` that takes a dictionary and returns a new dictionary sorted by its values. A test dictionary `my_dict_shawaal` is created and passed to the function. The output is printed in the terminal.

```
46 # print(shawaal_string)
47 # print(type(shawaal_string))
48
49
50 def sort_dict_by_values_shawaal(input_dict):
51     sorted_dict_shawaal = dict(sorted(input_dict.items(), key=lambda item: item[1]))
52     return sorted_dict_shawaal
53
54 my_dict_shawaal = {'b': 3, 'a': 1, 'c': 2}
55 sorted_dict_shawaal = sort_dict_by_values_shawaal(my_dict_shawaal)
56 print(sorted_dict_shawaal)
57
```

The terminal output shows the execution of the script, resulting in the sorted dictionary: `{'a': 1, 'c': 2, 'b': 3}`.

2. Implement a function to find the length of a dictionary.

The screenshot shows the same Visual Studio Code editor with a new function `dict_length_shawaal` implemented. This function takes a dictionary and returns its length using the `len()` function. A test dictionary `my_dict` is created and passed to the function. The output is printed in the terminal.

```
57
58
59 def dict_length_shawaal(input_dict):
60     return len(input_dict)
61
62 my_dict = {'a': 1, 'b': 2, 'c': 3}
63 print("Length of dictionary:", dict_length_shawaal(my_dict))
64
65
```

The terminal output shows the execution of the script, resulting in the output: `Length of dictionary: 3`.

3. Implement a Python function to merge two dictionaries.

The screenshot shows the Visual Studio Code editor with a file named `activity3.py` open. The Explorer sidebar on the left shows the file structure under 'HOME ACTIVITIES'. The code in the editor is as follows:

```
64
65
66
67 def merge_dicts_shawaal(dict1, dict2):
68     merged_dict = dict1.copy()
69     merged_dict.update(dict2)
70     return merged_dict
71
72 dict1 = {'a': 1, 'b': 2}
73 dict2 = {'c': 3, 'd': 4}
74 print("Merged dictionary:", merge_dicts_shawaal(dict1, dict2))
75
```

The bottom panel shows the TERMINAL output:

```
Microsoft Windows [Version 10.0.22631.3296]
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(myopenai) D:\6th Semester\AI-Lab\Home Activities>"C:/Users/Shawal Nadeem/anaconda3/envs/myopenai/python.exe" "d:/6th Semester/AI-Lab/Home Activities/activity3.py"
Merged dictionary: {'a': 1, 'b': 2, 'c': 3, 'd': 4}

(myopenai) D:\6th Semester\AI-Lab\Home Activities>
```

4. Write a Python program to remove a key from a dictionary.

The screenshot shows the Visual Studio Code editor with a file named `activity3.py` open. The Explorer sidebar on the left shows the file structure under 'HOME ACTIVITIES'. The code in the editor is as follows:

```
76
77 def remove_key_shawaal(input_dict, key_to_remove):
78     if key_to_remove in input_dict:
79         del input_dict[key_to_remove]
80     return input_dict
81
82 my_dict = {'a': 1, 'b': 2, 'c': 3}
83 key_to_remove = 'b'
84 print("Dictionary after removing key:", remove_key_shawaal(my_dict, key_to_remove))
85
86
```

The bottom panel shows the TERMINAL output:

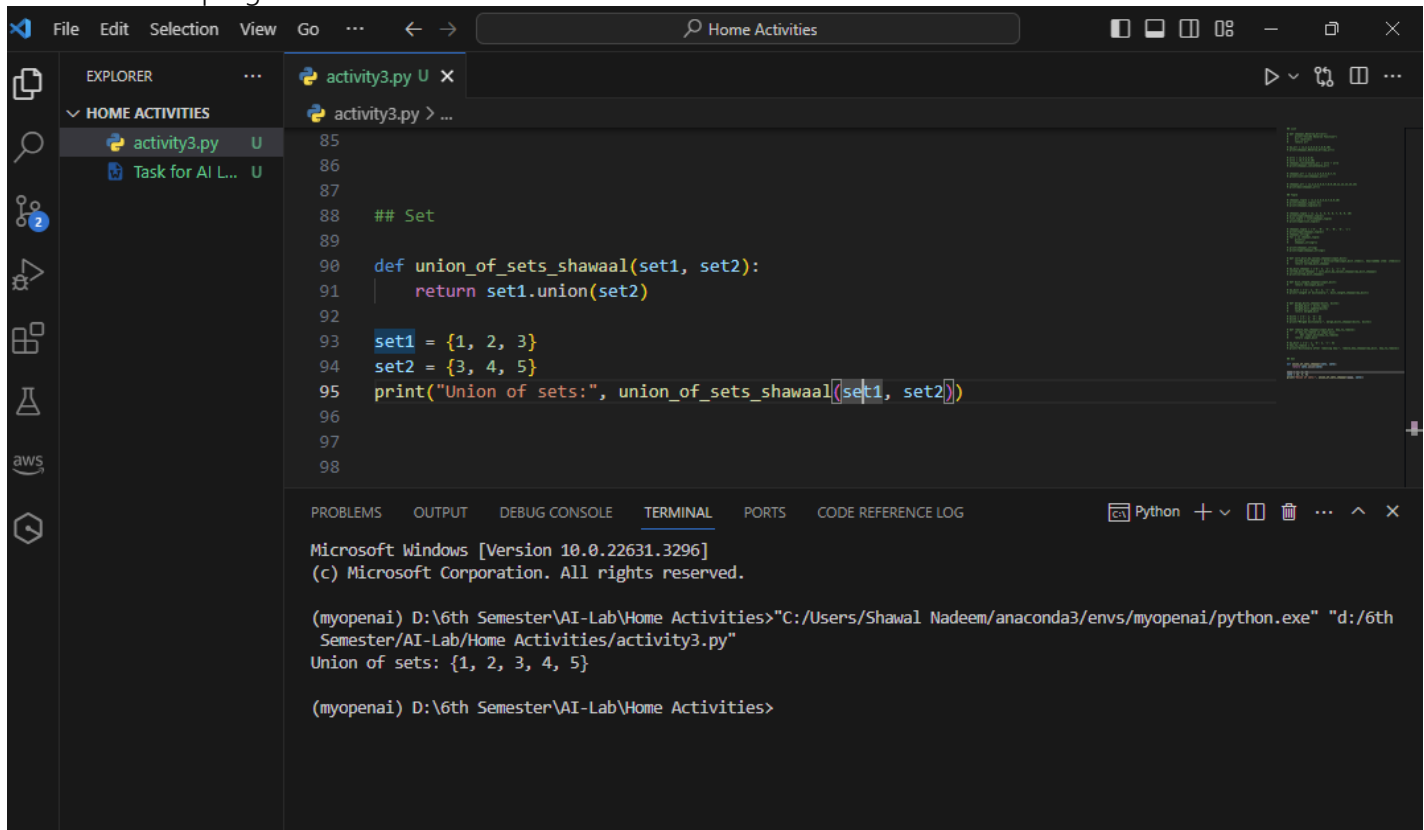
```
Microsoft Windows [Version 10.0.22631.3296]
(c) Microsoft Corporation. All rights reserved.

(myopenai) D:\6th Semester\AI-Lab\Home Activities>"C:/Users/Shawal Nadeem/anaconda3/envs/myopenai/python.exe" "d:/6th Semester/AI-Lab/Home Activities/activity3.py"
Dictionary after removing key: {'a': 1, 'c': 3}

(myopenai) D:\6th Semester\AI-Lab\Home Activities>
```


Set:

1. Write a program to find the union of two sets.



The screenshot shows a Visual Studio Code editor window with a Python file named `activity3.py`. The code defines a function `union_of_sets_shawaal` that takes two sets as input and returns their union. The sets are initialized as `set1 = {1, 2, 3}` and `set2 = {3, 4, 5}`. The function is called, and the result is printed. The terminal output shows the execution of the program, which prints the union of the two sets: `{1, 2, 3, 4, 5}`.

```
85
86
87
88 ## Set
89
90 def union_of_sets_shawaal(set1, set2):
91     return set1.union(set2)
92
93 set1 = {1, 2, 3}
94 set2 = {3, 4, 5}
95 print("Union of sets:", union_of_sets_shawaal(set1, set2))
96
97
98
```

Microsoft Windows [Version 10.0.22631.3296]
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(myopenai) D:\6th Semester\AI-Lab\Home Activities>"C:/Users/Shawal Nadeem/anaconda3/envs/myopenai/python.exe" "d:/6th Semester/AI-Lab/Home Activities/activity3.py"
Union of sets: {1, 2, 3, 4, 5}

(myopenai) D:\6th Semester\AI-Lab\Home Activities>

2. How do you add elements to a set in Python?

The screenshot shows the Visual Studio Code editor with a file named `activity3.py` open. The Explorer sidebar on the left shows the file structure under 'HOME ACTIVITIES'. The code in the editor is as follows:

```
90 # def union_of_sets_shawaal(set1, set2):
91 #     return set1.union(set2)
92
93 # set1 = {1, 2, 3}
94 # set2 = {3, 4, 5}
95 # print("Union of sets:", union_of_sets_shawaal(set1, set2))
96
97
98
99 shawaal_set = {1, 2, 3}
100 shawaal_set.add(4)
101 print("Set after adding element:", shawaal_set)
102
103
```

The bottom panel shows the 'TERMINAL' tab with the following output:

```
Microsoft Windows [Version 10.0.22631.3296]
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(myopenai) D:\6th Semester\AI-Lab\Home Activities>"C:/Users/Shawal Nadeem/anaconda3/envs/myopenai/python.exe" "d:/6th
Semester/AI-Lab/Home Activities/activity3.py"
Set after adding element: {1, 2, 3, 4}

(myopenai) D:\6th Semester\AI-Lab\Home Activities>
```

3. Write a Python program to create an empty set.

The screenshot shows the Visual Studio Code editor with a file named `activity3.py` open. The Explorer sidebar on the left shows the file structure under 'HOME ACTIVITIES'. The code in the editor is as follows:

```
104 shawaal_empty_set = {}
105 print("Empty set :", shawaal_empty_set)
106
107
108
109
110
```

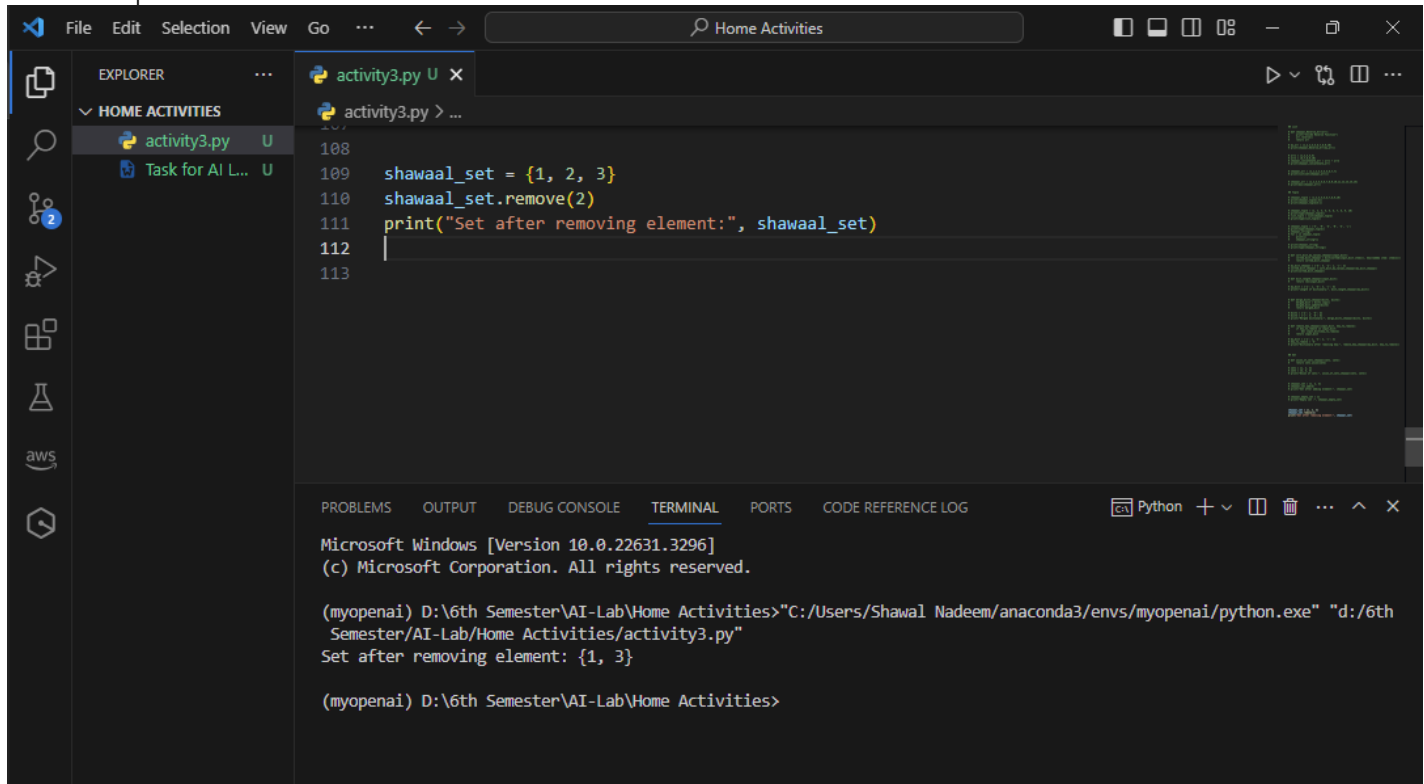
The bottom panel shows the 'TERMINAL' tab with the following output:

```
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(myopenai) D:\6th Semester\AI-Lab\Home Activities>"C:/Users/Shawal Nadeem/anaconda3/envs/myopenai/python.exe" "d:/6th
Semester/AI-Lab/Home Activities/activity3.py"
Empty set : {}

(myopenai) D:\6th Semester\AI-Lab\Home Activities>
```

4. Implement a function to remove an element from a set.



The screenshot shows a code editor with a dark theme. The Explorer panel on the left shows a folder named 'HOME ACTIVITIES' containing two files: 'activity3.py' and 'Task for AI L...'. The main editor window displays the code in 'activity3.py' with line numbers 108 to 113. The code defines a set 'shawaal_set' with elements {1, 2, 3}, removes the element 2, and prints the resulting set. The output panel at the bottom shows the execution of the script, displaying the path to the Python interpreter and the output 'Set after removing element: {1, 3}'.

```
108
109 shawaal_set = {1, 2, 3}
110 shawaal_set.remove(2)
111 print("Set after removing element:", shawaal_set)
112 |
113
```

Microsoft Windows [Version 10.0.22631.3296]
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(myopenai) D:\6th Semester\AI-Lab\Home Activities>"C:/Users/Shawal Nadeem/anaconda3/envs/myopenai/python.exe" "d:/6th Semester/AI-Lab/Home Activities/activity3.py"
Set after removing element: {1, 3}

(myopenai) D:\6th Semester\AI-Lab\Home Activities>