

Week10q2

Start with empty mappings for both s and t:

s: {}

t: {}

Now, let's iterate through the characters in both strings:

For the first character, 'e' in s and 'a' in t:

s: {'e' -> 'a'}

t: {'a' -> 'e'}

For the second character, 'g' in s and 'd' in t:

s: {'e' -> 'a', 'g' -> 'd'}

t: {'a' -> 'e', 'd' -> 'g'}

Now, we check if the mappings are consistent and one-to-one:

For each character in s, check if its mapping in t is correct.

For each character in t, check if its mapping in s is correct.

Therefore, the output for the given test data 'Input: s = "egg", t = "add"; Output: true' is True.

Chatgpt code

```
def isIsomorphic(s, t):
    if len(s) != len(t):
        return False

    char_map_s = {} # To store character mappings from s to t
    char_map_t = {} # To store character mappings from t to s

    for i in range(len(s)):
        char_s, char_t = s[i], t[i]

        if char_s in char_map_s:
            # If char_s is already mapped to a different character in t, return
False
            if char_map_s[char_s] != char_t:
                return False
            else:
                char_map_s[char_s] = char_t

        if char_t in char_map_t:
            # If char_t is already mapped to a different character in s, return
False
            if char_map_t[char_t] != char_s:
                return False
            else:
                char_map_t[char_t] = char_s

    return True

# Test data
s = "egg"
t = "add"
print(isIsomorphic(s, t)) # Output: True
```

Testcase

The screenshot shows the Visual Studio Code interface with a Python file named `week10q2.py` open. The file contains a function `isIsomorphic(s, t)` that checks if two strings are isomorphic. The function uses two dictionaries, `char_map_s` and `char_map_t`, to store character mappings. It iterates over the characters in `s` and checks if they are already mapped to a different character in `t`. If not, it maps them and continues. If already mapped to a different character, it returns `False`. If the strings are isomorphic, it returns `True`.

```
1 def isIsomorphic(s, t):
2     if len(s) != len(t):
3         return False
4     char_map_s = {} # To store character mappings from s to t
5     char_map_t = {} # To store character mappings from t to s
6     for i in range(len(s)):
7         char_s, char_t = s[i], t[i]
8         if char_s in char_map_s:
9             # If char_s is already mapped to a different character in t, return False
10            if char_map_s[char_s] != char_t:
11                return False
12        else:
13            char_map_s[char_s] = char_t
14        if char_t in char_map_t:
15            # If char_t is already mapped to a different character in s, return False
16            if char_map_t[char_t] != char_s:
17                return False
18        else:
19            char_map_t[char_t] = char_s
20    return True
21 s = "egg"
22 t = "add"
23 print(isIsomorphic(s, t)) # Output: True
24 s = "foo"
25 t = "bar"
26 print(isIsomorphic(s, t)) # Output: True
27 s = "paper"
28 t = "title"
```

The output window shows the execution results:

```
[Running] python -u "c:\Users\cheth\OneDrive\Desktop\SFBU\SEM3\ALGORITHMS\week10q2.py"
True
False
True
[Done] exited with code=0 in 0.172 seconds
```

The status bar at the bottom indicates the file is at line 3, column 21, with 4 spaces, UTF-8 encoding, and CRLF line endings. The Python version is 3.9.13 64-bit (microsoft store). The system clock shows 3:39 PM on 7/25/2023.