

Untitled

July 4, 2022

1 Assignment 7

1.0.1 Your Name Here

1.0.2 Date

1.1 Question 1

A palindrome is a word, phrase, or sequence that is the same spelled forward as it is backwards. Write a function using a for-loop to determine if a string is a palindrome. Your function should only have one argument.

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[4]: # your code here
```

1.2 Question 2

Write a function using a while-loop to determine if a string is a palindrome. Your function should only have one argument.

```
[3]: # your code here
```

1.3 Question 3

Two Sum - Write a function named two_sum() Given a vector of integers nums and an integer target, return indices of the two numbers such that they add up to target. You may assume that each input would have exactly one solution, and you may not use the same element twice. You can return the answer in any order. Use defaultdict and hash maps/tables to complete this problem.

Example 1: Input: nums = [2,7,11,15], target = 9 Output: [0,1] Explanation: Because nums[0] + nums[1] == 9, we return [0, 1].

Example 2: Input: nums = [3,2,4], target = 6 Output: [1,2]

Example 3: Input: nums = [3,3], target = 6 Output: [0,1]

Constraints: 2 <= nums.length <= 104 -109 <= nums[i] <= 109 -109 <= target <= 109
Only one valid answer exists.

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[6]: # your code here
```

1.4 Question 4

How is a negative index used in Python? Show an example

```
[7]: # your code here
```

1.5 Question 5

Check if two given strings are isomorphic to each other. Two strings `str1` and `str2` are called isomorphic if there is a one-to-one mapping possible for every character of `str1` to every character of `str2`. And all occurrences of every character in '`str1`' map to the same character in '`str2`'.

Input: `str1 = "aab", str2 = "xxy"`

Output: `True`

'a' is mapped to 'x' and 'b' is mapped to 'y'.

Input: `str1 = "aab", str2 = "xyz"`

Output: `False`

One occurrence of 'a' in `str1` has 'x' in `str2` and other occurrence of 'a' has 'y'.

A Simple Solution is to consider every character of '`str1`' and check if all occurrences of it map to the same character in '`str2`'. The time complexity of this solution is $O(n*n)$.

An Efficient Solution can solve this problem in $O(n)$ time. The idea is to create an array to store mappings of processed characters.

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[8]: # your code here
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