Lab-1

Artificial Intelligence

Cyber Security

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Questions Pool For Lab-1

1. Reverse a String ()

Write a function to reverse a string.

Example:

def reverse_string(s):

print(reverse_string("hello"))

```
Input: "hello"
Output: "olleh"
```

2. Two Sum ()

Find two numbers in a list that add up to a given sum.

Example:

def two_sum(nums, target):

 # Input

print(two_sum([2, 7, 11, 15], 9))

```
Input: nums = [2, 7, 11, 15], target = 9
Output: [0, 1]  # indices of the numbers
```

3. FizzBuzz ()

Write a function that prints numbers from 1 to n but for multiples of 3, print "Fizz" instead of the number, and for multiples of 5, print "Buzz". For numbers that are multiples of both 3 and 5, print "FizzBuzz".

Example:

def fizz_buzz(n):

```
Input: n = 15
Output: [1, 2, "Fizz", 4, "Buzz", "Fizz", 7, 8, "Fizz", "Buzz", 11,
"Fizz", 13, 14, "FizzBuzz"]
```

4. Valid Parentheses (/)

Check if a string has a balanced set of parentheses.

Example:

def is_valid_parentheses(s):

 # Input
print(is_valid_parentheses("()[]{}"))

```
Input: "()[]{}"
Output: True
```

5. Merge Two Sorted Arrays ()

Merge two sorted arrays into one sorted array.

Example:

def merge_sorted_arrays(nums1, nums2):

 # Input

print(merge_sorted_arrays([1, 3, 5], [2, 4, 6]))

 # Output

 # [1, 2, 3, 4, 5, 6]

```
Input: nums1 = [1, 3, 5], nums2 = [2, 4, 6]
Output: [1, 2, 3, 4, 5, 6]
```

6. Palindrome Check ()

Check if a string is a palindrome.

Example:

def is_palindrome(s):

 # Input

print(is_palindrome("racecar"))

 # Output

 # True

```
Input: "racecar"
Output: True
```

7. Maximum Subarray Sum

Find the contiguous subarray with the maximum sum.

Example:

def max_subarray_sum(nums):

 # Input

print(max_subarray_sum([-2, 1, -3, 4, -1, 2, 1, -5, 4]))

```
Input: nums = [-2, 1, -3, 4, -1, 2, 1, -5, 4]
```

```
Output: 6  # Subarray is [4, -1, 2, 1]
```

8. Find the Majority Element

Find the element that appears more than n/2 times in an array.

Example:

def majority_element(nums):

 # Input

print(majority_element([3, 2, 3]))

 # Output

 # 3

```
Input: nums = [3, 2, 3]
Output: 3
```

9. Anagram Check

Check if two strings are anagrams.

Example:

def are_anagrams(s1, s2):

 # Input

print(are_anagrams("listen", "silent"))

 # Output

 # True

```
Input: s1 = "listen", s2 = "silent"
Output: True
```

10. Find Duplicates in Array (/)

Find duplicate elements in an array.

Example:

def find_duplicates(nums):

 # Input

print(find_duplicates([1, 2, 3, 1]))

 # Output

 # [1]