ASSIGNMENT-01

DATE: 05/06/2024

1. **Two Sum**

```
def two_sum(n, target):
    index = {}
    for i, num in enumerate(n):
        complement = target - num
        if complement in index:
            return [index[complement], i]
        index[num] = i

n = [2, 7, 11, 15]
target = 9
print(two_sum(n,target))
```

2. **Add Two Numbers**

```
class ListNode:
    def _init_(self, val=0, next=None):
        self.val = val
        self.next = next

def addTwoNumbers(l1, l2):
    dummy = ListNode(0)
    current = dummy
    carry = 0

    while l1 or l2 or carry:
        sum_val = (l1.val if l1 else 0) + (l2.val if l2 else 0) + carry
        carry, val = divmod(sum_val, 10)
        current.next = ListNode(val)
        current = current.next
        l1 = l1.next if l1 else None
        l2 = l2.next if l2 else None

    return dummy.next
l1 = ListNode(2, ListNode(4, ListNode(3)))
l2 = ListNode(5, ListNode(6, ListNode(4)))
result = addTwoNumbers(l1, l2)

while result:
    print(result.val, end=" ")
    result = result.next
```

3. **Longest Substring without Repeating Characters**

```
def longest_substring(s: str) -> int:
    index = {}
    start = max_length = 0
```

```
    for end, char in enumerate(s):
        if char in index and index[char] >= start:
            start = index[char] + 1
        index[char] = end
        max_length = max(max_length, end - start + 1)
    return max_length
s = "abcabcbb"
print(longest_substring(s))
```

4. Median of Two Sorted Arrays

```
def findMedianSortedArrays(n1, n2):
    nums = sorted(n1 + n2)
    n = len(nums)
    if n % 2 == 1:
        return nums[n // 2]
    else:
        return (nums[n // 2 - 1] + nums[n // 2]) / 2.0
n1 = [1, 3]
n2 = [2]
print(findMedianSortedArrays(n1, n2))
```

5. Longest Palindromic Substring

```
def longest_palindromic_substring(s):
    def is_palindrome(s):
        return s == s[::-1]
    longest_palindrome = ""
    for i in range(len(s)):
        for j in range(i, len(s)):
            substring = s[i:j+1]
            if is_palindrome(substring) and len(substring) > len(longest_palindrome):
                longest_palindrome = substring
    return longest_palindrome
s = "babad"
print(longest_palindromic_substring(s))
```

6. Zigzag Conversion

```
def convert(s: str, numRows: int) -> str:
    if numRows == 1 or numRows >= len(s):
        return s
    rows = [''] * numRows
    row, step = 0, -1
    for char in s:
        rows[row] += char
        if row == 0 or row == numRows - 1:
            step = -step
        row += step
    return ''.join(rows)
```

```
input = "PAYPALISHIRING"
num_rows = 3
print(convert(input, num_rows))
```

7. **Reverse Integer**

```
num=1234
rev=0
while num!=0:
   rem=num%10
   rev=rev*10+rem
   num//=10
print(rev)
```

8. **String to Integer**

```
str="42"
print(int(str))
```

9. **Palindrome Number**

```
num=127
temp=num
rev=0
while num>0:
   rem=num%10
   rev=rev*10+rem
   num=num//10
if temp==rev:
   print("palindrome")
else:
   print("not palindrome")
```

10. **Regular Expression Matching**

```
import re
p = "aa"
s = "a"

p = r"{}".format(p)
p = re.compile(p)
if p.fullmatch(s):
  print("true")
else:
  print("false")
```