**EXPERIMENT–4**

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1. **Aim:**
   1. **FindtheIndexoftheFirstOccurrenceinaString:**Giventwostringsneedle and haystack, return the index of the first occurrence ofneedle in haystack,or - 1 if needle is not part of haystack.
   2. **RotateString:**Giventwostrings‘s’and'goal’,returntrueifandonlyif‘s’can become ‘goal’ after some number of shifts on ‘s’.
2. **Objectives:**

* FindtheIndexoftheFirstOccurrenceinaString.
* Checkifonestringisarotationofanother.

1. **Algorithm:**

* **FindtheIndexoftheFirstOccurrenceinaString:**
* Ensurethatneedleandhaystackarecomparedasintended.
* ThereturnIstatementseemsincorrect;itshouldbereturn i.
* Considercaseswhereneedleisemptyorlongerthanhaystack.
* **RotateString:**
* Iflen(s)!=len(goal),returnFalse.
* Creates+stoincludeallpossiblerotations.
* Ifgoalexistsins+s,returnTrue;else,returnFalse.

1. **Implementation/Code:**
   1. **FindtheIndexoftheFirstOccurrenceinaString:**

class Solution:

defstrStr(self,haystack:str,needle:str) ->int:

m= len(haystack)

n=len(needle)

foriin range(m-n +1):

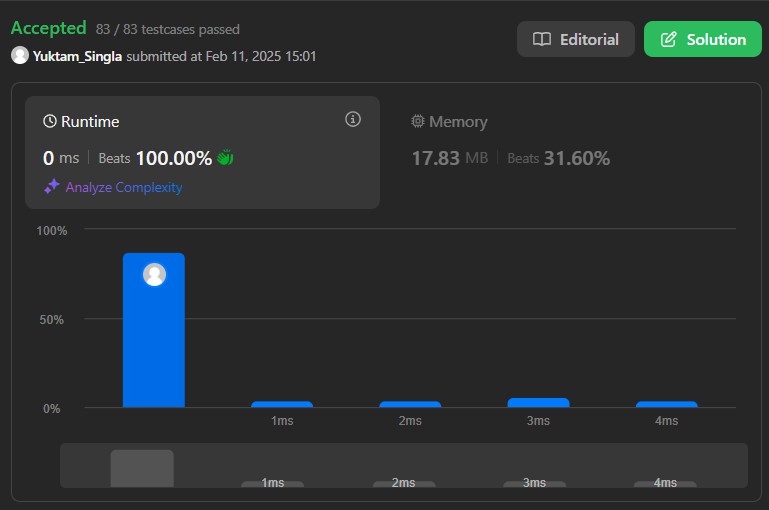
ifhaystack[i:i+n]==needle: return i

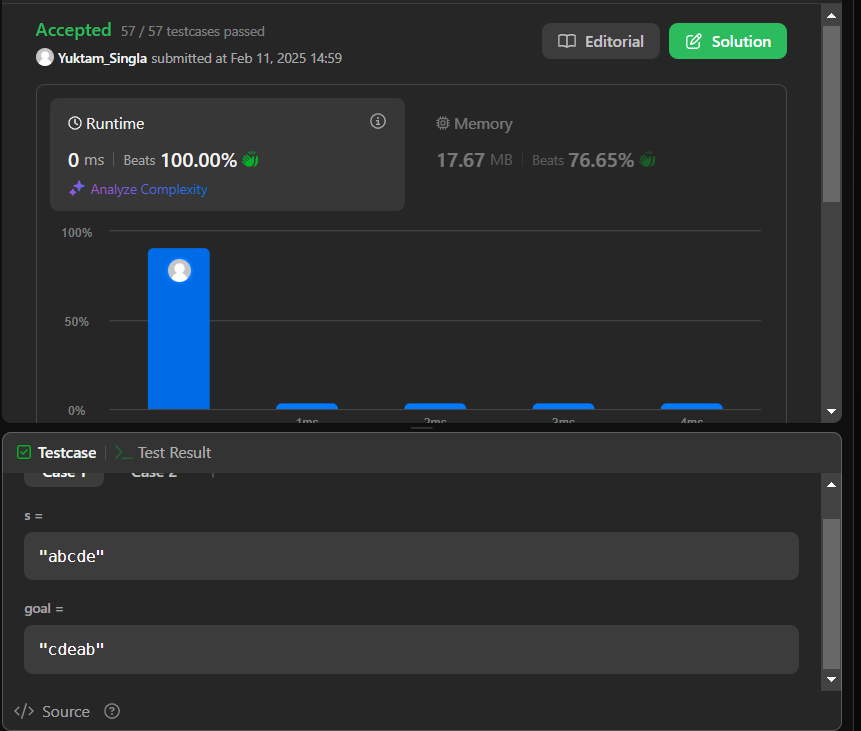
* 1. **RotateString**

class Solution:

defrotateString(self,s:str,goal:str)->bool: return len(s) == len(goal) and goal in s + s

1. **Output:**
   1. **FindtheIndexoftheFirstOccurrenceinaString:**

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* 1. **RotateString:**

1. **LearningOutcomes:**

* Understoodhowtocheckifonestringisarotationofanotherusingstring concatenation.
* Learnedtousethefindfunctiontocheckforsubstring existence.
* Understoodsubstringsearchusingaslidingwindow.
* Learnedtohandleedgecasesefficiently.
* Understoodhowtoimplementandtestbothfunctionsin C++.