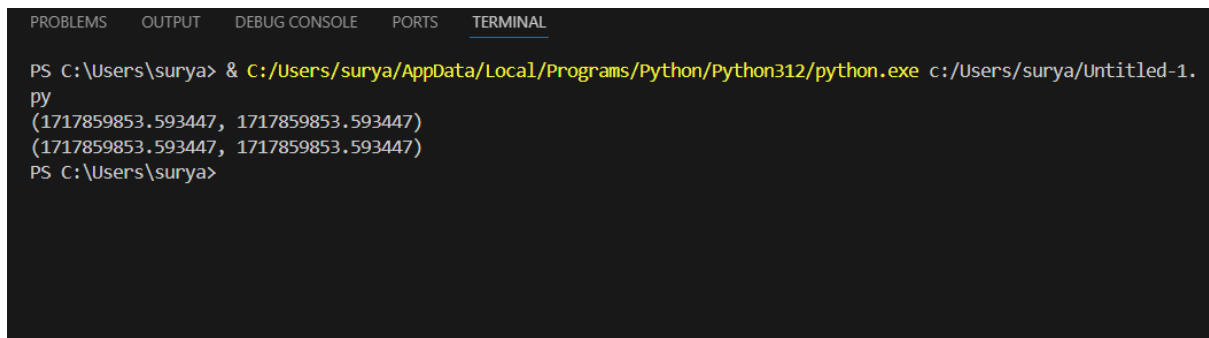


**13. Write C program that demonstrates the usage of these notations by analyzing the time complexity of some example algorithms.**

**PROGRAM:**

```
import time
def linears(a,target):
    start_time=time.time()
    for num in a:
        if num==target:
            break
    end_time=time.time()
    return end_time,start_time
def binarys(a,target):
    start_time=time.time()
    low=0
    high=len(a)-1
    while low<=high:
        mid=(low+high)//2
        if a[mid]==target:
            break
        elif a[mid]<target:
            low=mid+1
        else:
            high=mid-1
    end_time=time.time()
    return end_time,start_time
a=list(range(100000))
target=999999
l=linears(a,target)
b=binarys(a,target)
print(l)
print(b)
```

## OUTPUT:

A screenshot of a terminal window with a dark background. At the top, there is a horizontal menu bar with five items: 'PROBLEMS', 'OUTPUT', 'DEBUG CONSOLE', 'PORTS', and 'TERMINAL'. The 'TERMINAL' item is highlighted with a blue underline. Below the menu bar, the terminal shows a command prompt 'PS C:\Users\surya>' followed by a command to run a Python script: '& C:/Users/surya/AppData/Local/Programs/Python/Python312/python.exe c:/Users/surya/Untitled-1.py'. The output of the script is displayed on the next two lines: '(1717859853.593447, 1717859853.593447)' and '(1717859853.593447, 1717859853.593447)'. The prompt 'PS C:\Users\surya>' appears again on the third line.

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  PORTS  TERMINAL

PS C:\Users\surya> & C:/Users/surya/AppData/Local/Programs/Python/Python312/python.exe c:/Users/surya/Untitled-1.py
(1717859853.593447, 1717859853.593447)
(1717859853.593447, 1717859853.593447)
PS C:\Users\surya>
```

## TIME COMPLEXITY:

Time complexity for the above code is

**$O(n)+O(\log n)$**