

**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:**

```
PS C:\Users\chall\OneDrive\Desktop\DAA> & C:/Users/chall/AppData/Local/Programs/Python/Python312/python.exe  
"  
(1717775732.7114732, 1717775732.7082422)  
(1717775732.7114732, 1717775732.7114732)  
PS C:\Users\chall\OneDrive\Desktop\DAA>
```

### **TIME COMPLEXITY:**

**Time complexity for the above code is**

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