Design & Analysis Of Algorithm

Lab Experiment -7

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SUBJECT: DESIGN & ANALYSIS OF ALGORITHM

SUBJECT CODE: 19CSE302

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EX NO:7

Maximum Sub array Sum – Kadane's Algorithm.

AIM:

To write an algorithm to implement Maximum Sub array Sum.

ALGORITHM:

Initialize:
  max_so_far = INT_MIN
  max_ending_here = 0

Loop for each element of the array

(a) max_ending_here = max_ending_here + a[i]
(b) if(max_so_far < max_ending_here)
        max_so_far = max_ending_here
(c) if(max_ending_here < 0)
        max_ending_here = 0
return max_so_far

Step 1: BEGIN

2: Get length of array

3: Initializeempty array A = []

4: Get array A from user

5: Setsum = 0

6: Setmax_sum = A[0]

7: Setsub_array= [A[0]]

8: FOR i in range(0,n)

Set sum+=A[i]

IFsum<0:

Do sub_array.clear()

Dosub_array.append(A[i])

Updatesum=A[i]

ELSE IFsum>max_sum

Update max_sum=

Do sub_array.append(A[i])

Set a = copy.deepcopy(sub_array)

ELSE

Do sub_array.append(A[i])

9: Print max sum

10: Print maximum subarray

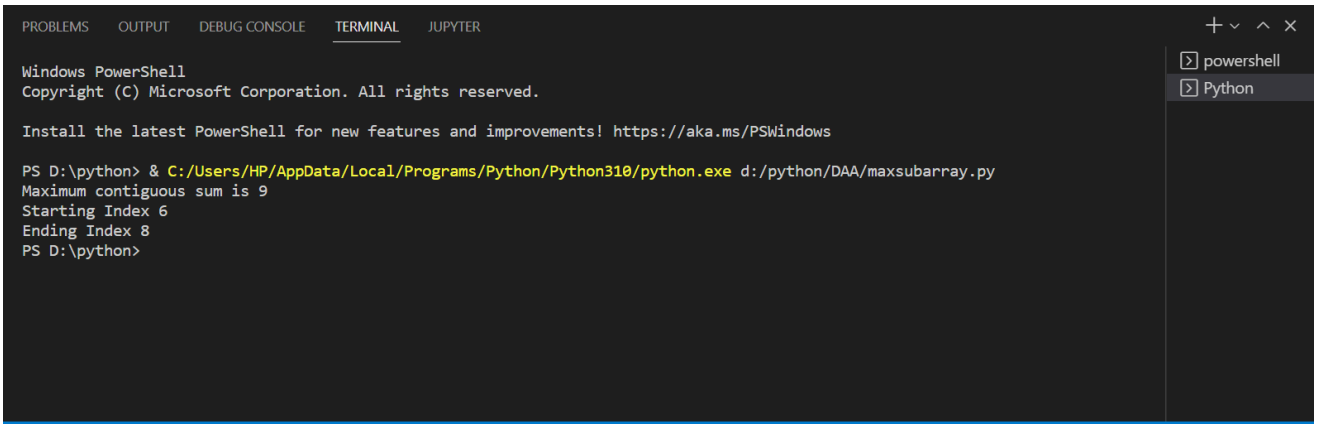
11: END

CODE SCREEN:

```
from sys import maxsize

def maxSubArraySum(a, size):

    max_so_far = -maxsize - 1
    max_ending_here = 0
    start = 0
    end = 0
    s = 0

    for i in range(0, size):
```

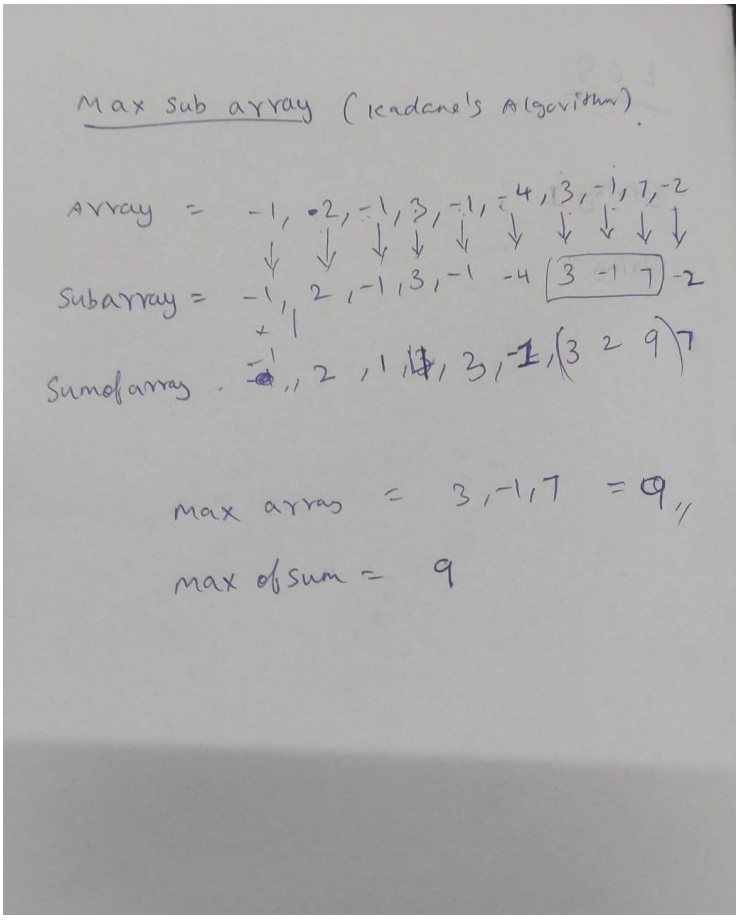
```
        max_ending_here += a[i]

        if max_so_far < max_ending_here:
            max_so_far = max_ending_here
            start = s
            end = i

        if max_ending_here < 0:
            max_ending_here = 0
            s = i+1

    print("Maximum contiguous sum is %d" % (max_so_far))
    print("Starting Index %d" % (start))
    print("Ending Index %d" % (end))

a = [-1,2,-1,3,-1,-4,3,-1,7,-2]
maxSubArraySum(a, len(a))
```

OUTPUT SCREEN :



TIME COMPLEXITY:

O(N)



RESULT:

I have studied and understood the Maximum Sub array Sum in python language and executed the program successfully.

THANK YOU !!