

kadane's max sum subarray

5, 2, -6, -4, 3, -1, 9, 6, -2, 10, -4, 5, -10, -7, 4

0 → 5 → 7 → 1 → 2 → 3 → 2 → 11 → 12 → 15 → 25 → 21 → 26 → 16 → 9 → 13

$$f_{\text{rain}} = 7$$

moni = 7

```
int train = 0
int maxSum = 0

for (i = 0; i < n; i++) {
    newTrain = arr[i]
    prev = train + arr[i]
    train = max(new, prev)
    maxi = max(maxi, train)
}
```

```
OSP = -1  
oep = -1  
mon = -∞  
  
osp = 0  
cep = 0  
train = 0  
for (i = 0; i < n; i++) {  
    prev = train + arr[i]  
    newtrain = arr[i]  
  
    if (newtrain > Prev) {  
        train = newtrain  
        cep = i  
    } else train = prev  
  
    if (train > mon) {  
        mon = train  
        osp = cep  
        oep = cep  
    }  
}
```





$\sqrt{5, 2, -6, -4, -3, -1, 9, 6, -2, 10, -4, 5, -10, -7, 4}$
 $\xrightarrow{0} 5 \xrightarrow{2} 7 \xrightarrow{1} 8 \xrightarrow{-1} 7 \xrightarrow{3} 10 \xrightarrow{-1} 9 \xrightarrow{2} 11 \xrightarrow{1} 12 \xrightarrow{-1} 11 \xrightarrow{2} 13 \xrightarrow{-1} 12 \xrightarrow{1} 13 \xrightarrow{-1} 12 \xrightarrow{2} 14 \xrightarrow{-1} 13 \xrightarrow{1} 14$

OSP → 4
Dep → 6
mxi → 11

CSP → 4
cep → 6
tran → 11

$$\begin{array}{cccccc} & -2 & -3 & -99 & -46 & -1 & -2 \\ \xrightarrow{0} & -2 & & -99 & & -1 & \\ & & -3 & & -46 & & -2 \\ & & & & & & \\ m = & -1 & & & & & \end{array}$$
$$\{1, 2, 3, 6, -10, -10, -5\}$$

$$\{3, 6, -4, -5, 2, -1\} \Rightarrow 1 - (-9) = 10$$

Comp I  as Machine Scheduling
 Comp II  as PM Scheduling
 Comp III  as PM Scheduling
 Comp IV  as Resource - Machine Scheduling
 PM Scheduling

Physion

Use a Sum O(n) prog

$$\begin{array}{cccccccc} -3 & -2 & 4 & 6 & -7 & -3 & 2 & 1 \\ \text{0} & & & & & & & \\ -3 & -5 & -1 & 5 & -2 & -5 & -3 & -2 \end{array}$$

sum: edx

ans: 6

0:1	-1:2
-3:0	5:3
-5:1	-1:7

Case \rightarrow Sum $= K$
 $K = 2$
 $-5 \quad 3 \quad -1 \quad 4 \quad -3 \quad 2 \quad -1 \quad -2 \quad 0$
 $-5 \quad -2 \quad -3$
 Avg $= K$
 $-5 -2$
 O: -1 -3: 2
 S: 0
 -2: 1
 Ans =

Large Summat most k

$k=5 \quad 2\ 3 \leftarrow 3$

$-5 \quad 3 \quad -1 \quad 7 \quad -3 \quad 2 \quad -1 \quad -2 \quad 0$

$-5 \quad -2 \quad -5 \quad -2$

$\ominus -7 \leftarrow -2$

Ceil(Pref-k)

$0:-1$

$-5:0$

$-2 - (-5) \Rightarrow 3$

$-2 - (-5) = 3$

Diagram illustrating a sliding window of size $k+1$. The window is defined by the range $[k, k+1]$. The elements within the window are labeled $p_{j-(k-1)}$, p_{j-k} , and $p_{j-(k-1)}$.

$\begin{matrix} \text{L} & \text{O} \\ \text{p} & \text{Q} \\ \text{p} & \text{Q} \\ \text{p} & \text{Q} \end{matrix}$

$\begin{matrix} 1 & 2 & 1 & 3 \\ 2 & 4 & 2 & 1 \\ 3 & 1 & 4 & 2 \\ 1 & 2 & 2 & 1 \end{matrix}$

$\begin{matrix} 6 & 6 & 6 & 6 \end{matrix}$

