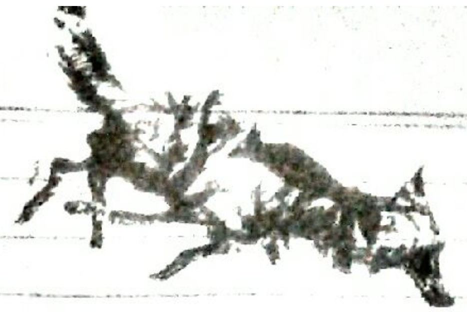


Operating System

SJF with Predicted BT

$\varepsilon = \tau \quad ; A = t$

exponential Average →

eg. 100 kb → 5 sec.
105kb ≈ 5 sec.

formula →
$$\varepsilon_{i+1} = \alpha A_i + (1-\alpha)\varepsilon_i$$
$$\tau_{i+1} = \alpha t_i + (1-\alpha)\tau_i$$

where,

ε_{i+1} = expected time for process $i+1$

A_i = actual burst time of process i

$0 \le \alpha \le 1$

$\varepsilon_i = \alpha A_{i-1} + (1-\alpha)\varepsilon_{i-1} \quad ; i=0$

$\varepsilon_{i-1} = \alpha A_{i-2} + (1-\alpha)\varepsilon_{i-2} \quad ; i=1$

$\varepsilon_{i-2} = \alpha A_{i-3} + (1-\alpha)\varepsilon_{i-3} \quad ; i=2$

Given that,

$\alpha = 0.5$, $\varepsilon_1 = 5$, $\varepsilon_5 = ?$

Process	BT
P_1	4
P_2	8
P_3	5
P_4	6

actual Burst t

for remember,

ε = actual + predicted

for finding P_5, $\varepsilon_5 = ?$,

$$\varepsilon_5 = \alpha A_{5-1} + (1-\alpha)\varepsilon_{5-1}$$
$$\varepsilon_5 = \alpha A_4 + (1-\alpha)\varepsilon_4$$
$$= .5 \times 6 + .5 \times \varepsilon_4 \quad — ③$$

① — ⊛ $\varepsilon_4 = .5 \times 5 + .5 \times \varepsilon_3$

② — ⊛ $\varepsilon_3 = .5 \times 8 + .5 \times \varepsilon_2$

⊛ $\varepsilon_2 = .5 \times 4 + .5 \times \varepsilon_1$

So, ε_2, as ε_1 is 5, $\varepsilon_2 = 4.5$

putting ε_2 in ②, $\varepsilon_3 = 6.25$

putting ε_3 in ①, $\varepsilon_4 = 5.625$

putting ε_4 in ③, $\varepsilon_5 = 5.8125$

So, required predicted / expected, $\varepsilon_5 = 5.8125$.

Semaphore

P(S) → checking semaphore (enter or not)

V(S) → signal given while leaving the section.

P(S) while S≤0 do skip;

S = S - 1;

// CS

V(S) S = S + 1

eg.

P_1	P_2
i_1	j_1
i_2	j_2
i_3	j_3
i_4	j_4
⋮	⋮
i_{nth}	j_{nth}

benefit → allowing concurrently executable, at first need to get dependen

need to synchronous.

P_1 P_2

$i_3 \leftarrow j_2$ } dependency,

$j_2, V(S)$

$P(S), i_3$

at first P_2's j_2, then P_1's i_3

P(S)
{ C
}
V(S)

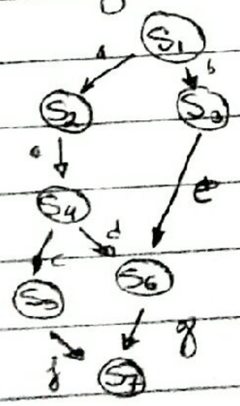
using multiple Semaphore.

editing: connected

S_2

S_4

synchronization using semaphore variable.



S_1 ; V(a) ; V(b)

P(a) ; S_2 ; V(c) ; V(d)

P(b) ; S_3 ; V(e)

P(c) ; S_5 ; V(f)

P(d); P(e) ; S_6 ; V(g)

P(f) ; P(g); S_7 .