

Non-Preemptive Scheduling Case

Program P1

t=0

δ_{cpu_wakeup}

δ_{cpu_wakeup}

Core 1	Core 2
P1B1	Idle
Time: 1/4	Time: 0

0

1

Prog. P2

t=1

Core 1	Core 2
Idle	P1B1
Time: 0	Time: 1/3

0

1

δ_{cpu_wakeup}

δ_{cpu_wakeup}

Core 1	Core 2
P1B1	P2B1
Time: 3/3	Time: 3/4

1

4

Prog. P3

t=3

Core 1	Core 2
P2B1	P1B1
Time: 2/5	Time: 2/2

1

3

δ^{pm}

δ^{pm}

Core 1	Core 2
P1B2	P2B1
Time: 1/5	Time: 1/1

4

5

Core 1	Core 2
P3B1	P2B1
Time: 1/3	Time: 1/1

4

5

Core 1	Core 2
P2B1	P3B1
Time: 2/3	Time: 2/2

3

5

Core 1	Core 2
P2B1	P1B2
Time: 2/3	Time: 2/2

3

5

Core 1	Core 2
P3B1	P2B2
Time: 2/2	Time: 2/2

5

7

Core 1	Core 2
P3B1	P1B2
Time: 2/2	Time: 2/3

5

7

Core 1	Core 2
P2B1	P1B2
Time: 1/1	Time: 1/3

5

6

General state representation:

Allocated core to Program A

Block of Prog. B executed on Core Y

Core X	Core Y
Prog. A Block K	Prog. B Block L
Time: t^a/t^{tc}	Time: t^a/t^{tc}

Execution time slice relative to a system start

t^{start}

t^{end}

Individual programs states

t^a – allocated execution time
 t^{tc} – time to complete block L

Core 1	Core 2
Idle	P1B2
Time: 0	Time: 1/1

7

8

Core 1	Core 2
P2B2	P1B2
Time: 2/3	Time: 2/2

6

8

Core 1	Core 2
P2B2,3	Idle
Time: 4/4	Time: 0

8

12

Core 1	Core 2
Idle	P2B2,3
Time: 0	Time: 4/4

8

12

P2 ends

Schedule S1

P2 ends

Schedule S2

$+ \delta^{pm}$

$+ \delta^{migr}$

$+ \delta^{cpu_down}$

$+ 2\delta^{cpu_wakeup}$

Summary

Schedule	Prog. 1 Ex. Time	Prog. 2 Ex. Time	Prog. 3 Ex. Time	Overheads
S1	7	8	3	$2\delta^{pm} + \delta^{migr} + \delta^{cpu_down} + 2\delta^{cpu_wakeup}$
S2	6	11	2	$\delta^{pm} + \delta^{cpu_down} + 2\delta^{cpu_wakeup}$