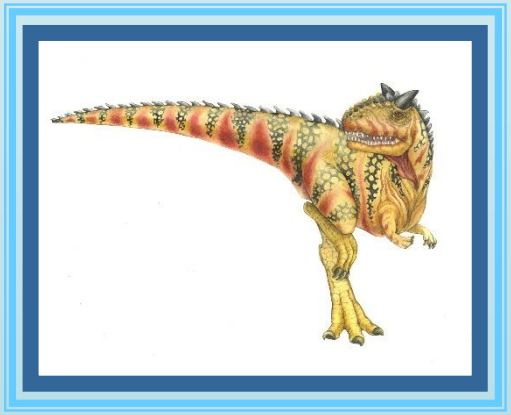
Mustansiriyah University
College of Education
Computers Science Department

Chapter 4: CPU Scheduling
Part-3
جدولة وحدة المعالجة المركزية



Dr. Hesham Adnan ALABBASI

3- Priority Scheduling

* رقم الأولوية (الأهمية) عبارة عن رقم صحيح مرتبط بكل الـ Processes ضمن المدى (0-127), الاقل هو أعلى اولوية.

* الـ CPU تحجز الى الـ Process ذو الاعلى أولوية (اهمية) بمعنى الذي لدية أصغر رقم.

* عمل الخوارزمية : يتم التنفيذ اعتمادا على هذا الرقم Priority , فيتم ترتيب الـ Processes حسب الأولوية من الأصغر رقماً (أعلى أولوية) الى الاعلى (أقل أولوية) ويبدأ بالتنفيذ.

هذه الخوارزمية تكون:

1- **Preemptive**

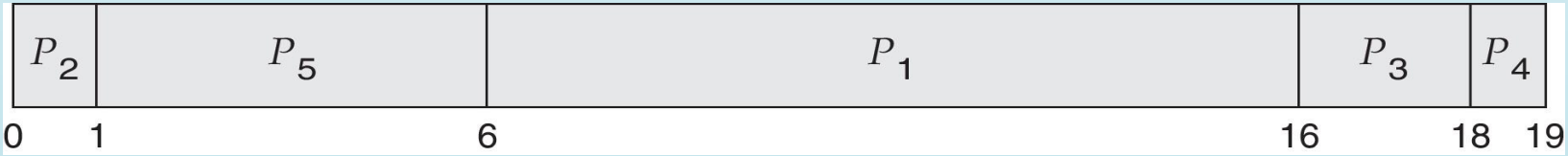
2- **Non-preemptive**.

Priority Scheduling (Non-preemptive)

- Example 1:Draw the Gantt chart and calculate the average waiting for the processes as in the given table, **All processes arrived at the same time (time 0)**?

Processes	Burst time	Priority
P1	10	3
P2	1	1
P3	2	4
P4	1	5
P5	5	2

Processes	Burst time	Priority
P2	1	1
P5	5	2
P1	10	3
P3	2	4
P4	1	5



- Waiting time:

P_1 = 6
P_2 = 0
P_3 = 16
P_4 = 18
P5= 1

Average waiting time = (6+0+16+18+1) / 5= 8.2 Ms.

Priority Scheduling (Non-preemptive) Cont.

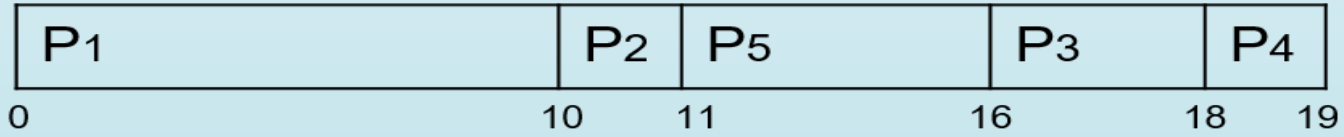
- Example 2:Draw the Gantt chart and calculate the average waiting for the processes as in the given table?

Processes	Burst time	Priority	Arrival time
P1	10	3	0
P2	1	1	1
P3	2	4	2
P4	1	5	3
P5	5	2	4

Processes	Burst time	Priority	Arrival time
P1	10	3	0
P2	1	1	1
P5	5	2	4
P3	2	4	2
P4	1	5	3

Priority Scheduling (Non-preemptive) Cont.

Processes	Burst time	Priority	Arrival time
P1	10	3	0
P2	1	1	1
P5	5	2	4
P3	2	4	2
P4	1	5	3



- Waiting time:

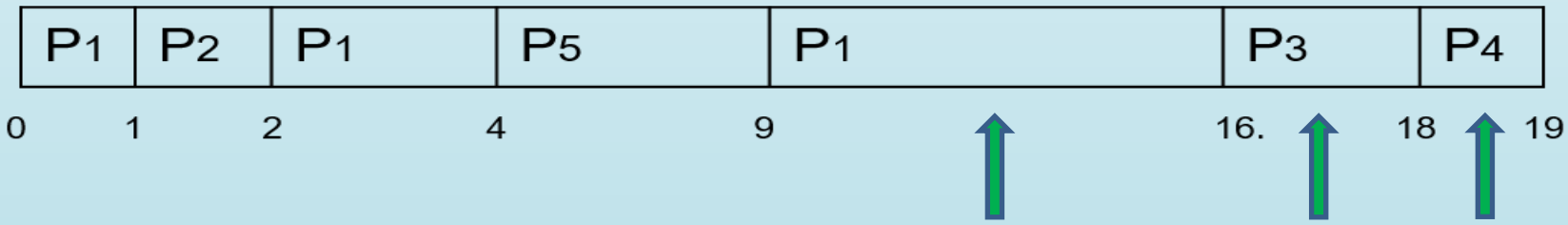
P_1 = [(0-0)=0
P_2 = (10-1)=9
P_3 = (16-2)=14
P_4 = (18-3)=15
P_5 = (11-4)=4

Average waiting time = (0+9+14+15+4) / 5 = 78.4 Ms.

Priority Scheduling (Preemptive)

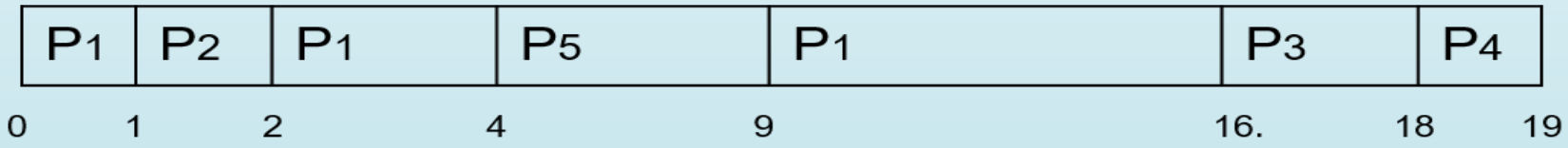
- Example 3:Draw the Gantt chart and calculate the average waiting for the processes as in the given table?

Processes	Burst time	Priority	Arrival time
P1	10 9 8 7	3	0
P2	1	1	1
P3	2	4	2
P4	1	5	3
P5	5	2	4



Priority Scheduling (Preemptive)

Processes	Burst time	Priority	Arrival time
P1	10	3	0
P2	1	1	1
P3	2	4	2
P4	1	5	3
P5	5	2	4



- **Waiting time:**

P_1 = [(0-0)+(2-1)+(9-4)]=6
P_2 = (1-1)=0
P_3 = (16-2)=14
P_4 = (18-3)=15
P_5 = (4-4)=0

Average waiting time = (6+0+14+15+0) / 5 = 7 Ms.

End of Chapter 4- Part 3