

PRAKTIKUM SISTEM OPERASI

MODUL 11

PENJADWALAN PROSES DAN MANAJEMEN MEMORI (OSSim)



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Kegiatan 1. Penjadwalan Proses

1. First-Come, First-Served (FCFS)

FCFS

Process Scheduling Information										
Efficiency (%)		1.00								
Throughput (processes/time unit)		0.18								
Avg. Turnaround Time (time)		11.25								
Avg. Waiting Time (time)		5.75								
Avg. Response Time (time)		5.75								
PID	Name	Priority	Submission	Periodic	CPU	Response	Waiting	Turnaround	% CPU	% IO
1	P0	1	0	-	5	0	0	5	1.0	0.0
3	P1	1	1	-	3	4	4	7	0.4285714...	0.0
4	P2	1	2	-	8	6	6	14	0.5714285...	0.0
5	P3	1	3	-	6	13	13	19	0.3157894...	0.0

Process	Wait time = Service Time - Arrival Time
P0	0
P1	4
P2	6
P3	13
Av wait time	5.75

2. Shortest Job First (SJF)

SJF Non-Preemptive

Process Scheduling Information										
Efficiency (%)		1.00								
Throughput (processes/time unit)		0.18								
Avg. Turnaround Time (time)		10.75								
Avg. Waiting Time (time)		5.25								
Avg. Response Time (time)		5.25								
PID	Name	Priority	Submission	Periodic	CPU	Response	Waiting	Turnaround	% CPU	% IO
1	P0	1	0	-	5	0	0	5	1.0	0.0
3	P1	1	1	-	3	4	4	7	0.4285714...	0.0
5	P3	1	3	-	6	5	5	11	0.5454545...	0.0
4	P2	1	2	-	8	12	12	20	0.4	0.0

Process	Wait time = Service Time - Arrival Time
P0	0
P1	4
P2	5
P3	12
Average wait time	5.25

SJF Preemptive

Process Scheduling Information										
Efficiency (%)		1.00								
Throughput (processes/time unit)		0.18								
Avg. Turnaround Time (time)		10.50								
Avg. Waiting Time (time)		5.00								
Avg. Response Time (time)		4.25								
PID	Name	Priority	Submission	Periodic	CPU	Response	Waiting	Turnaround	% CPU	% IO
2	P1	1	1	-	3	0	0	3	1.0	0.0
1	P0	1	0	-	5	0	3	8	0.625	0.0
4	P3	1	3	-	6	5	5	11	0.545454...	0.0
3	P2	1	2	-	8	12	12	20	0.4	0.0

Process	Wait time = Service Time - Arrival Time
P0	0
P1	3
P2	5
P3	12
Average wait time	5.00

3. Priority

Priority

Process Scheduling Information										
Efficiency (%)		1.00								
Throughput (processes/time unit)		0.18								
Avg. Turnaround Time (time)		11.50								
Avg. Waiting Time (time)		6.00								
Avg. Response Time (time)		6.00								
PID	Name	Priority	Submission	Periodic	CPU	Response	Waiting	Turnaround	% CPU	% IO
1	P0	1	0	-	5	0	0	5	1.0	0.0
4	P3	3	3	-	6	2	2	8	0.75	0.0
2	P1	2	1	-	3	10	10	13	0.2307692...	0.0
3	P2	1	2	-	8	12	12	20	0.4	0.0

Process	Wait time = Service Time - Arrival Time
P0	0
P1	10
P2	12
P3	2
Av wait time	6.00

4. Round Robin

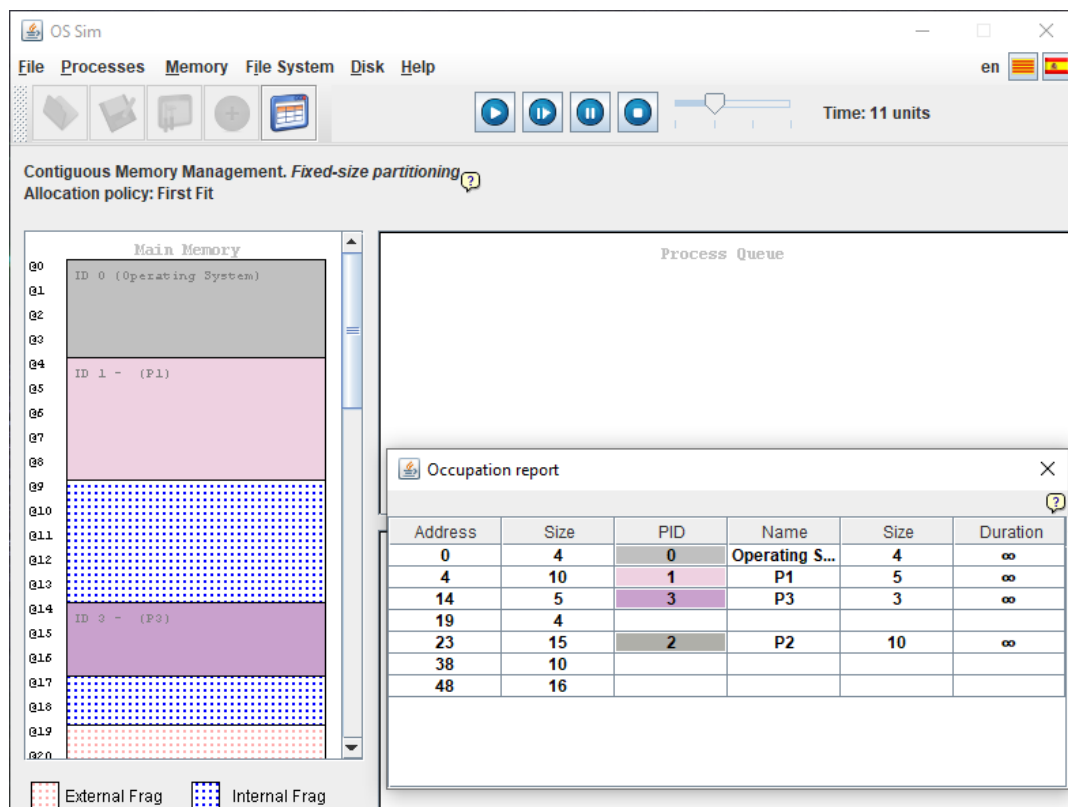
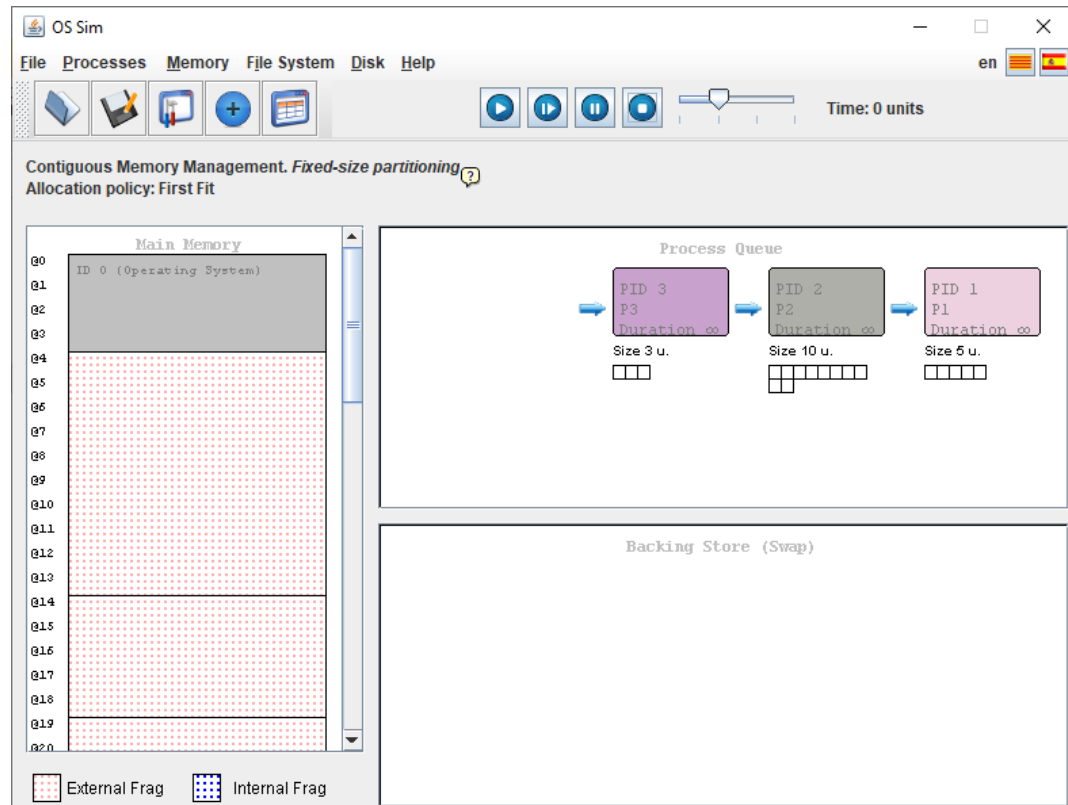
Round Robin

Process Scheduling Information										
Efficiency (%) 1.00										
Throughput (processes/time unit) 0.18										
Avg. Turnaround Time (time) 14.00										
Avg. Waiting Time (time) 8.50										
Avg. Response Time (time) 3.00										
PID	Name	Priority	Submission	Periodic	CPU	Response	Waiting	Turnaround	% CPU	% IO
2	P1	1	1	-	3	2	2	5	0.6	0.0
1	P0	1	0	-	5	0	9	14	0.3571428...	0.0
4	P3	1	3	-	6	6	11	17	0.3529411...	0.0
3	P2	1	2	-	8	4	12	20	0.4	0.0

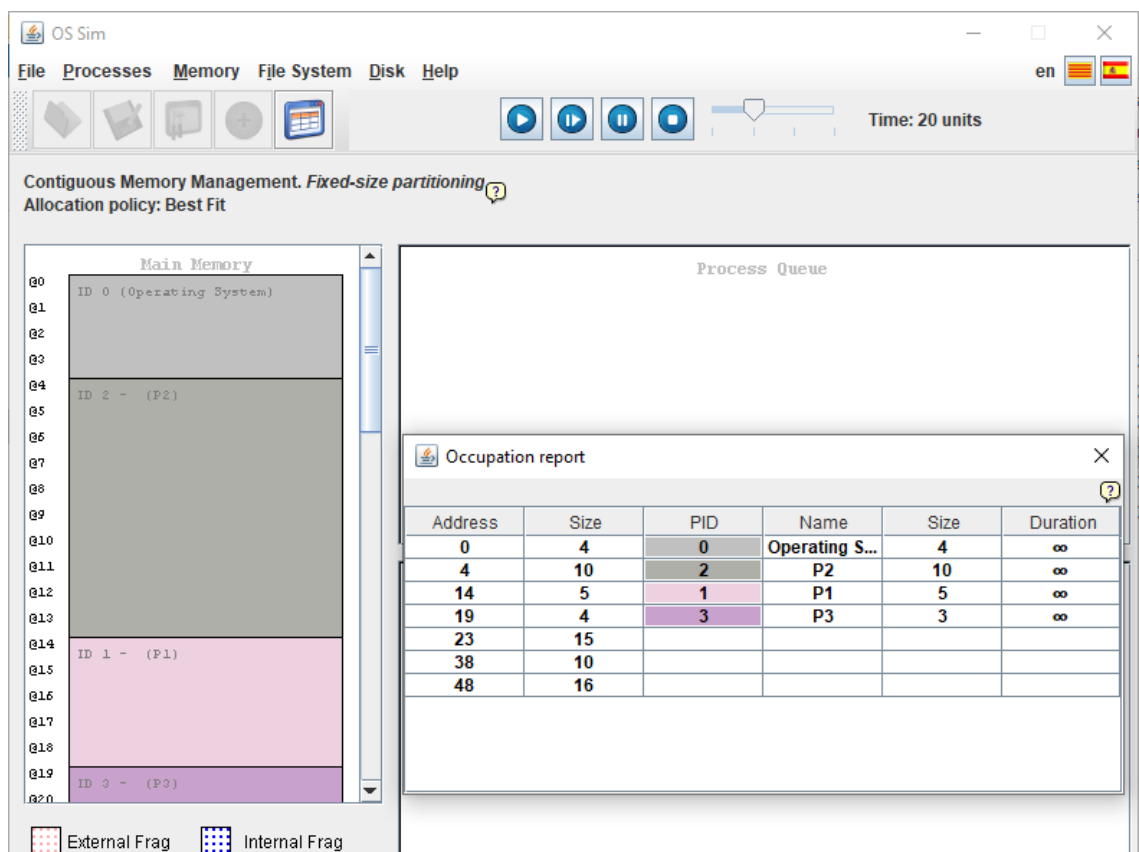
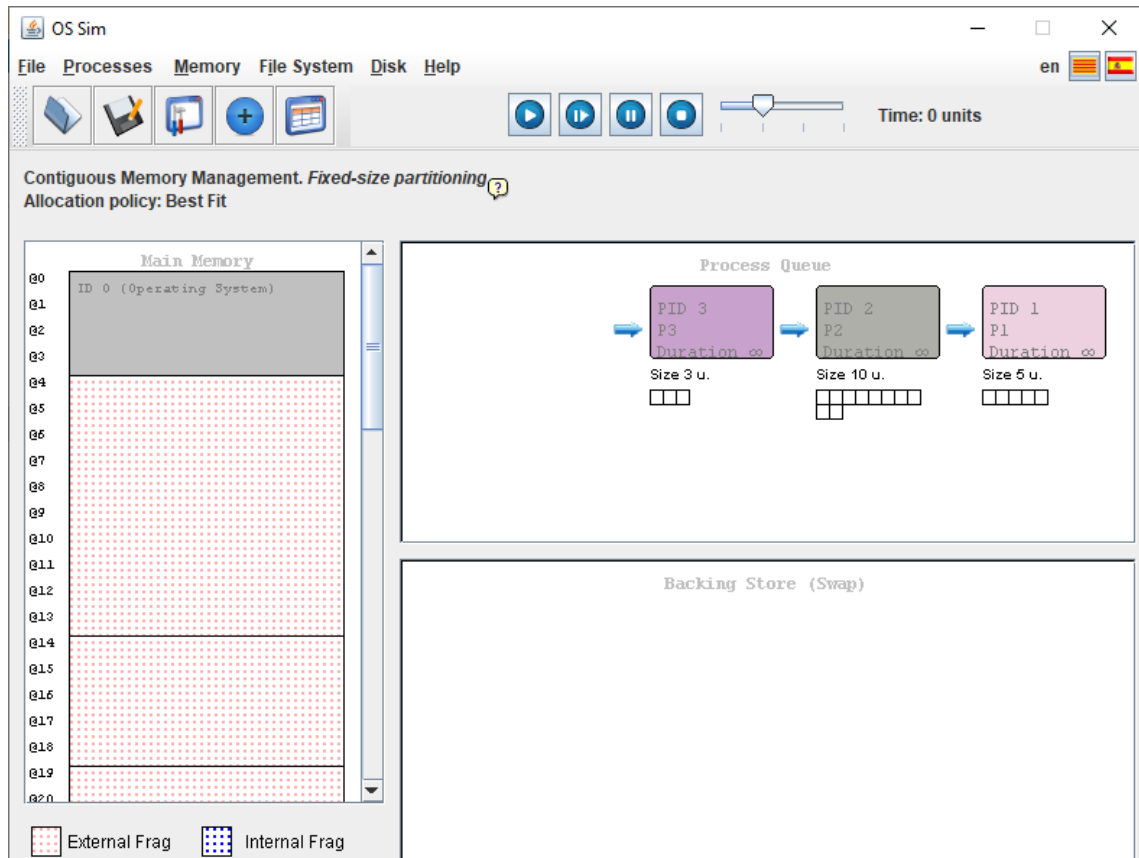
Process	Wait time = Service Time - Arrival Time
P0	9
P1	2
P2	12
P3	11
Av wait time	8.50

Kegiatan 2. Manajemen Memori

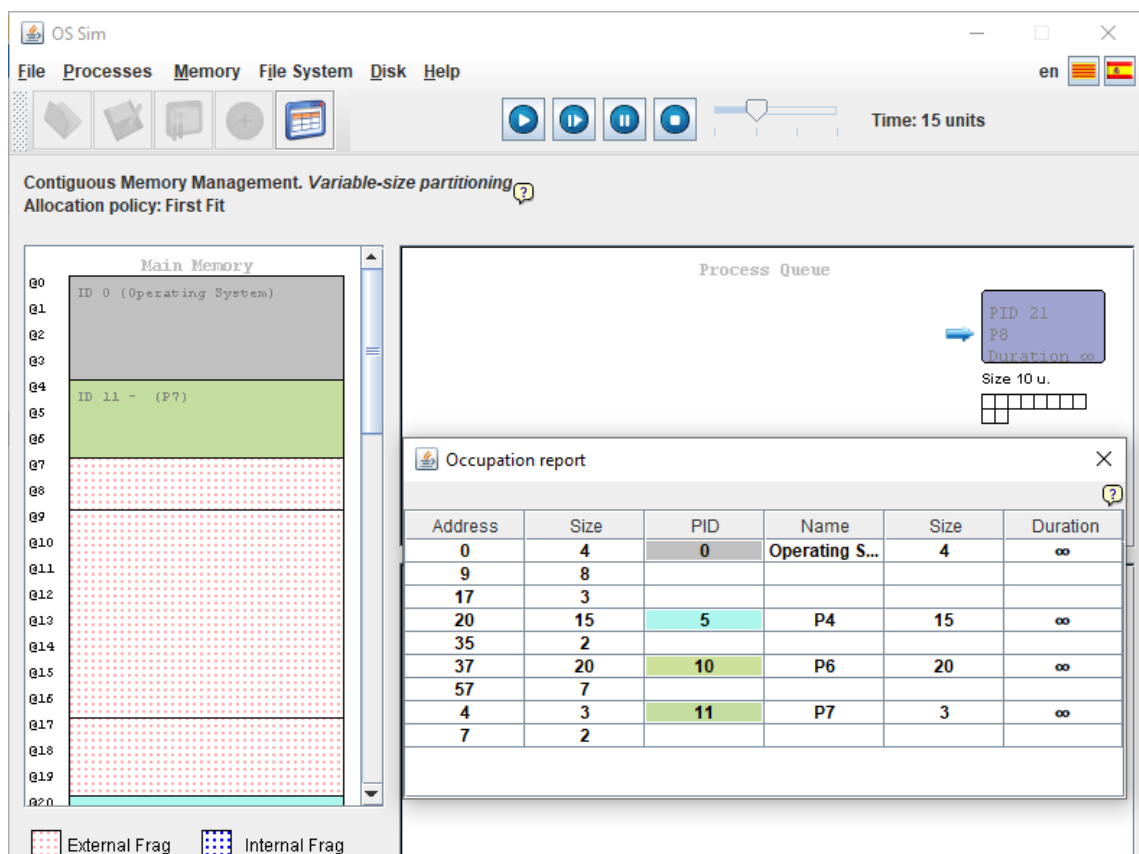
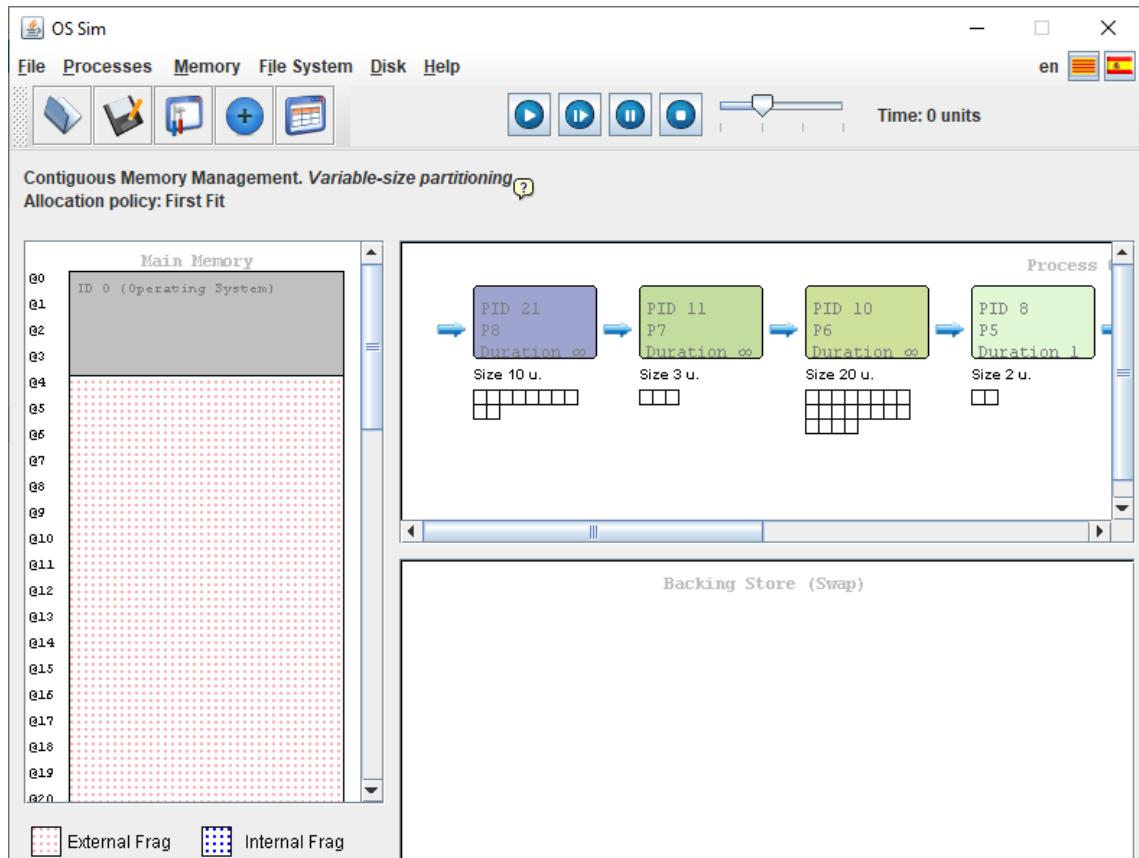
1. Continguos memory management dengan menggunakan partisi berukuran tetap (fixed-size partition) dan aturan first-fit



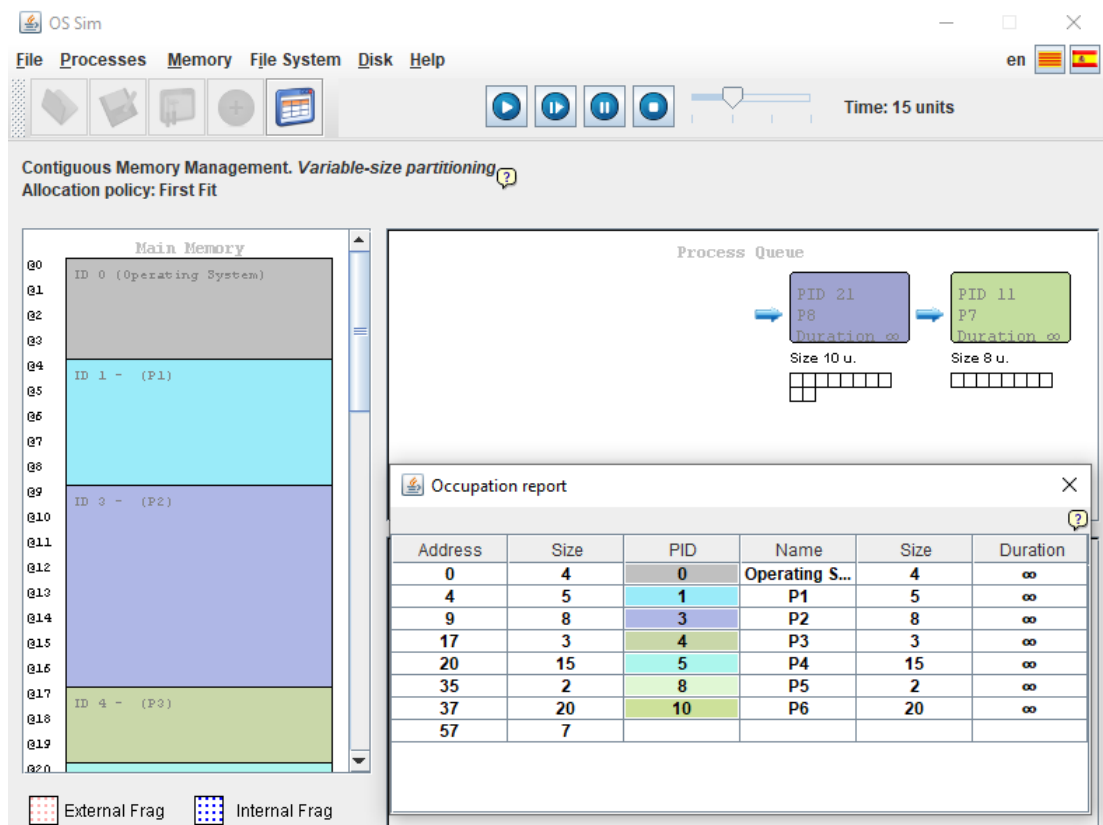
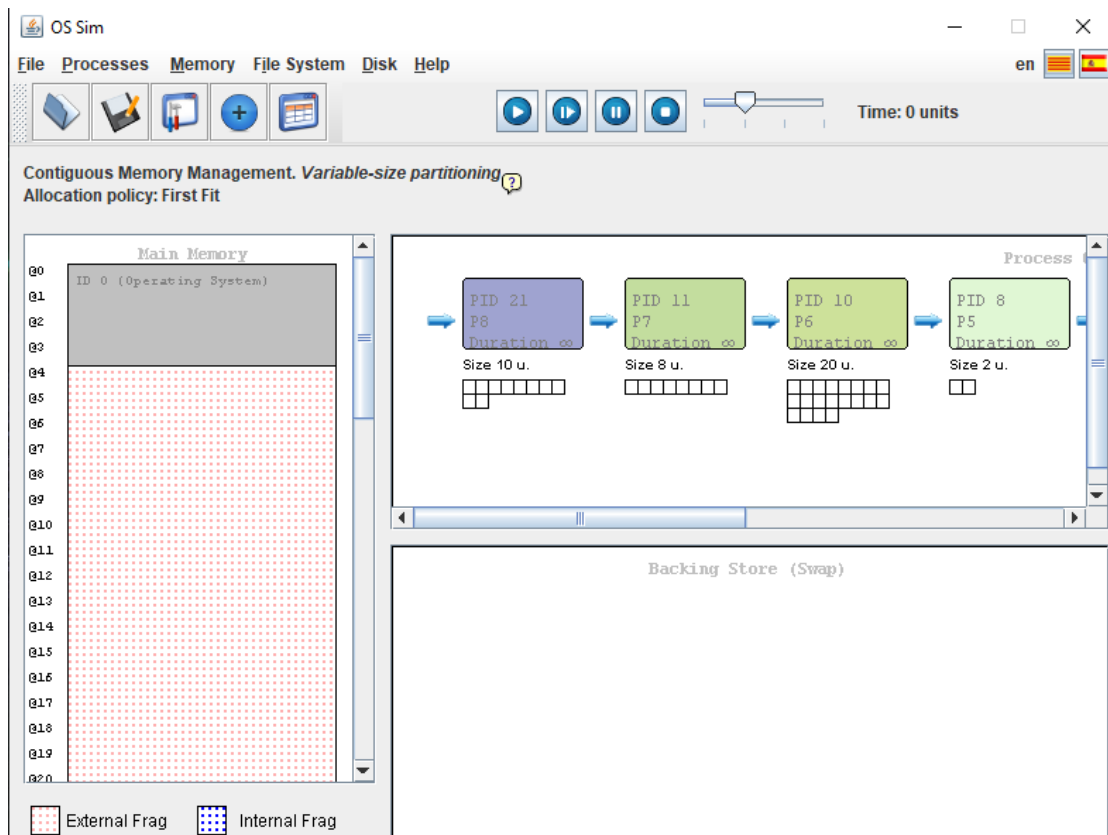
2. Continguous memory management dengan menggunakan partisi berukuran tetap (fixed-size partition) dan aturan best fit



3. Continguos memory management dengan menggunakan partisi berukuran tidak tetap (variable-size partition) >> defragmentasi



4. Continguous memory management dengan menggunakan partisi berukuran tidak tetap (variable-size partition) >> swap



5. Pagination (ukuran page 2 unit)

OS Sim

File Processes Memory File System Disk Help

en

Time: 0 units

Non Contiguous Memory Management.
Pagination. Page size: 2 units

Main Memory

Q0 ID 0 (Operating System)
Q1 ID 0 (Operating System)
Q2 ID 0 (Operating System)
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
Q15
Q16
Q17
Q18
Q19
Q20

External Frag Internal Frag

Process Queue

PID 17 P6 Duration ∞
Pages 2 p.
□□

PID 16 P5 Duration ∞
Pages 4 p.
□□□□

PID 14 P4 Duration ∞
Pages 3 p.
□□□

PID 4 P3 Duration 2
Pages 6 p.
□□□□□□

Backing Store (Swap)

OS Sim

File Processes Memory File System Disk Help

en

Time: 12 units

Non Contiguous Memory Management.
Pagination. Page size: 2 units

Main Memory

Q0 ID 0 (Operating System)
Q1 ID 0 (Operating System)
Q2 ID 0 (Operating System)
Q3 ID 16 - 0 (P5)
Q4 ID 16 - 1 (P5)
Q5 ID 16 - 2 (P5)
Q6 ID 2 - 0 (P2)
Q7 ID 2 - 1 (P2)
Q8 ID 16 - 3 (P5)
Q9 ID 17 - 0 (P6)
Q10 ID 17 - 1 (P6)
Q11
Q12
Q13
Q14
Q15
Q16
Q17
Q18
Q19
Q20

External Frag Internal Frag

Process Queue

Occupation report

Address	Frame	PID	Page	Name	Size	Duration
0	0	0	0	Operating...	4	∞
2	1	0	1	Operating...	4	∞
4	2	16	0	P5	7	∞
6	3	16	1	P5	7	∞
8	4	16	2	P5	7	∞
10	5	2	0	P2	4	∞
12	6	2	1	P2	4	∞
14	7	16	3	P5	7	∞
16	8	17	0	P6	3	∞
18	9	17	1	P6	3	∞
20	10					

6. Segmentation (alokasi parsial)

