Sistemas Informáticos (Computer Systems)

Unit 03. Activities 02. Solution

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UNIT 03. ACTIVITIES 02- SOLUTION

1. EXERCISE 01

Solution FCFS

FCFS table:

Instant	Queue Process	Process in CPU	Queue DSC1	DSC1	Queue DSC2	DSC2	QueuePRN	PRN		P1	P2
0	P2	P1								CPU	CPU
1		P2		P1						DSC1	CPU
2		P2		P1						DSC1	CPU
3		P2		P1						DSC1	CPU
4	P1	P2								CPU	CPU
5	P1	P2								CPU	CPU
6	P1	P2								PRN	DSC1
7		P1		P2						PRN	CPU
8	P2	P1								PRN	CPU
9		P2						P1		PRN	CPU
10		P2						P1		PRN	DSC2
11		P2						P1		PRN	DSC2
12						P2		P1		CPU	CPU
13						P2		P1			PRN
14		P2						P1			CPU
15		P1						P2	P1 ends		CPU
16		P2									
17		P2							P2 ends		
18											

FCFS final values:

- **P1 Return time**: 16
- **P2 Return time:** 18
- **Mean return time:** 17
- **P1 queue waiting time:** 3
- **P2 queue waiting time:** 2
- **CPU usage**: 16/18= 88%

Solution Round Robin

Since the proposed activity is a little different, we will propose the solution (only a few steps).

To solve it, we will use the table on the next page, where for each moment of time we will write down where each process is located.

- At instant 0 both processes want to use the CPU, but only one can do it. Then P1 uses the CPU while P2 remains in the queue.
- At instant 1 the quantum ends so the P2 starts using the CPU. At that instant, the P1 needs to use disk1. As he is free, P1 uses it.
- At instant 2 the quantum ends so the P2 has to go out of the CPU. But the CPU queue is empty, because P1 continues working with the disc1, so another quantum is given to P2.

Can you continue? ;)

Round Robin table:

Instant	Queue Process	Process in CPU	Queue DSC1	DSC1	Queue DSC2	DSC2	QueuePRN	PRN		P1	P2
0	P2	P1								CPU	CPU
1		P2		P1						DSC1	CPU
2		P2		P1						DSC1	CPU
3		P2		P1						DSC1	CPU
4	P2	P1								CPU	CPU
5	P1	P2								CPU	CPU
6	P2	P1								PRN	DSC1
7		P2						P1		PRN	CPU
8		P2						P1		PRN	CPU
9				P2				P1		PRN	CPU
10		P2						P1		PRN	DSC2
11		P2						P1		PRN	DSC2
12		P2						P1		CPU	CPU
13		P1				P2			P1 ends		PRN
14						P2					CPU
15		P2									CPU
16								P2			
17		P2									
18		P2							P2 ends		

Round Robin final values:

- **P1 Return time:** 14
- **P2 Return time:** 19
- **Mean return time:** 16.5
- **P1 queue waiting time:** 1
- **P2 queue waiting time:** 3
- **CPU usage:** 16/19= 84%