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SECTION 3. File systems (15 points)

Consider a 32-bit file system with 1024 blocks on the single indirect level, and an i-node format that has 12 blocks for direct access, 1 block for single indirect access, 1 block for double indirect access. Determine the following parameters
(do not enter the unit when writing your answer):

Question **1**
Correct
Mark 5.00 out of 5.00
Flag question

Size of a block (in bytes):

Answer: 4096 ✓

The correct answer is: 4096

Question **2**
Correct
Mark 5.00 out of 5.00
Flag question

Number of blocks of the second level of indirection:

Answer: 1048576 ✓

The correct answer is: 1048576

Question **3**
Correct
Mark 5.00 out of 5.00
Flag question

Number of bytes for the direct level:

Answer: 49152 ✓

The correct answer is: 49152

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SECTION 4. Page replacement algorithms (20 points) (All-or-nothing questions)

Question **4**
Correct
Mark 6.00 out of 6.00
Flag question

Page references: 2,3,5,1,2,2,3,1,5
Algorithm: FIFO
Number of Frames: 3

2 ✓	2 ✓	2 ✓	1 ✓	1 ✓	1 ✓	1 ✓	1 ✓	5 ✓
	3 ✓	3 ✓	3 ✓	2 ✓	2 ✓	2 ✓	2 ✓	2 ✓
		5 ✓	5 ✓	5 ✓	5 ✓	3 ✓	3 ✓	3 ✓

Question **5**
Correct
Mark 7.00 out of 7.00
Flag question

Page references: 2,3,5,1,2,2,3,1,5
Algorithm: LRU
Number of Frames: 3

2 ✓	2 ✓	2 ✓	1 ✓	1 ✓	1 ✓	1 ✓	1 ✓	1 ✓
	3 ✓	3 ✓	3 ✓	2 ✓	2 ✓	2 ✓	2 ✓	5 ✓
		5 ✓	5 ✓	5 ✓	5 ✓	3 ✓	3 ✓	3 ✓

Question **6**
Incorrect
Mark 0.00 out of 7.00
Flag question

Page references: 5,4,3,2,1,1,2,3,4
Algorithm: CLOCK
Number of Frames: 3
Use bit: 0 = off, 1 = on

5 ✓ 1 ✓	5 ✓ 1 ✓	5 ✓ 1 ✓	2 ✓ 1 ✓
	4 ✓ 1 ✓	4 ✓ 1 ✓	4 ✓ 0 ✓
		3 ✓ 1 ✓	3 ✓ 0 ✓

Information
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SECTION 5. Fair-Share scheduling algorithm (10 points) (All-or-nothing question)

Question **7**
Incorrect
Mark 0.00 out of 10.00
Remove flag

Given a system with two processes (A and B) that are members of Group 1 and Group 2 respectively, execute the Fair-Share scheduling algorithm and complete the following table.

	Group 1			Group 2		
Time	Process A			Process B		
	Priority	Process CPU Count	Group CPU Count	Priority	Process CPU Count	Group CPU Count
0	45	0	0	45	0	0
1	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

You can assume that:

1. The base priority is equal to 45.
2. The processor is interrupted 60 times per time instant (the number of counts of the process that is currently running will be increased).
3. The weight of Group 1 is equal to the weight of Group 2.
4. If the priority of the two processes is the same, you will use the lowest PID criterion (using lexicographical order).

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SECTION 6. Uniprocessor scheduling algorithms (5 points each) (All-or-nothing questions)

Question **8**
Incorrect
Mark 0.00 out of 5.00
Flag question

Execute FCFS for the following group of processes and complete the following table:

Process	**A**	**B**	**C**	**D**	**E**
$T_{Arrival}$	0	2	4	6	8
T_s	2	3	5	1	4
T_{Finish}	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
T_R	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

If two processes or more processes arrive at the ready queue at the same time, you will use the lowest PID criterion (using lexicographical order).

Question **9**
Incorrect
Mark 0.00 out of 5.00
Flag question

Execute RR (Q=3) for the following group of processes and complete the following table:

Process	**A**	**B**	**C**	**D**
$T_{Arrival}$	0	1	5	6
T_s	4	2	3	1
T_{Finish}	[redacted]	[redacted]	[redacted]	[redacted]
T_R	[redacted]	[redacted]	[redacted]	[redacted]

If two processes or more processes arrive at the ready queue at the same time, you will use the lowest PID criterion (using lexicographical order).

Question **10**
Incorrect
Mark 0.00 out of 5.00
Flag question

Execute SPN for the following group of processes and complete the following table:

Process	**A**	**B**	**C**	**D**
$T_{Arrival}$	0	1	5	6
T_s	4	2	3	1
T_{Finish}	[redacted]	[redacted]	[redacted]	[redacted]
T_R	[redacted]	[redacted]	[redacted]	[redacted]

If two or more processes in the ready queue have the shortest service time, you will use the lowest PID criterion (using lexicographical order).

Question **11**
Incorrect
Mark 0.00 out of 5.00
Flag question

Execute SRT for the following group of processes and complete the following table:

Process	**A**	**B**	**C**	**D**
$T_{Arrival}$	0	1	2	3
T_s	1	4	2	2
T_{Finish}	[redacted]	[redacted]	[redacted]	[redacted]
T_R	[redacted]	[redacted]	[redacted]	[redacted]

1. If the process arriving has the same remaining execution time as the process in the CPU, then the process that is using the CPU will have the highest priority.

2. If there is no process in the execution state and two or more processes have the shortest remaining time, then you will use the lowest PID criterion (using lexicographical order).

Question **12**
Incorrect
Mark 0.00 out of 5.00
Flag question

Execute HRRN for the following group of processes and complete the following table:

Process	**A**	**B**	**C**	**D**
$T_{Arrival}$	0	1	2	3
T_s	1	4	2	2
T_{Finish}	[redacted]	[redacted]	[redacted]	[redacted]
T_R	[redacted]	[redacted]	[redacted]	[redacted]

If two or more processes in the ready queue have the highest response rate, you will use the lowest PID criterion (using lexicographical order).

Question **13**
Complete
Not graded
Flag question

Provide a file (JPEG, PDF, etc.) showing your work (step by step) while executing the uniprocessor scheduling algoritms.