7. Operating Systems

Starter Quiz ·

University Computer Science Name: _____ Score: _____

1. A process waiting for disk I/O is –

   ☐ running

   ☐ ready

   ☐ terminated

   ☐ blocked

2. For the course set (7, 4, 1, 4 at time 0), the policy with the lowest average turnaround is –

   ☐ SJF

   ☐ FCFS

   ☐ a tie

   ☐ round robin q=2

3. Two threads each add 1 to counter = 5 with read-then-write. The unlocked interleaving R1 R2 W1 W2 leaves –

   ☐ 6

   ☐ 5

   ☐ 7

   ☐ 10

4. 16-bit virtual addresses with 256-byte pages give – virtual pages

   ☐ 16

   ☐ 64

   ☐ 256

   ☐ 1024

5. With 1 KiB blocks, 4 direct pointers and one 256-pointer indirect block, the max file is –

   ☐ 1 MiB

   ☐ 260 KiB

   ☐ 4 KiB

   ☐ 256 KiB

6. At 10^10 guesses a second, how many seconds does it take to try every 8-letter lowercase password? (Answer to 1 decimal place.)

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_____ s

7. A program calls ‘fork()‘ four times in a loop, and every process keeps looping. How many processes exist at the end, the original included?

   _____

8. For the course set under FCFS (P1 = 7, P2 = 4, P3 = 1, P4 = 4, all at time 0), what is the average waiting time?

   _____

9. The 4-slot buffer starts empty. The producer puts 3 items and the consumer takes 1. What is the value of ‘empty‘?

   _____

10. How many page faults does FIFO make on 1, 2, 3, 4, 1, 2, 5, 1, 2, 3, 4, 5 with 4 frames?

    _____

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1. **blocked**

   Blocked waits on a device; ready waits only for the CPU.

2. **SJF**

   SJF averages 7.75 against FCFS 11.5 and RR 11.25.

3. **6**

   Both reads see 5; both writes store 6 – one increment lost.

4. **256**

   8-bit VPN after the 8-bit offset: 2 to the 8th is 256 pages.

5. **260 KiB**

   (4 + 256) x 1 KiB = 260 KiB.

6. **20.9 s**

   26^8 = 208 827 064 576, divided by 10^10 is about 20.9 s.

7. **16**

   Each fork doubles the count: 2^4 = 16.

8. **7.5**

   Waits are 0, 7, 11 and 12, which average 30 / 4 = 7.5.

9. **2**

   empty = 4 - 3 + 1 = 2 free slots.

10. **10**

    The four first loads, then 5, 1, 2, 3, 4, 5 all fault: 4 + 6 = 10, one more than with 3 frames.

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