Module 3 Quiz

Quiz, 10 questions

1 point

1.
What advantage do actors have over object-based isolation?

- A. Avoids data races
- B. Less runtime overhead
- C. Increased CPL
- D. Reduces programmer error by making a variable isolated by default

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1 point

2.
How does an actor interact with the local state?

- A. Using parallel threads to access the local state variable
- B. Using predefined message methods in that subclass of actor
- C. Using only the methods INCREMENT, DECREMENT, EXIT
- D. Using message methods the programmer defines for that subclass of actor

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1 point

3.

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In the Actor model, message ordering can be preserved in which of the following cases?

- A. Never
- B. Same sender, different receiver
- C. Same receiver, different sender
- D. Same sender and receiver

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1 point

4.

How many actors do you need in an actor-based pipeline?

- A. One
- B. One actor per pipeline stage
- C. One actor per actor sublcass

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1 point

5.

For generating the primes less than n, how many actors will the Sieve of Eratosthenes use?

- A. 1
- B. $\sqrt{n}$
- C. $n - 1$
- D. n
- E. Number of primes less than n

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6.

Which of the following statements is/are true regarding the sieve pipeline introduced in the video?

Please choose all options that are correct.

- [x] A. The pipeline grows dynamically
- [x] B. Each next actor in the pipeline is created and started by the previous actor
- [ ] C. What numbers get filtered in the next stage of the pipeline is arbitrarily determined

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1 point

7.

Which of the following would be good objects to use to implement an unbounded buffer in Java?

Please choose all options that are correct.

- [ ] A. PriorityBlockingQueue
- [ ] B. SynchronousQueue
- [x] C. ConcurrentLinkedQueue
- [ ] D. ArrayBlockingQueue

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1 point

8.

Why is it beneficial to model producers, consumers and their unbounded buffer as actors?

Please choose all options that are correct.

- [x]

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A. Actors are more efficient than alternatives like waiting on a while loop condition to evaluate to true.

- [x] B. There is no need for producers to check whether the buffer is full, or for consumers to check whether the buffer is empty.
- [ ] C. The consumer can remove items from the buffer at will.
- [ ] D. The producer must coordinate with the master actor when it's ready to insert items in the buffer.

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1 point

9.

P is the number of producer actors and C is the number of consumer actors. What can we assume about the size of the buffer (B)?

- ( ) A. $B < P$ and $B < C$
- ( ) B. $B < P$ or $B < C$
- (•) C. $P \leq B$
- ( ) D. $C \leq B$

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1 point

10.

The bounded buffer master actor coordinates with the producer actors and consumer actors by...

Please choose all options that are correct.

- [x] A. Requesting data from a producer actor
- [ ] B. Waiting for a producer actor to send it data
- [ ] C. Requesting removal of data by consumer actors
- [x] D. Waiting for a consumer actor to tell the buffer that it is ready

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