

THE AUSTRALIAN NATIONAL UNIVERSITY

Mid-semester Quiz, Second Semester 2002

**COMP2310
(Concurrent and Distributed Systems)**

Writing Period: 60 minutes duration

Study Period: 5 minutes duration

Permitted Materials: None

All your answers must be written in the spaces provided in this booklet. Only answers written in this booklet will be marked. Do not remove this booklet from the examination room.

Consider each statement carefully. If you believe that it is correct, write a tick (✓) in the TRUE box, and write nothing in the large box. If you believe that it is incorrect, write a tick (✓) in the FALSE box and write a corrected version of the statement in the large box. It is not sufficient merely to negate a false statement (i.e. by deleting or inserting the word 'not'); your answer must show that you understand why it is false.

A correct response earns four marks. An incorrect response earns a penalty of one mark. If you correctly tick the FALSE box but do not rewrite the statement correctly, you earn one mark. If you tick neither box, you earn zero.

Name (family name first):

Student Number:

Official use only:

#4	#1	#-1	#0	Total (160)
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(Have you read the instructions on the cover?)

1. In a SIMD computer, multiple CPUs share the same program counter.

TRUE FALSE

1

2. The Unix `exec()` system call resets the file descriptor table.

TRUE FALSE

2

3. Within a thread, operations are carried out strictly one at a time.

TRUE FALSE

3

4. The Unix `wait()` system call waits for the termination of a particular child process.

TRUE FALSE

4

5. In a modern shared-memory multiprocessor, there is one cache shared by all CPUs.

TRUE FALSE

5

6. In a solution to the mutual exclusion problem, it is permissible for two processes to be simultaneously in critical regions of two different classes.

TRUE FALSE

6

7. The explicit passing between processes of the right to execute is a technique called *coroutines*.

TRUE FALSE

7

8. The semaphore `wait` method *always* suspends the calling process.

TRUE FALSE

8

9. The semaphore `wait` method is normally implemented using busy-waiting.

TRUE FALSE

9

10. In the Readers & Writers problem, writers have priority over readers.

TRUE FALSE

10

11. In Producer-Consumer problems, there is never more than one consumer process.

TRUE FALSE

11

12. The file descriptor table is an array; a file descriptor is an array index.

TRUE FALSE

12

13. The file descriptor table of a process newly created by `fork()` is a copy of its parent's.

TRUE FALSE

13

14. To share a pipe between two processes, a program calls `fork()` and then `pipe()`.

TRUE FALSE

14

15. Standard output can be redirected to a socket using `close()` and `dup()`.

TRUE FALSE

15

16. The monitor signal method *may* suspend the calling process.

TRUE FALSE

16

17. Semaphores are a lower-level structuring concept than monitors.

TRUE FALSE

17

18. It is possible to implement a rendezvous using one eventcount.

TRUE FALSE

18

19. Each Java method labelled `synchronized` is a critical region.

TRUE FALSE

19

20. A Unix program that uses multiple threads may appear as multiple processes in the output of `ps`.

TRUE FALSE

20

21. In a microkernel operating system, the device drivers are executed in the CPU's user mode.

TRUE FALSE

21

22. In a monolithic kernel operating system, the memory manager is executed in the CPU's privileged mode.

TRUE FALSE

22

23. The upper half of a device driver runs synchronously.

TRUE FALSE

23

24. On an Ethernet, a transmitter does not check that the ether is quiet before sending, but detects if a collision occurs.

TRUE FALSE

24

25. In the case of repeated collisions on an Ethernet cable, backoff times increase exponentially.

TRUE FALSE

25

26. In Hoare's CSP, execution of a conditional statement involves choosing the first guard which evaluates to true, and executing the corresponding statements.

TRUE FALSE

26

27. A CSP guard may include an input command at the end.

TRUE FALSE

27

28. Message passing is only useful for data transfer between processes.

TRUE FALSE

28

29. The postal system is a metaphor for unbuffered synchronous communication.

TRUE FALSE

29

30. In real-time systems, where predictability is important, it is best to use static process creation.

TRUE FALSE

30

31. A message-passing system is characterized as synchronous if and only if a sender must block.

TRUE FALSE

31

32. According to RFC1983, a broadcast packet is a packet intended for a group of nodes on the network, not necessarily all.

TRUE FALSE

32

33. The Ada rendezvous mechanism is synchronous and buffered.

TRUE FALSE

33

34. The occam language supports dynamic process creation.

TRUE FALSE

34

35. The actual transmission of messages is usually arranged by the user process.

TRUE FALSE

35

36. A connectionless protocol is most often used with an iterative server.

TRUE FALSE

36

37. Linda operations are atomic.

TRUE FALSE

37

38. The Ada Linda Input call blocks until another process calls Output with matching parameters.

TRUE FALSE

38

39. TCP is a connection-oriented protocol.

TRUE FALSE

39

40. The inetd super-server uses the accept system call to listen for requests.

TRUE FALSE

40

