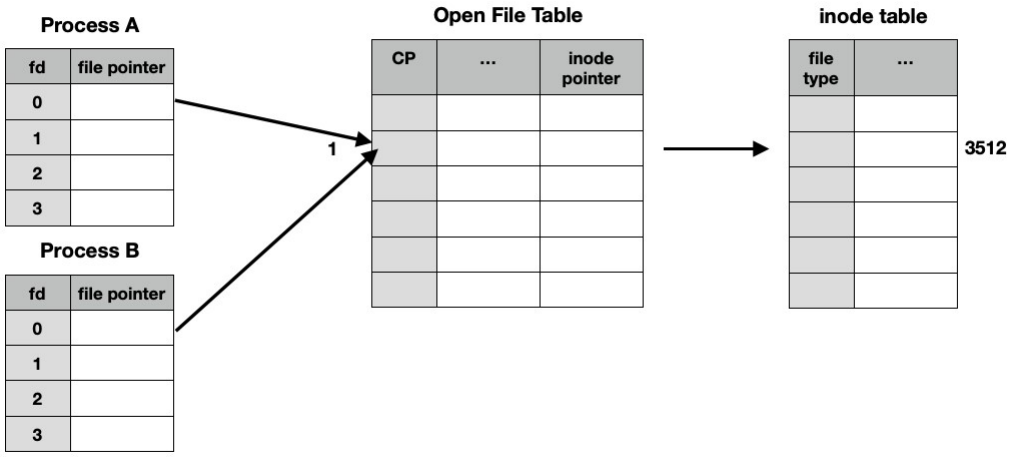
Review Test Submission: Quiz 3

User	Sim Jia Ren .
Course	2110 ISTD - 50.005 : Computer System Engineering
Test	Quiz 3
Started	3/4/21 9:00 AM
Submitted	3/4/21 9:13 AM
Due Date	3/4/21 9:16 AM
Status	Completed
Attempt Score	5.67333 out of 15 points
Time Elapsed	12 minutes
Results Displayed	All Answers, Submitted Answers, Correct Answers

Question 1

0.00013 out of 2 points

Consider the following simple states of Process A and B file descriptor table, open file table, and inode table. Select all statements that are **true**. Selecting an incorrect answer will result in penalty. The minimum score for this question is 0.



← OK

Selected Answers:
- It is possible that the above state is a snapshot right after process A forks and return (no other instruction has been executed).
- If process A advances fd0 by 15 bytes via `read()`, process B will observe that effect.
- fd0 in process B is created because process A called the `dup()` system call
- The inode table contains the content (data blocks) of file with id 3512.

Answers:
- Process A and Process B can share information by writing to or reading from file id: 3512.
- It is possible that the above state is a snapshot right after process A forks and return (no other instruction has been executed).
- If process A advances fd0 by 15 bytes via `read()`, process B will observe that effect.
- fd0 in process B is created because process A called the `dup()` system call
- The inode table contains the content (data blocks) of file with id 3512.

Open file table and inode table are in kernel space, but process file descriptor tables reside in user space.

Question 2

0 out of 2 points

Consider two instances of a Vector class in Java.

```
Vector x = new Vector()

Vector y = new Vector()
```

The class has a **synchronized** function called `dotProduct(Vector z)`

State whether the following is true or false:

If thread T1 runs `x.dotProduct(y)`, and thread T2 runs `y.dotProduct(x)`, then its execution cannot be interleaved, i.e: either T1 or T2 will finish first before the other can start.

Selected Answer: True
Answers: True
False

Question 3

0 out of 2 points

Threads waiting to acquire the object lock are placed in the wait set for the object lock.

Selected Answer: True
Answers: True
False

Question 4

1 out of 1 points

In a resource allocation graph, if there's only one instance **per** resource then there's 100% certainty that the system is currently in a deadlock.

Selected Answer: ✓ False
Answers: True
✓ False

Question 5

0 out of 1 points

Consider Java implementation of binary lock as follows:

```
public synchronized int factorial(int n){

   if (n == 0) return 1;

   return n * factorial(n-1);

}
```

State whether the following is true or false:

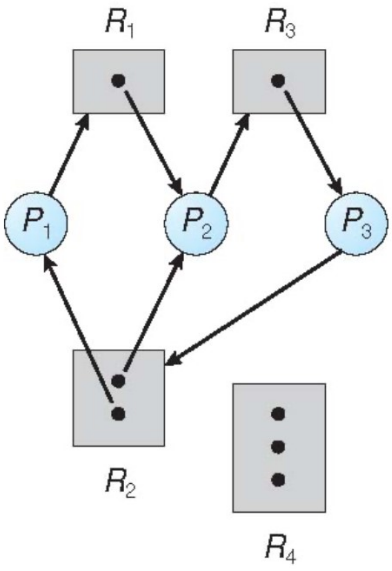
Running the method above will result in a deadlock since we have to acquire the **binary** lock "this" multiple times.

Selected Answer: ✗ True
Answers: True
✓ False

Question 6

1 out of 1 points

Given a resource allocation graph as follows, select the correct allocation matrix that represents the graph:



Selected Answer:

	R1	R2	R3	R4
P1	0	1	0	0
P2	1	1	0	0
P3	0	0	1	0

Answers:

	R1	R2	R3	R4
P1	0	1	0	0
P2	1	1	0	0
P3	0	0	1	0

	R1	R2	R3	R4
P1	0	1	0	3
P2	2	0	0	0
P3	0	0	1	0

	R1	R2	R3	R4
P1	0	0	1	1
P2	1	1	0	0
P3	0	0	1	1

	R1	R2	R3	R4
P1	0	1	0	0
P2	1	1	0	0
P3	1	1	1	0

Question 7

1.3332 out of 2 points

Consider a system with 3 processes (P1, P2, P3) that adopts deadlock detection as a method of handling deadlock situation. There are 3 types of resources in the system: RA, RB, and RC.

Is the system currently in the safe state? Select all statement(s) that is/are true. Selecting an incorrect anwer will result in penalty. The minimum marks for this question is 0.

Allocation

	RA	RB	RC
P1	0	1	2
P2	1	2	1
P3	0	0	1

Request

	RA	RB	RC
P1	0	0	1
P2	1	1	1
P3	1	0	1

Available

RA	RB	RC
1	0	1

Selected Answers:
- Yes, with safe sequence <P3, P1, P2>
- Yes, with safe sequence <P1, P2, P3>
- Yes, with safe sequence <P1, P3, P2>
- Yes, with safe sequence <P2, P1, P3>

Answers:
- No, the system is currently deadlocked.

Yes, with safe sequence <P3, P2, P1>

Yes, with safe sequence <P3, P1, P2>

Yes, with safe sequence <P1, P2, P3>

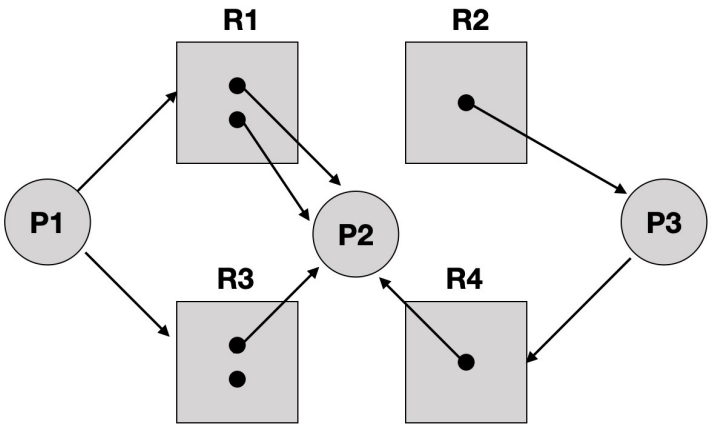
Yes, with safe sequence <P1, P3, P2>

Yes, with safe sequence <P2, P1, P3>

Question 8

1.34 out of 2 points

Consider the resource allocation graph below. Assume that processes will not release its currently held resources until they can continue execution and complete their tasks.



Select **ALL** statements that are true. Selecting an incorrect statement will result in penalty. Minimum score for this question is 0.

Selected Answers:
- There are four different resource types in total.
- The system is currently not in a deadlock.
- Process 2 holds exactly two instances of R1.
- There is one instance of R3.

Answers:
- The system is in a deadlock.
- There are four different resource types in total.
- The system is currently not in a deadlock.
- Process 2 holds exactly two instances of R1.
- Process 1 currently holds one instance of R1 and one instance of R3.
- There is one instance of R3.

Question 9

1 out of 1 points

In tree-strurtured directory, you cannot create new subdirectory within a directory.

Selected Answer: False
Answers: True
False

Question 10 0 out of 1 points

You can have separate directory for each user in a system that implements single-level directory.

Selected Answer: True
Answers: True
False

Wednesday, March 17, 2021 10:04:52 PM SGT