Operating systems INT2206-6 Summer 2018-2019

Started on	Sunday, 7 April 2019, 8:00 PM
State	Finished
Completed on	Sunday, 7 April 2019, 8:30 PM
Time taken	29 mins 53 secs
Marks	18.00/20.00
Grade	**9.00** out of 10.00 (**90**%)

Question 1

Incorrect

Mark 0.00 out of 1.00

Flag question

Given the following system information:

	ALLOCATION	MAX	AVAILABLE
PROCESS	TAPES	TAPES	TAPES
P0	5	10	3
P1	2	4	
P2	2	9	

Which is the correct value of FINISH and WORK vectors during the running of Banker's algorithm?

Select one:

- FINISH=(T, F, T) WORK=(10)
- FINISH=(F, T, F) WORK=(10) ✗
- FINISH=(T, F, F) WORK=(10)
- FINISH=(T, T, F) WORK=(10)

Question 2

Correct

Mark 1.00 out of 1.00

Flag question

Given the two bellow processes sharing three semaphores full, empty, mutex, and a buffer buff having initial N empty slots:

```
semaphore mutex=1, full=0, empty=N;
```

```
int buff[N];
```

```
Write_Process:
```

```
do {
```

```
        wait(empty);
```

```
        wait(mutex);
```

```
        Write(buff);
```

```
        signal(mutex);
```

```
        signal(full);
```

```
} while (TRUE);
```

```
Read_Process:
```

```
do {
```

```
        wait(full);
```

```
                wait(mutex);

                Read(buff);

                signal(mutex);

                signal(empty);

        } while (TRUE);
```

Which is correct about the semaphore mutex?

Select one:

- Both semaphore mutex and full are used to ensure at most 1 process can access the buff at a time.
- mutex is initially set to 1. wait(mutex); and signal(mutex); operators follow a protocol to execute a critical section, i.e. to allow at most 1 process to access the buff. ✓
- mutex is used to force Read_Process to wait until Write_Process write data into buff.
- mutex is used to force Write_Process to write at most N data items into buff.

Question 3

Correct

Mark 1.00 out of 1.00

Flag question

Which is incorrect about Semaphore?

Select one:

- signal (or V) operator is corresponding to EXIT in the protocol of a critical section
- Semaphore includes an integer and two atomic operators.
- wait (or P) operator is corresponding to ENTRY in the protocol of a critical section
- There is only one implementation of semaphore. ✓

Question 4

Correct

Mark 1.00 out of 1.00

Flag question

Given the following system information:

```
                        ALLOCATION              REQUEST         AVBALABLE

        PROCESS A       B       C               A       B       C       A       B
C
```

```
                P0      0       1       0               0       0       0       0
0       0
```

```
                P1      2       0       0               2       0       2
```

```
                P2      3       0       3               0       0       0
```

```
                P3      2       1       1               1       0       0
```

```
                P4      0       0       2               0       0       2
```

Which is correct value of FINISH and WORK vectors during the running of the deadlock detection algorithm?

Select one:

- FINISH=(F, F, F, F, T), WORK=(0, 1, 0)
- FINISH=(T, F, F, F, F), WORK=(0, 1, 0) ✓
- FINISH=(F, F, F, F, F), WORK=(0, 0, 1)
- FINISH=(F, F, F, T, F), WORK=(1, 0, 0)

Question 5

Correct

Mark 1.00 out of 1.00

Flag question

Which is INCORRECT about Resource Allocation Graph (RAG)?

Select one:

- A rectangle represents a process ✓
- An edge from a resource vertex to a process vertex represents an instance of the resources is allocated to the process
- A circle represents a process
- A request edge is from a process vertex to a resource vertex

Question 6

Correct

Mark 1.00 out of 1.00

Flag question

Given the code of Readers-Writers problem:
Process writer P:

```
        do {
```

```
            wait(wrt);
```

```
            write(data_set);
```

```
            signal(wrt);
```

```
        }while (TRUE);
```

Process reader Q:

```
        do {
```

```
            wait(mutex);
```

```
            readcount++;
```

```
            if (readcount ==1) wait(wrt);
```

```
            signal(mutex);
```

```
            read(data_set);
```

```
            wait(mutex);
```

```
            readcount--;
```

```
            if (readcount ==0) signal(wrt);
```

```
            signal(mutex);
```

```
        } while (TRUE);
```

Which is the initialized value of the wrt variable in the above algorithm?

Select one:

- NULL
- 0
- 1 ✓
- -1

Question 7

Correct

Mark 1.00 out of 1.00

Flag question

Given the following code, with the globally shared variable int buf, and count() is a function. Which is correct when multiple instances of the code are running in the system?

```
        while (true) {
```

```
                //Some code
```

```
                int val=buf;
```

```
                val += count();//A time consuming function
```

```
                buf=val
```

```
                //Some other code
```

```
        }
```

Select one:

- The globally shared variable buf can get an incorrect value when there are more than 1 instance of the code running. ✓
- The globally shared variable buf will always get an incorrect value when there are more than 2 instances of the code running.

- The globally shared variable buf will always get an incorrect value when only 2 instances of the code running.
- The globally shared variable buf will always get the correct value.

Question 8

Correct

Mark 1.00 out of 1.00

Flag question

Which is NOT an implementation of critical section?

Select one:

- Monitor
- Peterson's solution
- Condition ✓
- Semaphore

Question 9

Correct

Mark 1.00 out of 1.00

Flag question

Given the following system information, and process P4 requests (1, 0, 0) more resources:

	ALLOCATION			MAX			AVBALABLE		
PROCESS	A	B	C	A	B	C	A	B	C
P0	0	1	0	7	5	3	2	3	0
P1	3	0	2	3	2	2			
P2	3	0	2	9	0	2			
P3	2	1	1	2	2	2			
P4	0	0	2	4	3	3			

Which is the correct value of FINISH and WORK vectors during the running of Banker's algorithm which is called in the Resource-Request algorithm (to avoid deadlock)?

Select one:

- FINISH=(F, T, F, F, F), WORK=(4, 3, 2) ✓

- FINISH=(F, F, T, F, F), WORK=(4, 3, 0)
- FINISH=(F, F, F, T, F), WORK=(4, 3, 2)
- FINISH=(F, T, F, F, F), WORK=(4, 3, 0)

Question 10

Correct

Mark 1.00 out of 1.00

Flag question

Given the following system information:

	ALLOCATION			REQUEST			AVBALABLE		
PROCESS	A	B	C	A	B	C	A	B	C
P0	0	1	0	0	0	0	0	0	0
P1	2	0	0	2	0	2			
P2	3	0	3	0	0	0			
P3	2	1	1	1	0	0			
P4	0	0	2	0	0	2			

Which is correct for the deadlock detection algorithm?

Select one:

- The algorithm results in FINISH=(F, T, T, T, T), WORK=(5, 1, 2), thus there is a deadlock.
- The algorithm results in FINISH=(T, T, T, T, T), WORK=(7, 2, 4), thus there is no deadlock.
- The algorithm results in FINISH=(F, T, T, T, T), WORK=(7, 2, 5), thus there is a deadlock.
- The algorithm results in FINISH=(T, T, T, T, T), WORK=(7, 2, 6), thus there is no deadlock. ✓

Question 11

Correct

Mark 1.00 out of 1.00

Given the following system information, and process P0 requests (0, 2, 0) more resources:

	ALLOCATION			MAX			AVBALABLE		

Flag question

PROCESS	A	B	C	A	B	C	A	B	C
P0	0	1	0	7	5	3	3	3	2
P1	2	0	0	3	2	2			
P2	3	0	1	9	0	2			
P3	2	1	1	2	2	2			
P4	0	0	2	4	3	3			

Which is the correct value of FINISH and WORK vectors during the running of Banker's algorithm which is called in the Resource-Request algorithm (to avoid deadlock)?

Select one:

- FINISH=(F, T, T, F, T), WORK=(7, 3, 3)
- FINISH=(T, T, T, T, F), WORK=(10, 5, 4) ✓
- FINISH=(F, T, T, T, T), WORK=(10, 5, 3)
- FINISH=(T, T, F, T, T), WORK=(7, 5, 4)

Question 12

Correct

Mark 1.00 out of 1.00

Flag question

Which is INCORRECT about banker algorithm?

Select one:

- Banker algorithm can be used in case each resource type has several instances
- Each process has to register the maximum number of resource instances it needs
- When a process hold a resource, it must release in a finite duration
- When a process requests a resource, it does not have to wait ✓

Question 13

Correct

Given the two bellow processes sharing three semaphores full, empty, mutex, and a buffer buff having initial N empty slots:

```
semaphore mutex=1, full=0, empty=N;
```

Mark 1.00 out of 1.00

Flag question

```
int buff[N];
```

```
Write_Process:
```

```
do {
```

```
        wait(empty);
```

```
        wait(mutex);
```

```
        Write(buff);
```

```
        signal(mutex);
```

```
        signal(full);
```

```
} while (TRUE);
```

```
Read_Process:
```

```
do {
```

```
        wait(full);
```

```
        wait(mutex);
```

```
        Read(buff);
```

```
            signal(mutex);
```

```
            signal(empty);
```

```
        } while (TRUE);
```

Which is incorrect about semaphore full?

Select one:

- The maximum value of full is N.
- The minimum value of full is 0.
- It is a binary semaphore. ✓
- It is a counting semaphore.

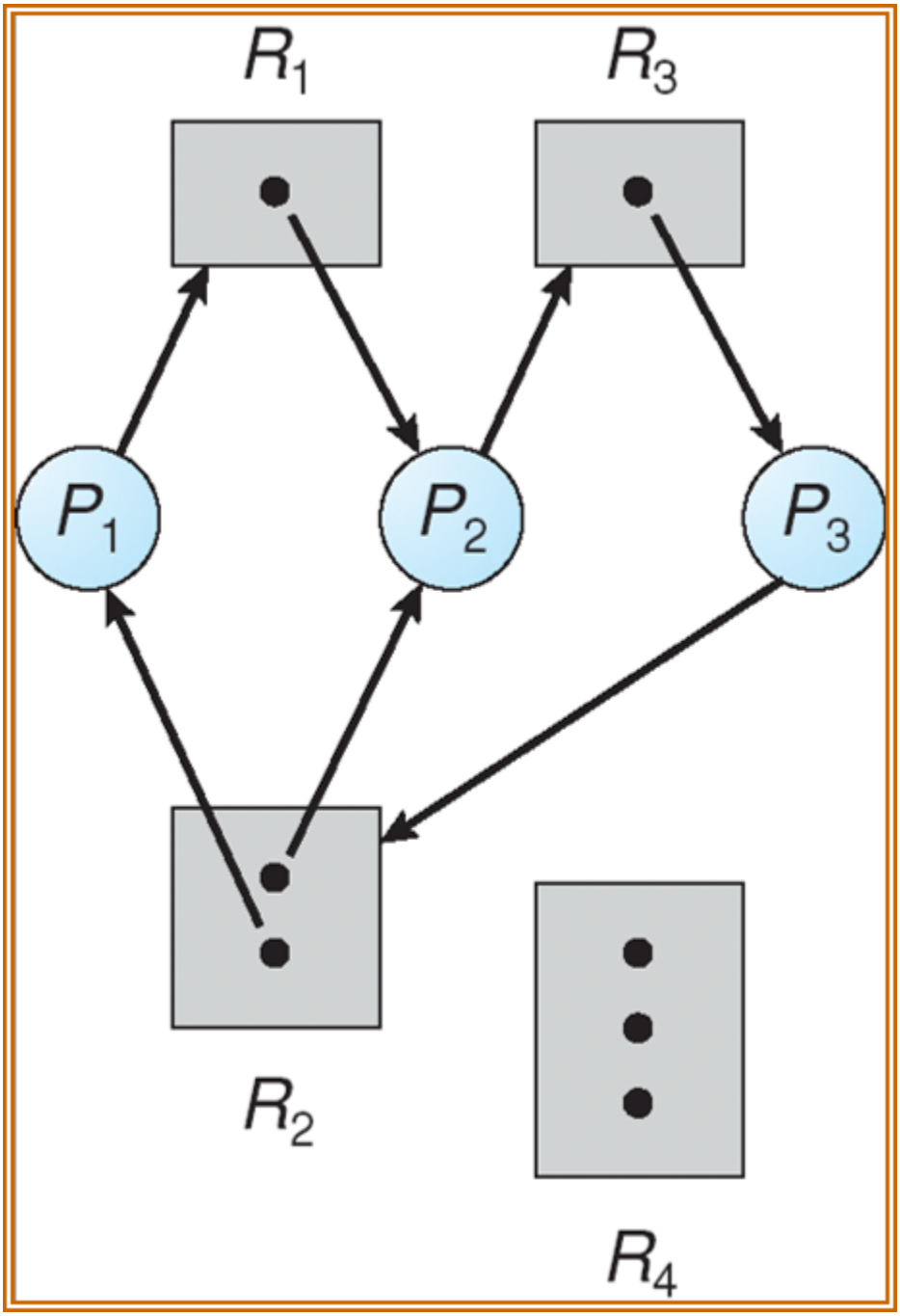
Question 14

Correct

Mark 1.00 out of 1.00

Flag question

Given the following resource allocation graph, provide the name of the edge from P3 to R2 (Assignment, Claim,or Request)?



Answer: Request

Question 15

Correct

Mark 1.00 out of 1.00

Flag question

Given the following system information:

	ALLOCATION			REQUEST			AVBALABLE		
PROCESS	A	B	C	A	B	C	A	B	C

```
                P0      0       1       0               0       0       0       0
0       0
```

```
                P1      2       0       0               2       0       2
```

```
                P2      3       0       3               0       0       1
```

```
                P3      2       1       1               1       0       0
```

```
                P4      0       0       2               0       0       2
```

Which is correct value of FINISH and WORK vectors during the running of the deadlock detection algorithm?

Select one:

- FINISH=(T, F, F, F, F), WORK=(2, 0, 0)
- FINISH=(F, F, F, F, T), WORK=(0, 1, 0)
- FINISH=(F, T, F, F, F), WORK=(0, 0, 2)
- FINISH=(T, F, F, F, F), WORK=(0, 1, 0) ✓

Question 16

Correct

Mark 1.00 out of 1.00

Flag question

Given the code of Readers-Writers problem:
Process writer P:

```
        do {
```

```
                wait(wrt);
```

```
                write(data_set);
```

```
                signal(wrt);
```

```
        }while (TRUE);
```

Process reader Q:

```
        do {
```

```
                wait(mutex);
```

```
                readcount++;
```

```
                if (readcount ==1) wait(wrt);
```

```
                signal(mutex);
```

```
                read(data_set);
```

```
                wait(mutex);
```

```
                 readcount--;
```

```
                if (readcount ==0) signal(wrt);
```

```
                signal(mutex);
```

```
        } while (TRUE);
```

Why do we need readcount variable?

Select one:

- To make sure there is one reader at a time
- We may remove this variable
- To make sure no readers are reading
- To make sure no readers are reading before writing ✓

Question 17

Correct

Mark 1.00 out of 1.00

Flag question

Given the code for bounded-buffer problem:
Write process P:

```
        do {

                wait(empty);

                wait(mutex);

                Write (item);

                signal(mutex);

                signal(full);

        } while (TRUE);
```

Read process Q:

```
        do {

                wait(full);

                wait(mutex);

                Read(item);

                signal(mutex);

                signal(empty);
```

```
        } while (TRUE);
```

What will be the problem if the initialized value of the full variable is 1?

Select one:

- the reader process can not run
- no problem at all
- the reader can read an invalid value ✓
- the writer process can not run

Question 18

Correct

Mark 1.00 out of 1.00

Flag question

Which is INCORRECT about Inter-process communication (IPC)?

Select one:

- IPC can be used for memory management ✓
- IPC can be used for data communication
- IPC can be used to handle critical section
- IPC can be used to synchronization

Question 19

Incorrect

Mark 0.00 out of 1.00

Flag question

Given the following system information, and process P0 requests (0, 2, 0) more resources:

	ALLOCATION			MAX			AVBALABLE	
PROCESS	A	B	C	A	B	C	A	B C
P0	0	1	0	7	5	3	3	3 2
P1	2	0	0	3	2	2		
P2	3	0	1	9	0	2		
P3	2	1	1	2	2	2		

P4	0	0	2	4	3	3

Which is the correct value of FINISH and WORK vectors during the running of Banker's algorithm which is called in the Resource-Request algorithm (to avoid deadlock)?

Select one:

- FINISH=(F, F, T, F, T), WORK=(7, 3, 3)
- FINISH=(F, T, F, T, F), WORK=(7, 2, 3)
- FINISH=(F, F, F, F, T), WORK=(5, 3, 2)
- FINISH=(F, T, F, T, F), WORK=(5, 2, 3) ✗

Question 20

Correct

Mark 1.00 out of 1.00

Flag question

Which is not Interprocess Communication?

Select one:

- A process reads data from a file. ✓
- Two processes shares data in a file via file mapping.
- A web browser views a webpage from a web server.
- A process shares a semaphore with another process.

Finish review

QUIZ NAVIGATION

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Show one page at a time

Finish review