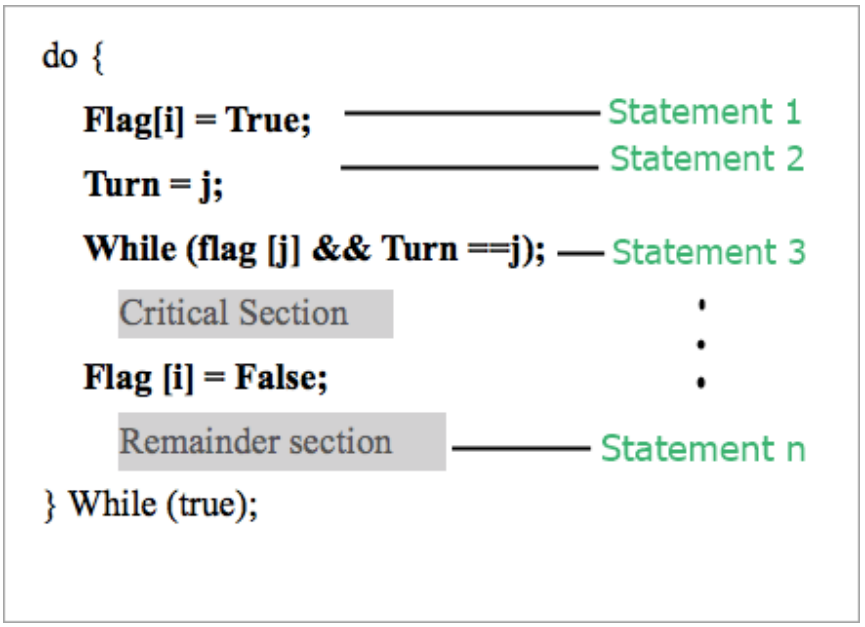
Questions

Question 1

0.0/10.0 points (graded)
Marks of this question **[10 Marks]**

Peterson's algorithm is suitable for synchronizing two processes. Suppose, there are two processes Process P0 and Process P1. In the following please, select how the two processes work sequentially from first statement 1 to statement n of code by context switching while following peterson algorithm.



Consider the given information applicable for both Process P0 and P1 -
1. Each statement will take 3ms (milisecond) to complete.
2. Initally, For process P0: i=0,j=1; and for process P1: i=1,j=0.
3. Context switching will occur after every 6ms.
4. The critical section area carries 1 statements.
5. The remainder section area carries 3 statements.
6. Information common to both processes: turn=0, flag[0]=false, flag[1]=false

Based on the above information, the first phases are completed for you -

Step 1: At time 0, Process P0 starts and , executes Statement 1, flag[0] = true
Step 2: After 3ms, Process P0, executes Statement 2, turn = 1
Step 3: After 6ms, a Context switch occurs from process P0 to Process P1
Step 4: Now, Process P1 starts and , executes Statement 1, flag[1] = true

Now, complete the remaining steps sequentially until any of the process finishes executing all the statements of its remainder section.

Select an option

Answer: Process P1 executes turn = 0

Select an option

Answer: Context switch occurs

Select an option

Answer: Process P0 executes "While" statement

Select an option

Answer: Process P0 executes 1st critical statement

Select an option **Answer:** Context switch occurs

Select an option

Answer: Process P1 executes "While" statement

Select an option

Answer: Process P1 executes "While" statement

Select an option **Answer:** Context switch occurs

Select an option **Answer:** Process P0 executes flag[0] = false

Select an option

Answer: Process P0 executes 1st remainder statement

Select an option **Answer:** Context switch occurs

Select an option

Answer: Process P1 executes "While" statement

Select an option

Answer: Process P1 executes 1st critical statement

Select an option **Answer:** Context switch occurs

Select an option

Answer: Process P0 executes 2nd remainder statement

Select an option

Answer: Process P0 executes 3rd remainder statement

Submit You have used 0 of 2 attempts

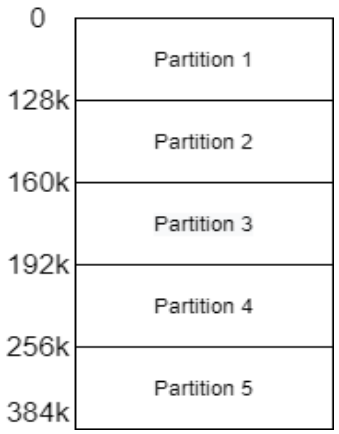
Answers are displayed within the problem

Question 2

6.0/10.0 points (graded)

Memory Allocation Problem: 10 Marks

Consider the following memory unit:



Now, consider the following processes along with their size:

P1 → 100k

P2 → 50k

P3 → 50k

P4 → 90k

P5 → 20k

Now imagine, you try to fit the processes in the memory unit in serial from P1 to P5. Meaning, you try to fit P1 first, then P2, P3, P4, and P5. You can place only one process in a single partition and once a process takes place in a particular partition, no other process can take that place. You can use first fit, best fit and worst fit approach. The first fit has been solved for you.

P1:

Partition 1

P2:

Partition 4

P3:

Partition 5

P4:

Waiting

P5:

Partition 2

Now, apply **best fit algorithm** and solve the following (If you find multiple best fits, pick the partition that comes first. For example if Partition 3 and 5 are multiple best fits, you have to pick partition 3):

P1:

Partition 1 ✔ **Answer:** Partition 1

P2:

Partition 4 ✔ **Answer:** Partition 4

P3:

Waiting ✖ **Answer:** Partition 5

P4:

Partition 5 ✖ **Answer:** Waiting

P5:

Partition 2 ✔ **Answer:** Partition 2

Also, apply **worst fit algorithm** and solve the following (If you find multiple worst fits, pick the partition that comes first. For example if Partition 3 and 5 are multiple worst fits, you have to pick partition 3:

P1:

Partition 1 ✔ **Answer:** Partition 1

P2:

Partition 5 ✔ **Answer:** Partition 5

P3:

Partition 5 ✖ **Answer:** Partition 4

P4:

Waiting ✔ **Answer:** Waiting

P5:

Partition 1 ✖ **Answer:** Partition 2

Submit You have used 1 of 2 attempts

Answers are displayed within the problem

Question 3

Consider the following table- **[10 Marks]**

	Max				Allocation				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
Pa	7	0	1	3	7	0	0	2	1	4	4	4
Pb	2	8	5	0	2	1	0	0				
Pc	2	12	5	6	0	6	3	3				
Pd	1	6	5	6	0	2	1	2				

Using this table, solve the below problem -

Multiple Choice

10.0/10.0 points (graded)

Suppose, we have the above scenario in an OS. There are four processes (Pa, Pb, Pc, Pd) and four

resource types (A, B, C, D). Solve this scenario using Bankers algorithm. How many instances each resource type has? [Hints. please write the numbers without any space in between. Example answer- 1012141618]

1013811 ✔ **Answer:** 1013811

1013811

What is the Need array for thread Pa? [Hints. please write the numbers without any space in between. Example answer- 00012121]

0011 ✔ **Answer:** 0011

0011

What is the Need array for thread Pb? [Hints. please write the numbers without any space in between. Example answer- 012121]

0750 ✔ **Answer:** 0750

0750

What is the Need array for thread Pc? [Hints. please write the numbers without any space in between. Example answer- 012121]

2623 ✔ **Answer:** 2623

2623

What is the Need array for thread Pd? [Hints. please write the numbers without any space in between. Example answer- 012121]

1444 ✔ **Answer:** 1444

1444

Let's assume we use Banker's algorithm to allocate required resources instances to the process starting from process Pa. What are the resources instances available after satisfying the first request. [Hints. please write the numbers without any space in between. Example answer - 910131417]

8446 ✔ **Answer:** 8446

8446

What are the resources instances available after satisfying the second request.[Hints. please write the numbers without any space in between.]

8658 ✔ **Answer:** 8658

8658

What are the resources instances available after satisfying the third request.[Hints. please write the numbers without any space in between.]

812811 ✔ **Answer:** 812811

812811

If the system is in safe state find the Safe Sequence.

- ○ Pa, Pb, Pd, Pc
- ○ Pc, Pd, Pd, Pa
- ○ Pa, Pd, Pb, Pc
- ◉ Pa, Pd, Pc, Pb
- ○ There is no safe sequence.

✔

If there is an additional request from process Pc as [0 0 3 1], will it be granted?

- ◉ No, the request will be rejected.
- ○ Yes , the request will be granted.

✔

Submit You have used 2 of 2 attempts

Answers are displayed within the problem

Instructions

1. Please copy the form link before the **55 minutes** timer is ended. Here is link
- https://forms.gle/ZigU9Bkwy3q2yMuW8

2. You will submit your rough work in the form. The form accepts **only pdf file**. The maximum file **size is 10 mb**. Make sure your file format and size is appropriate.

3. **Make sure you enter all your answers in bux first**. Only after submitting answers in bux, take images of your rough work and upload in the form. Submitting rough work is **mandatory**.

4. You have to upload your work within 15 minutes, after **submitting exam in bux**. Your bux submission time and google form submission time will be tracked.

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