Questions

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Question 1

3.4/5.0 points (graded)

Question1 : 5 marks

Suppose your friend Tahmid, recently bought a computer. He is calling this a 10th generation computer with core i5 processors. To ensure the __(i)__ he created five users called Tah1, Tah2, ..., Tah5 in the OS. All the other users except Tah1 belong to the "General" group. Tah1 and Tah3 are the "Admin" users. Currently, there are three files on the computer F1, F2, and F3. The permission table for the files are

User/group id	Read	Write	Execution	File
admin	1	0	1	F1
general	1	1	0	F1
Tah3	1	1	1	F1
Admin	1	1	0	F2
Admin	1	0	0	F3
General	0	0	1	F3
Tah2	1	1	1	F3

If Tah5 wants to write the text "hello from user5" into the file F3. A system call named "write_text_to_file(string a)" needs to be invoked to access the file.

Which of the following is/are true in the above scenario? -

- [x] the user can't write into the file ✱
- [ ] system call interface associates a number with the system call ✔
- [x] system call will not invoked through OS kernel ✱
- [ ] system call interface will return the status of system call
- [ ] system call interface will return a value from system call

✱

Who can't execute the file F1?

- [ ] Tah1
- [x] Tah2
- [ ] Tah3
- [x] Tah4
- [x] Tah5

✔

Who can't write into the file F2?

- [x] Tah1
- [ ] Tah2 ✔
- [x] Tah3
- [ ] Tah4 ✔
- [ ] Tah5 ✔

✖

Who can read the file F3?

- [x] Tah1
- [x] Tah2
- [x] Tah3
- [ ] Tah4
- [ ] Tah5

✔

Answer to (i)

- [ ] concurrency
- [x] parallelism
- [ ] multiprocessing
- [ ] multiprogramming ✔
- [ ] multi-threading

✱

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Show Answer

Answers are displayed within the problem

Question 2 (Mark 5)

0.0/5.0 points (graded)

Suppose, process P1 requires 5ms burst time to execute its code. During execution the process P1 interrupted twice by P2 and P3 those requires 3ms and 6ms burst time respectively. For each context switch, operating system spent 1ms to save the remaining part of the interrupted process and 1ms for reload the new process. How much total time requires for completing the task of process P1? (Example ans: 12)

22 ✖ **Answer:** 20

22

We have considered four process (p1, p2, p3, p4) which have some common portion to share. Process p1, p2, p3 and p4 has total 2000bits, 1000bits, 1200bits, 1500bits respectively where 1000bits, 0bits, 200bits and 500bits are private and remaining portions are common in four process. If we consider shared memory IPC technique, how much bits will be reduced to store in main memory? (Example ans: 120)

5700 ✖ **Answer:** 3000

5700

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question 3 (Mark 5)

4.0/5.0 points (graded)

At time 0, each of the processes is in Ready state. The scheduler operates in round-robin fashion. All events except dispatch that occur from time 5 to time 48 listed here:
At time 5: P1 executes a command to read from disk.
At time 15: P3's time slice expires.
At time 18: P4 executes a command to write to disk.
At time 20: P2 executes a command to read from disk.
At time 23: P5 goes to sleep for 7 unit of time.
At time 24: P3 is writting to the disk.
At time 30: P5 wakes up from sleep.
At time 33: An interrupt occurs from disk unit 2: P2's read is complete.
At time 36: An interrupt occurs from disk unit 3: P1's read is complete.
At time 38: P5 terminates.
At time 40: An interrupt occurs from disk: P3's write is complete.
At time 48: An interrupt occurs from disk: P4's write is complete.

Now infer the state of each process state using the available information at time 39.

Process P1

Ready ✔ **Answer:** Ready

Process P2

Ready ✔ **Answer:** Ready

Process P3

Waiting ✖ **Answer:** Running

Process P4

Waiting ✔ **Answer:** Waiting

Process P5

Terminated ✔ **Answer:** Terminated

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Question 4

0.0/5.0 points (graded)

Question 4 : 5 marks

In a single core system, a concurrent execution has following scenarios: We have 10 threads in the system (0 through 9). Threads have variable time slots. First thread (0) has a slot duration of T0 unit time the remaining thread's time slots are based on the following rule, if thread number%3=0, then slot duration for that thread will be 1/4th of the immediate previous thread's slot duration, else the slot duration will be two times than the immediate previous thread's slot duration. For example, if thread number 1 has a slot duration of 2T0 unit time then thread number 2 will have a slot duration of 4T0 unit time and thread number 3 will have T0. Calculate the total execution time if each of the threads gets 3 rounds to finish their complete execution. Remember that for each round time slot duration starts with T0. (Type your answer in the format: aT0)

22 ✖ **Answer:** yueydfgsdasfadgdsgfg **or** 66T0 **or** 3*22T0 **or** 3*22*T0 **or** 66*T0 **or** T0*66 **or** T066 **or** T0*3*22 **or** T03*22

If T0=10 ms , calcualte the total execution time

✖ **Answer:** 660

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Question 5a

5.0/5.0 points (graded)

Marks for this question: **5 marks**

Consider the information of following five processes -

Process	Arrival time	Burst time
P1	0	12
P2	5	1
P3	1	11
P4	8	9
P5	2	11

Now apply the **Round Robin** scheduling algorithm with time Quantime **q=3** on the above given data.

*Insert the **Execution Ending Time of Process P2** (only integer value, no decilam points. For example if your ans is 25.8 or 25.1 , insert 25 only)*

13 ✔

*Insert the **Execution Ending Time of Process P5** (only integer value, no decilam points. For example if your ans is 25.8 or 25.1 , insert 25 only)*

44 ✔

*Insert **Avarage Response Time** (only integer value, no decilam points. For example if your ans is 25.8 or 25.1 , insert 25 only)*

4 ✔

*Insert **Avarage Waiting Time** (only integer value, no decilam points. For example if your ans is 25.8 or 25.1, insert 25 only)*

23 ✔

*Insert the **Number of context switches** for execution of all the processes. (only integer value, no decilam points. For example if your ans is 25.8 or 25.1 , insert 25 only)*

15 ✔

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Question 5b

3.0/5.0 points (graded)

Marks for this question: **5 marks**

Consider the information of following five processes -

Process	Arrival time	Burst time
P1	0	1
P2	1	5
P3	1	11
P4	3	9
P5	2	8

Now apply the **Preemtive Shortest Remaining Job First(SRTF or SRJF)** scheduling alogorithm on the above given data.

*Insert the **Execution Starting Time of Process P2** (only integer value, no decilam points. For example if your ans is 25.8 or 25.1 , insert 25 only)*

1 ✔ **Answer:** 1

*Insert the **Execution Starting Time of Process P5** (only integer value, no decilam points. For example if your ans is 25.8 or 25.1 , insert 25 only)*

6 ✔ **Answer:** 6

*Insert **Response Time of Process P3** (only integer value, no decilam points. For example if your ans is 25.8 or 25.1 , insert 25 only)*

12 ✖ **Answer:** 22

*Insert **Avarage TurnAround Time** (only integer value, no decilam points. For example if your ans is 25.8 or 25.1, insert 25 only)*

14 ✔ **Answer:** 14

*Insert the **Number of context switches** for execution of all the processes. (only integer value, no decilam points. For example if your ans is 25.8 or 25.1 , insert 25 only)*

6 ✖ **Answer:** 4

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