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14SCS14

First Semester M.Tech Degree Examination, Dec.2014/Jan.2015
Multicore Architecture and Programming

Time: 3 hrs. Max. Marks: 100

Note: ***Answer any FIVE full questions.***

1 a. What are the motivations for concurrency in software? Discuss the reasons for concurrency in software is important. **(05 Marks)**

b. Describe the Flyxn's taxonomy and classification. **(08 Marks)**

c. What is Virtualization? Describe the different virtualizations used in modern computers. **(07 Marks)**

2 a. Describe the different decomposition techniques with example. List the implications of decomposition techniques. **(10 Marks)**

b. What is error diffusion? Explain the steps involved in error diffusion algorithm with example. **(10 Marks)**

3 a. What are the principles used to perform synchronization? Explain them with necessity pseudocodes. **(10 Marks)**

b. Describe the different models of message passing in the context of multi threading environment. **(06 Marks)**

c. Define the following : i) Fence ii) Barrier. **(04 Marks)**

4 a. Describe the different parameters for the basic thread creation mechanism Create Thread ( ) provided by the Microsoft. **(10 Marks)**

b. Write a code for communicating between threads by using windows events. **(10 Marks)**

5 a. Write a note on :
i) Thread priority and ii) Processor affinity. **(10 Marks)**

b. Write a program to obtain the basic processes data from windows. **(05 Marks)**

c. Write a program to create fibers that print an identifying message to the console. **(05 Marks)**

6 a. What are the challenges in threading a loop? Explain any four. **(08 Marks)**

b. What is the need of minimizing threading overhead? List the measured costs of a set of open MP constructs on a 4 – way intel xeon processor based system. **(07 Marks)**

c. With diagram, explain the Intel Task queuing extension to open MP. **(05 Marks)**

7 a. What are the difficulties in debugging an Open MP program? Mention the guidelines for debugging Open MP program. **(06 Marks)**

b. In parallel programming model too many threads can degrade the performance. Discuss any five. **(10 Marks)**

c. What are the four conditions that may lead the dead lock to occur? **(04 Marks)**

8 a. Discuss the reasons for locks to be heavily contented. Explain the solutions for heavily contended locks. **(06 Marks)**

b. Describe any two issues of multi core processors suppose to take care about memory. **(10 Marks)**

c. Discuss the two rules that cover typical programming on IA 32 architecture. **(04 Marks)**

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