Week 7 : Assignment 7

The due date for submitting this assignment has passed.

Due on 2021-09-15, 23:59 IST.

As per our records you have not submitted this assignment.

1) In the context of multiprocessors, UMA stands for *1 point*

a. Union Memory Access
b. Uniform Memory Access
c. Union Multiprocessor Access
d. Uniform Multiprocessor Access
e. United Memory Access

a. b. c. d. e.

No, the answer is incorrect.
Score: 0
Accepted Answers:
b.

2) Which of the following are disadvantages of message passing communication? *1 point*

a. Hardware for communication and synchronization are much simpler
b. Precise identification of the processes with which communication is to occur.
c. Explicit communication
d. Explicit calls to operating system
e. Implicit synchronization

a. b. c. d. e.

No, the answer is incorrect.
Score: 0
Accepted Answers:
b.
d.

3) Which one of the following algorithms is NOT used for static task allocation in multi-processor systems? *1 point*

a. Utilization Balancing Algorithm
b. Next-fit algorithm for RMA
c. Buddy Algorithm
d. Bin packing algorithm for EDF

a. b. c. d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
c.

4) In which of the following task allocation algorithms, the tasks with similar utilization are allocated to the same processor? *1 point*

a. Utilization Balancing Algorithm
b. Buddy Algorithm
c. Next-fit algorithm for RMA
d. Bin packing algorithm for EDF

a. b. c. d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
c.

5) In Next fit algorithm for RMA, suppose the tasks are to be divided into 4 classes. Then, the utilization grid for the different classes can be found as: *1 point*

a. {Class 1: (0.41, 1), Class 2: (0.26, 0.41), Class 3: (0.19, 0.26), Class 4: (0, 0.19)}
b. {Class 1: (0.89, 1), Class 2: (0.59, 0.89), Class 3: (0.49, 0.59), Class 4: (0, 0.49)}
c. {Class 1: (0.89, 1), Class 2: (0.79, 0.89), Class 3: (0.59, 0.79), Class 4: (0, 0.59)}
d. {Class 1: (0.91, 1), Class 2: (0.79, 0.91), Class 3: (0.69, 0.79), Class 4: (0, 0.69)}

a. b. c. d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
a.

6) Simulation studies show that first-fit random algorithm requires at most ------- times the optimum number of processors. *1 point*

a. 1.70
b. 2.34
c. 1.22
d. 1.34

a. b. c. d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
a.

7) Which one of the following bin-packing algorithms allocates a new task to the non-empty bin with lowest index? *1 point*

a. First Fit Algorithm
b. Next Fit Algorithm
c. Best Fit Algorithm
d. Worst Fit Algorithm

a. b. c. d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
a.

8) In the context of clock synchronization, UTC stands for: *1 point*

a. Universal Time Constraints
b. Universal Coordinated Time
c. Universal Temperature Constraints
d. Universal Time Communication

a. b. c. d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
b.

9) Suppose we need to synchronize six distributed clocks, using the centralized synchronization scheme. Assume that, the rate of drift between any two clocks is restricted to $\rho = 5 \times 10^{-6}$. The maximum drift between any two clocks is to be restricted to ϵ = 1mSec. Determine the message overhead per hour. *1 point*

a. 80
b. 90
c. 100
d. 180

a. b. c. d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
d.

10) Suppose in a distributed real-time system, there are 10 clocks. In order to approximately synchronize the good clocks, at most how many clocks can be Bad or Byzantine? *1 point*

a. 1
b. 2
c. 3
d. 4
e. 5

a. b. c. d. e.

No, the answer is incorrect.
Score: 0
Accepted Answers:
c.

11) Which of the following is false regarding the utilization-balancing algorithm for task allocation in multiprocessors? *1 point*

a. In the resultant allocation, the typical utilization of each processor is different from the average utilization of the processors
b. It is a greedy algorithm
c. It is a non-optimal algorithm
d. It is typically used when the tasks assigned to the individual processors are to be scheduled using rate monotonic schedulers
e. It is typically used when the tasks assigned to the individual processors are to be scheduled using earliest deadline first (EDF) scheduler

a. b. c. d. e.

No, the answer is incorrect.
Score: 0
Accepted Answers:
d.

12) Assume that six periodic hard real-time tasks are to be scheduled on a four-core processor. The processor utilization of these tasks are 0.1, 0.2, 0.25, 0.3, 0.35, 0.6 respectively. Allocate the tasks to processors using the next-fit algorithm. Assume that the individual processors are to be scheduled using RMA algorithms. What would be the utilization of the four processors after the allocation? *1 point*

a. 0.45, 0.45, 0.45, 0.45
b. 0.1, 0.45, 0.65, 0.6
c. 0.35, 0.45, 0.45, 0.55
d. 0.35, 0.4, 0.45, 0.6
e. 0.14,0.35,0.25,0.2

a. b. c. d. e.

No, the answer is incorrect.
Score: 0
Accepted Answers:
b.