Capstone Course Component

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* Required

Capstone Course Test

The minimum frame size required for a CSMA/CD based computer network running at 1 Gbps on a 200 m cable with a link speed of 2 × 10^8 m/s is * 1 point

- (●) 125 bytes
- ( ) 500 bytes
- ( ) 250 bytes
- ( ) 100 bytes

An operating system contain 3 user processes each requiring 2 units of resource R. The minimum number of units of R such that no deadlocks will ever arise is * 1 point

- ( ) 3
- (●) 4
- ( ) 5
- ( ) 6

Consider the following sequence of operations on an empty stack. * 1 point
Push(54);push(52);pop();push(55);push(62);s=pop();

Consider the following sequence of operations on an empty queue.
enqueue(21);enqueue(24);dequeue();enqueue(28);enqueue(32);q=dequeue(
);

The value of s+q is _____.

- (●) 86
- ( ) 68
- ( ) 26
- ( ) 32

Consider the following statements about process state transitions for a system using preemptive scheduling. * 1 point

I. A running process can move to ready state.

II. A ready process can move to ready state.

III. A blocked process can move to running state.

IV. A blocked process can move to ready state.

Which of the above statements are TRUE?

- ( ) II and III only
- ( ) I, II and III only
- (●) I, II and IV only
- ( ) I, II, III and IV

In which one of the following page replacement policies, Belady's anomaly may occur? * 1 point

- (●) FIFO
- ( ) Optimal
- ( ) LRU
- ( ) MRU

The address resolution protocol (ARP) is used for: * 1 point

- ( ) Finding the IP address from the DNS
- ( ) Finding the IP address of the default gateway
- ( ) Finding the IP address that corresponds to a MAC address
- (●) Finding the MAC address that corresponds to an IP address

Consider a virtual memory system with FIFO page replacement policy. For an arbitrary page access pattern, increasing the number of page frames in main memory will__ * 1 point

- ( ) always decrease the number of page faults
- ( ) always increase the number of page faults
- (●) sometimes increase the number of page faults
- ( ) never affect the number of page faults

How many distinct binary search trees can be created out of 4 distinct keys ? * 1 point

- [ ] 5
- [x] 14
- [ ] 24
- [ ] 42

The minimum number of interchanges needed to convert the array 89, 19, 40, 17, 12, 10, 2, 5, 7, 11, 6, 9, 70 into a heap with maximum element at the root is * 1 point

- [ ] 0
- [ ] 1
- [x] 2
- [ ] 3

In the following pairs of OSI protocol layer/sub-layer and its functionality, the INCORRECT pair is * 1 point

- [ ] Network layer and Routing
- [x] Data Link Layer and Bit synchronization
- [ ] Transport layer and End-to-end process communication
- [ ] Medium Access Control sub-layer and Channel sharing

In the IPv4 addressing format, the number of networks allowed under Class C addresses is * 1 point

- ○ 2^14
- ○ 2^7
- ○ 2^21
- ◉ 2^24

Which scheduling policy is most suitable for a time-shared operating system ? * 1 point

- ○ Shortest Job First
- ◉ Round Robin
- ○ First Come First Serve
- ○ Elevator

A Critical section is a program segment * 1 point

- ○ which should run in a certain specified amount of time
- ○ which avoids deadlocks
- ◉ where shared resources are accessed
- ○ which must be enclosed by a pair of semaphore operations, P and V

The maximum window size for data transmission using the *selective reject protocol* with n-bit frame sequence numbers is: * 1 point

- (●) 2^(n-1)
- ( ) 2^n
- ( ) 2^(n) -1
- ( ) 2^(n+1)

Consider a simple undirected graph of 10 vertices. If the graph is disconnected, then the maximum number of edges it can have is _____ * 1 point

- ( ) 30
- (●) 36
- ( ) 10
- ( ) 45

Suppose that the stop-and-wait protocol is used on a link with a bit rate of 64 kilobits per second and 20 milliseconds propagation delay. Assume that the transmission time for the acknowledgment and the processing time at nodes are negligible. Then the minimum frame size in bytes to achieve a link utilization of at least 50% is _____. * 1 point

- ( ) 160
- ( ) 640
- (●) 320
- ( ) 220

In OSI model, which of the following layer provides End -to end communication? * 1 point

- [ ] Data link
- [ ] Network
- [x] transport
- [ ] Session

Which of the following protocol pairs can be used to send and retrieve e-mails (in that order)? * 1 point

- [ ] IMAP, POP3
- [x] SMTP, POP3
- [ ] SMTP, MIME
- [ ] IMAP, SMTP

Assuming int is of 4bytes, what is the size of int arr[15];? * 1 point

- [ ] 15
- [ ] 19
- [ ] 11
- [x] 60

What is the default subnet mask for a class C network? * 1 point

- ○ 255.255.255.255
- ○ 255.0.0.0
- ○ 255.255.0.0
- ◉ 255.255.255.0

Level order traversal of a rooted tree can be done by starting from the root and performing * 1 point

- ○ preorder traversal
- ○ inorder traversal
- ○ depth first search
- ◉ breadth first search

Which of the following statements is FALSE regarding a bridge ? * 1 point

- ○ Bridge is a layer 2 device
- ○ Bridge reduces collision domain
- ○ Bridge is used to connect two or more LAN segments
- ◉ Bridge reduces broadcast domain.

Identify the correct sequence in which the following packets are transmitted on the network by a host when a browser requests a webpage from a remote server, assuming that the host has just been restarted * 1 point

- ○ HTTP GET request, DNS query, TCP SYN
- ○ DNS query, HTTP GET request, TCP SYN
- ◉ DNS query, TCP SYN, HTTP GET request
- ○ TCP SYN, DNS query, HTTP GET request

A binary search tree is generated by inserting in order the following integers : 50, 15, 62, 5, 20, 58, 91, 3, 8, 37, 60, 24 The number of nodes in the left subtree and right subtree of the root respectively is * 1 point

- ○ (4, 7)
- ◉ (7, 4)
- ○ (8, 3)
- ○ (3, 8)

Consider the virtual page reference string 1, 2, 3, 2, 4, 1, 3, 2, 4, 1 On a demand paged virtual memory system running on a computer system that main memory size of 3 pages frames which are initially empty. The number of page faults under the corresponding page replacements policy for FIFO is ___ * 1 point

- ◉ 6
- ○ 5
- ○ 4
- ○ 3

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