

Exam 1

Monday, February 23, 2004

Rules:

The instructor is traveling and this exam is being proctored by TA's. Therefore, questions will not be permitted. If you have a complaint or a concern about a question please make note of the issue on the exam. You may use the back of a page to explain yourself. I will look over all complaints about questions and if I am convinced that a question is unfair I will remove it from the exam.

Please only look at your own test. I am asking the TA's to monitor (but not enforce) this rule. The TA's are being asked to report on any cheating that they might see. I will be in charge of enforcing this rule.

Use a separate sheet of paper to cover your answers. Turn in ALL pages of the exam (including all figures).

No books, notes, or computers may be used when taking the exam.

The exam is over at 10:50 or 12:20 sharp.

On the multiple choice questions circle the one best answer.

1. Which of the following is not a challenge normally associated with the construction of a distributed system?
 - a. Heterogeneity of components
 - b. Openness
 - c. Processor Speed
 - d. Security
 - e. Scalability

2. Failure Transparency is best described as
 - a. not permitting any failures to occur
 - b. the concealment of faults
 - c. the hiding of the location of the failure
 - d. the hiding of the failure type.
 - e. a failure in the transparency layer of the TCP/IP protocol

3. Which of the following illustrates the openness of the World Wide Web?
 - a. A browser, written in C++, can communicate with a server written in Java.
 - b. A URL may point to any resource on the web.
 - c. The WWW has wide scale availability.
 - d. HTML, HTTP and TCP/IP are published standards.
 - e. The web is open to eavesdropping.

4. Which of the following is considered a Byzantine failure?
 - a. A process halts and its halted state is detectable by other processes
 - b. A message is placed in an outgoing buffer but is never placed in an incoming buffer.
 - c. A process begins to execute random steps.
 - d. The system detects a communications failure.
 - e. A message is read from an incoming buffer after being read from a communications channel.

5. Suppose process A places a Lamport timestamp of 33 on a message before it is sent. When the message arrives at process B, process B's local Lamport clock has the value 89. Which of the following activities is carried out by process B?
 - a. It's local clock is changed to 34.
 - b. It's local clock is changed to 33.
 - c. It makes a request on process A to update process A's clock.
 - d. It increments its own clock to 90.
 - e. It decrements its own clock to 88.

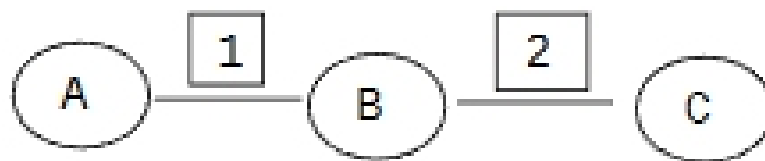
6. Suppose process A places a Lamport timestamp of 33 on a message before it is sent. When the message arrives at process B, process B's local Lamport clock has the value 29. Which of the following activities is carried out by process B?
 - a. It's local clock is changed to 34.
 - b. It's local clock is changed to 32.
 - c. It makes a request on process A to update process A's clock.
 - d. It increments its own clock to 30.
 - e. It decrements its own clock to 28.

7. Which of the following is in the correct order?
 - a. Application message, IP header, TCP header, Ethernet Header
 - b. Application message, Ethernet Header, IP header, TCP Header
 - c. Application message, TCP header, UDP header, Ethernet Header
 - d. UDP Message, IP header, TCP header, Ethernet Header
 - e. Application message, TCP header, IP header, Ethernet Header

8. Which of the following is in the correct order?
 - a. HTTP Request, IP header, TCP header, Ethernet Header
 - b. Http Request, Ethernet Header, IP header, TCP Header
 - c. HTTP Request, TCP header, UDP header, Ethernet Header
 - d. HTTP Response, IP header, TCP header, Ethernet Header
 - e. HTTP Response, TCP header, IP header, Ethernet Header

9. In general, routers
- Examine each application level message
 - Keep messages flowing between networks rather than within networks
 - Keep messages flowing within networks rather than between networks
 - Are small computers connected to each desktop machine
 - Do not adapt to changes in network state

10. Suppose node B in the following graph executes an RIP send operation (see Figure 1) to nodes A and C on links 1 and 2. Fill in the resulting routing tables for nodes A and C. That is, fill in the 6 blanks below.



| A | | |
|-------|-----|----|
| To | On | In |
| ===== | | |
| A | Loc | 0 |
| B | 1 | 1 |
| -- | -- | -- |

| B | | |
|-------|-----|----|
| To | On | In |
| ===== | | |
| B | Loc | 0 |
| A | 1 | 1 |
| C | 2 | 1 |

| C | | |
|-------|-----|----|
| To | On | In |
| ===== | | |
| C | Loc | 0 |
| B | 2 | 1 |
| -- | -- | -- |

11. This is a continuation of question 10. Suppose that (after the updates are made from question 10) node B now discovers that the link to node A is broken. Node B sends a message to Node C and tables are updated again. What do the tables of Nodes B and C look like after this update? Fill in these tables in the space provided below.

| Node B | | |
|--------|----|----|
| To | On | In |
| ===== | | |

| Node C | | |
|--------|----|----|
| To | On | In |
| ===== | | |

12. Which of the following is true of the server in Figure 2?
- The server will handle multiple requests before terminating.
 - The server sends HTML code back to a visiting browser.
 - The server sends an HTTP response back to a visiting browser.
 - This server sends no data back to a visiting browser.
 - There is no server side output from this program. That is, no data is sent to the console screen when a browser visits.