CS 640 Introduction to Computer Networks

Quiz 4

Write your name on the exam. Write something for every question. Students who do not write something for everything lose out over students who write down wild guesses. You will get some points if you attempt a solution but nothing for a blank sheet of paper. Write something down, even wild guesses. Problems take long to read but can be answered concisely.

Question	Maximum	Score
1	12	
2	8	
Total	20	

Question 1 – defining terms

Explain concisely the difference between the following pairs of terms

a) SOAP vs. REST

SOAP request are in XML, REST requests are a sequence of name-value pairs. SOAP requests are more expressive, but impose more overhead.

b) AJAX asynchronous requests vs. ASP.NET postback

As a result of an ASP.NET postback, the server re-builds the entire page and sends it back to the client, the response to an AJAX request is typically much smaller and it results in only a portion of the page being rebuilt through DOM manipulation at the client.

c) Tagged data representation vs. untagged data representation

When an RPC framework uses tagged representation, information about the type of the parameters/results is included in the messages whereas with untagged representations only the values are sent.

d) Lossy compression vs. lossless compression

Lossless compression allows the receiver to reconstruct the exact byte sequence that was compressed; lossy compression, used for images and sounds, allows only the reconstruction of a similar data (similarity being defined by the human senses), but the compressed data is smaller.

e) I frames vs. B frames (for MPEG)

I frames are larger but can be rendered independently whereas rendering B frames requires information from nearby I frames or P frames.

f) Error detection vs. error correction

An error detection algorithm only notifies the receiver about the existence of some errors, an error correction algorithm also fixes some errors.

Question 2 – CRC

A data link layer protocol uses the CRCs for error detection. Its frames contain fixed size 2 byte messages followed by a 4 bit CRC computed using the generator 10001.

a) What will the checksum be for a frame with payload 0010011011011001?

0000

b) Will the CRC check detect if the last bit in the frame gets flipped?

Yes.

c) Will the CRC check detect if the first and seventh bit get flipped?

Yes.

d) Will the CRC check detect if the third, fourth, seventh, and eighth bit get flipped?

No.