

Week #12: Networking and HTTP
Exam Review Question
CS 241: Fall 2013

These questions are provided to you to help you study material covered in CS 241 that may appear on the final exam. These exact questions may or may not appear on the final exam, but the topics they cover will almost certainly be on the final exam.

1. List and explain three features that are provided by TCP that are not provided by UDP.
2. Why does HTTP run on TCP? What could happen if HTTP ran on UDP?
3. Explain why `strlen()` is not guaranteed to work when reading the body of an HTTP packet? Why is it safe to use when you are reading the header?
4. What are the two components to an HTTP packet? What is the network frame of each of these components in HTTP?
5. You develop a new web browser that uses a new “pre-fetch” technology. This “pre-fetch” technology will look at a web page as soon as it received by your web browser and will request the HTML and images for all off the pages linked off of the main page.

A user of your web browser visits **example.com**, which contains an HTML page that has 3 images (`` tag, so the image needs to be fetched) and also contains 4 links to other HTML pages. Each of the four linked pages contains 2 images (`` tags).

- a. Using plain HTTP/1.0, how many HTTP requests will need to be sent to the server in order to load the main page of **example.com** without “pre-fetch”?
- b. Using plain HTTP/1.0, how many HTTP requests will need to be sent to the server in order to load the main page of **example.com** with “pre-fetch”?
- c. In terms of RTTs, how many RTTs will be needed if you had only one connection to the web server and “Connection: keep-alive” is enabled?
- d. In terms of RTTs, how many RTTs will be needed if you had four parallel connections to the web server and “Connection: keep-alive” is enabled?