Quiz 1 Review (Week 10)

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Agenda

Topics you asked to have covered:

- Pointer-based Data Structures
  - We'll do a queue and talk about how to change it for a stack, as well as how this relates to linked lists, hash tables, and tries.
- Structure of the Internet
- PHP and JS: what do we need to know?
- Asynchronous Practice

Rapid Fire

Huffman Coding: not covered.

sscanf & scanf – what questions do you have?

Anything you'd like to add to the agenda?

Topics

- chmod + permissions + Server Responses (Example: 2014 7 -10)

- PSET 6 Request Parsing

Internet

- Terms:
  - DNS
  - HTML
  - HTTP & HTTPS
  - IP address
  - port
  - router
  - TCP
- What happens when I type in https:// samuelgreen.org/cs50_2015 into Google Chrome's url bar?

Internet (answer)

1. <u>IP Address</u> lookup (via cache or <u>DNS server</u>)

2. <u>HTTP</u> requested whose body is encrypted with <u>HTTPS</u> to the <u>IP address</u>.

3. The request is sent to a specific port using <u>TCP</u>, which will handle dropped packages.

4. <u>Routers</u> in the network are intermediaries.

5. The response is structured in <u>HTML</u>.

Queue

- Write a type definition that we could use for a node in a queue.
- The queue should be capable of holding an arbitrary number of nodes, and should have constant time push and pop.
- How could you change it into a stack?
- How about a structure that can be a queue and a stack at the same time?

Hash Tables and Tries

- When would be use them?
- What's the difference between a tree and a trie?
- What're the tradeoffs between separate chaining and linear probing?

HTML/JQuery/Ajax Practice

- Write an html page that displays a button.
- Give that button an ID.
- Write JS that listens for a click on the button, and gets your IP address by querying http://ip.jsontest.com/
- Alert the user of the result.
- Alert the user if there's a failure.

PHP example

- Write a php controller that responds to a request with a json object with the key "num" and a random number.

- The function to generate a random number in php is rand()

Bigger Example: PHP and JS

- Imagine you wanted to write a webpage that gets a user's name and phone number in a GET request, stores the name and phone number to a database, and then responds to that information by returning the name and phone number inside a json object.

- What pieces would you need? What would you put on the server side (in php)? What would you put in the JavaScript side? Why?

- Write a webform and a some JS to validate input.

Other questions or topics?