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Quiz 1
Long Form

1.1 Describe in your own words how the web works! In as much detail as you can, describe **all** the sequences of events that take place from the time a user presses Enter on the keyboard after typing in www.rpi.edu into the address bar to when the webpage is finished rendering in the browser. Specifically, tell me in great detail the **two protocols** we discussed in class in action. (8 points)

Step 1 – Send a Request to Resolve a Domain Name
When you type www.rpi.edu into a browser, the browser asks for an IP address linked to the URL
Step 2 – Search for an IP Locally
Before checking outside the computer it first checks the local DNS cache database to see if the IP you are looking for is already registered.
Step 3 – Contact ISP and its Recursive DNS Server to Resolve a Domain Name
If the IP isn't on the local machine it looks at the Internet Service Provider to find the proper IP and return it back to the computer.
Step 4 – Ask Outside DNS Servers to Provide an IP Address
If the ISP DNS Server does not have the IP it checks other outside servers until the proper IP is found and returned to the computer
Step 5 – Receive the IP Address
Once the IP is located and sent back to the computer it will log the IP into the DNS cache and the browser will then be able to connect to the IP, meaning the website is now loaded.
Step 6 – Send HTTP
The client sends the HTTP GET request to the web server with all of the information needed. Then the client waits for the server to respond to the request.
Step 7 – Gets the data
The web server first processes the request, then finds the resource, and sends the response to the Client. The Client receives the packets from the web server, which contains the HTTP Response headers and content.
Step 8 – Show data
Once the browser has all of the data that it needs from the server it will display the page that was requested will all the extra data it needs such as the CSS or JS that goes along with it.

1.2 Explain what is meant by a Universal Interface in a REST API. (5 points)

The Universal Interface in a REST API, which can also be known as "Discoverability" is the standard that is set to make sure that the client can understand the entire API simply by connecting to it and getting the header from the HTTP Request.

1.3 Explain how your browser chooses which CSS rule to apply to a tag in the case where there are multiple rules that could apply. (3 points)

The way that the browser chooses which CSS rule to apply is called Specificity. There are 4 levels to it, being, Level 1: Inline, Level 2: ID's, Level 3: Classes, attributes and pseudo-classes, and Level 4: Elements and pseudo-elements. They go in an inverse order meaning that Level 4 will always have more power than Level 3 and 3 more than 2 and so on. This means that if there is a rule in Level 2 for a tag but Level 4 has a different rule for that same tag Level 4 will win. On the off chance that there is a tie then the latest rule that is written will win over all.

1.4 What command would you use to change the ownership of a file or directory on a Unix machine (such as your Azure VM)? Show me a complete command invocation to make a directory named `/var/www/html` be owned by a user named `callab5`. (4 points)

The command that you use to change ownership of a file or directory is called "chown".
The command syntax goes as follows: chown [Options] User[:Group] File(s)
To change all of the sub-directories in the path we need to add the -R option
This means to change the owner of /var/www/html to callab5 the command would be:
sudo chown -R callab5 /var/www/html