**Meena Mall**

**Part 1 & Part 3**

**Quiz 1**

**1.1 Describe in your own words how the web works! In as much detail as possible, describe all the sequences of events that take place from when a user presses Enter on the keyboard after typing** [**www.rpi.edu**](http://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)**

The World Wide Web (WWW) works through an articulated system of computers and servers that work together to host websites and web pages. When a user enters a URL or clicks a hyperlink, their web browser sends a request to a domain name server (DNS). This will translate the web address into an IP address. Once the IP address is understood, the browser will connect to the specific web server, which will then send the requested web page's data back to the user's device to be displayed. In this class, we talked about two protocols, the DNS and HTTP protocols. For the Domain Name System (DNS) which is where your browser needs to find the corresponding IP address of the web server hosting that site and translate the domain name into an IP address. There is also the Hypertext Transfer Protocol (HTTP which is a protocol that focuses on how data is transferred between your browser and the web server. When you enter a URL and hit "Enter," your browser uses this HTTP to send a request to the web server for the specific web page and will respond with the data and be displayed. These two protocols are fundamental to the process of browsing the World Wide Web.

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

A universal interface in a REST API refers to the interaction between a client and its server. It is a common set of rules which everyone agrees to follow. A REST API is a specific type of API that follows certain guidelines. With this, computer programs can talk to each other over servers and the internet and help ensure that all of the web services are accessible and user-friendly. It also focuses on security and workload management. A REST API also follows guidelines such as UI, Client service decoupling, and Representational Transfer. REST APIS are also characterized a by resources, client server communications and standard HTTO methods such as GET, POST, PUT and DELETE. The uniform interface helps ensure that all web services are proper and being displayed.

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

In this case, the browser chooses which CSS rule to apply to a tag where multiple rules could apply is called cascading order. When multiple CSS rules apply to the same element, this order is used to determine what to do first. The cascading order is a specific set of rules that browsers follow to prioritize. The browser considers these factors in order of importance: Origin and importance, Specificity, Order in the file, and Inheritance. The browser will determine its order after determining the cascade origin and its importance. The order of precedence that the browser uses to determine which CSS to apply is Inline styles, ID selectors, Class selectors, and Element selectors. By following this cascading order, browsers can determine the most specific, important, and relevant CSS rule to apply to a particular HTML element. This will ensure that the appropriate styles are shown on the webpage.

**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 and a group also named callab5. (4 points)**

A command that would be used to change the ownership of a file or directory on a Unix Machine such as my Azure VM would be the chown command. The chown command is used to help with changing the ownership of both a file and a directory. There are different ways for the syntax of the chown command. For this case, you will start with using chown and sudo - sudo chown -R username: group directory, in which sudo is used to help run the command. Doing this will help change the township of both the ownership and the group. As for making a directory named /var/www/html to be owned by callab5 and its group being callab5, you will use this command: sudo chown – R callab5: callab5 /var/www/html. Doing this will change the ownership/user to callab5 and its group to callab5. So, now the ownership of the /var/www/html directory has callab5 as its user and its group as callab5.

**Part 3:**

**Part 3 (15 points)**

**Choose one of the attacks you learned about in the Google Gruyere activity and walk me through how and why that attack works, and what you can do to mitigate such an attack in your term project, explaining the mitigation and why it works to prevent the attack. You may use code snippets or pseudo-code to help explain things.**

### When it came to the Google Gruyere activity, one aspect/attack that I did that stood out to me was the XSSI Challenge where you can figure out a way to read someone else’s private snippet using XSSI. In this case, anyone (attackers) can figure out a way to sneak into someone's private information that is non a website and can make it their website from which they stole from that person. On the Google gruyere website, it explains that this happens because browsers will let you use scripts from various websites being used anywhere and you can use that script and input it into an attacker's webpage which will let them see all of your private data and information. To mitigate this attack, I can use tokens to ensure that my private information is not being used for other pages that are unauthorized. I can also use POST requests for data as well on my term project to help with this issue, which we learned in class. Doing these actions, will help my team and I be safe with our term project keep all our data safe, and not allow attackers to see private information through XSSI attacks.