Unit 1 Critical Thinking Questions

1. **Identify at least two advantages and two disadvantages of client-side processing. One disadvantage must be an example of a security issue that client-side processing introduces.**

    Two advantages of client-side is that it can perform actions quickly without having to go to the server, and that it allows for more interactivity. Two disadvantages are that if the user's browser is out of date, the website will not display correctly, and that some browsers will disable the active content and tell the user that they may be harmful.

2. **Consider this example of HTML code. Can you identify three mistakes in it that need to be fixed so that it will run properly? Explain why these changes are important.**

    In the example of HTML code, the first mistake is that the person did not correctly use the <!DOCTYPE> tag. It doesn't specify what kind of document it is. Since this is an HTML document, the correct use of it would be <!DOCTYPE HTML>. This is important because then the browser will know that the document is HTML and will tell the browser to try to interpret the HTML document by keeping as closely as possible to the W3C's HTML5 specification. The second mistake is that the opening body tag is incorrectly typed. It should not be typed as (body), instead it should be typed as <body>. This is important because if the body tag is incorrectly typed, then nothing inside of the body tags will show. This is because of the fact that theoretically there is no opening body tag, as HTML does not recognize (body) as the opening body tag. The third and final mistake is that there is no link included within the opening and closing button tags. Without a link, you won't be able to go anywhere when you click on the button. To fix this problem you would need to type this instead <button>Hello!</button>.

3. **Net neutrality, or the idea that all internet traffic should be treated equally is an ongoing debate. What challenges do internet users face if big businesses like Google, Amazon, or Netflix use their financial power to influence internet access to their advantage?**

    Internet users face the challenge that they may have to pay to do specific things on the internet. Net neutrality is the principle that Internet service providers treat all forms of internet communications equally, and not treat them separately. If net neutrality didn't exist companies like Google and Amazon, which pretty much dominate the internet, could charge users in tiers to be able to do different activities. For example, search engines would be one tier and news sites would be a separate one. With this format, you would have to pay for each category separately. This would be a main problem for the people who can barely afford internet alone. If that were the case, then they couldn't afford to do much on the internet. Below is an example of the tier system.

4. **Explain how the client-server model makes it possible for a web page to be accessed by a user.**

The client-server model is a distributed application structure that partitions tasks or workloads between the providers of a resource or service, called servers, and service requesters, called clients. In short terms, the client is the device requesting information and the server provides the information. The internet is what allows information to go back and forth between the server and the client, it's basically like the guy in the middle of two people helping to move things from one side to the other. When going to a webpage the client makes a request by typing in a URL. When you hit enter on the URL bar, the client makes a request to the server of that website, and the server of that site then delivers the content of the webpage to the client. This is what happens while the webpage is "loading." The code that is responsible for what you see once the page is loaded is called client-side code.

5. **You are building an interactive tool for students to share, comment on, and critique and publish their solutions of advanced calculus problems. Describe how you would use at least two of the following mark-up languages: Markdown, LaTeX, MathML, Schema, X3D.**

Markup would be useful for a collaborative project such as this, because Markup is often used for writing messages in online discussion forums. A discussion forum would be useful as this would allow the ability for the students to actually share or comment on something. **MathML** would also be useful for this project because it gives the user the ability to represent mathematics on webpages and facilitate the transfer and reuse of mathematical content between applications.