Web Systems Quiz 1

1. Describe how HTML fits into the broader ecosystem of a website. Contrast the fundamental role of HTML with the primary roles of CSS and JavaScript. (5 points)

HTML provides semantic meaning to a website. We use various tags to make the information we try to display have more meaning and have it be more legible to the users. HTML is for formatting data while CSS is used for styling and making the website more appealing to the eye through color and layout. JavaScript adds more interactivity for the user such as search functions and animations. The more in-depth interactions on websites tend to use JavaScript.

1. Explain the difference between HTML structure and HTML semantics. Why is writing semantic HTML considered a best practice? Provide one example of a semantic HTML element and one example of a non-semantic element. (10 points)

HTML structure focuses on formatting and layout but does not convey much on information on the data contained in the tag one example of a structure tag is <div>. HTML semantics conveys information on what the purpose of the content is. The most common tags for this are likely the <header> and <footer> tags. Using semantics is best practice since it retains readability for when the code is read. Simply having a <div> tag does not inform someone of why the piece of code is there, however adding in semantic tags can help with it. A section named <footer> conveys exactly why the section of code is there, to have the basic information of the page like contacts, copyrights, etc. HTML semantics can also aid in accessibility for people who use screen readers.

1. What is the "three-tier model" (also known as three-tier architecture) in web systems? Briefly describe the function and responsibility of each of the three tiers. (15 points)

The three-tier architecture refers to the common organization websites use where each tier focuses on its own function. The presentation tier focuses on user interface or presenting information. This layer consists of HTML, CSS, and JavaScript. The logic tier focuses on processing data. This includes adding and deleting data. This layer can use Java, PHP, and Python. In order to communicate with the data tier, it utilizes API calls. The last tier, data, focuses on storing and retrieving data. This is the backend of the website where the information is stored and managed. MySQL, MariaDb, and MongoDB are all a part of this tier

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

Universal Interface in a REST API means that **every part of a REST system like clients, servers, and resources** interact in a **consistent way. It uses four principles to help achieve its goal. First is identifying resources with URIs, then manipulation of resources with representations usually in JSON or another format. Followed by descriptive messages to explain how to process the information including metadata and content type. The last principle is** hypermedia as the engine of application state which makes sure the responses from the server should include links to relates resources.

1. Explain how your browser chooses which CSS rule to apply to a tag in the case where there are multiple rules that could apply. (15 points)

The browser decides which CSS rule to apply with the cascade, importance, specificity, and order. The first is importance which can be declared with the keyword !important and can override normal rules. Next is specificity, which is determined by selectors. Inline styling is the most specific to elements like <h1> being the least specific. Then if the specificity of a tag is the same then the browser relies on order, the most recently declared rule would apply so a rule declared in line 30 would override a rule in line 5 assuming they have the same specificity.