Write a one-page paper describing 3 things you can do with the developer tools in either Chrome or Firefox.  The paper must be at least 500 words in length and include 2 citations.  Failure to include two creditable sources will net you 0 points.

The list of things that can be done in developer tools for Chrome is pretty extensive. From changing CSS, to seeing how your network or storage is impacted by a web application, to seeing how your website performs on multiple devices, there is a tremendous amount of opportunity to make sure your web application is performing and behaving like it should be.

The three areas I’ll focus on for this paper in regards to Chrome’s developer tools are the DOM, Accessibility, and Security. I chose the DOM because it can be critical to be able to debug and understand why the site is behaving and displaying the way that it is. I chose accessibility because this is an area that is generally overlooked and not thought about when web applications are created. I also chose security because it’s not always top of mind when web applications are being developed and because an insecure web application can be hacked and have negative consequences for the web application owner and it’s users.

The DOM can be inspected (viewed) in Chrome developer tools. There are a variety of ways to do this but one of the easiest is to have a web page displayed in Chrome, have developer tools open, right click on the web page element, and choose Inspect (1). When this is done the particular DOM node is displayed. The developer can see what type of element is is, such as a list item.

The developer can also navigate the DOM from the place that was selected to be viewed. For example the developer could see that the list item is under a particular paragraph tag and that the paragraph tag and list items are formatted by CSS in a particular way. Items in the DOM can also be searched for. If there is a particular item being displayed on the web page the developer can use that item as the search criteria.

Besides viewing the DOM and seeing how it is structured and marked up, the DOM can be used for logic debugging (2). The items to be debugged are selected and using the functionality in the developer tool console that item can be inspected in more detail by including breakpoints or stepping through the section line by line to see how scripts are executed.

Accessibility is a feature in Chrome Developer tools that is often overlooked but can give some really good insight into how a web application would or would not serve those who require accessibility features in order to use the application.

The accessibility feature let’s a developer know if the page can be navigate by keyboard or screen readers and if the page is properly marked up for screen readers (1). The accessibility tool can also do an audit on things like contrast ratios (1). This will help the developer know if the colors in use are distinct enough from one another so they can be easily seen and differentiated from one another. This is really useful for people with color vision issues. If there are issues with colors the color selector tool in Chrome developer tools is a good tool to use to adjust contrast (3).

Accessibility audits can be run against different devices types and audits produce results that indicate what things should be adjusted and if it passes the audit. Sometimes the audit report will even give hints or ideas about how to fix things the audit report might have found. The accessibility audit is also included in the overall site audit report that can be generated from the developer tools found in Chrome (3).

Finally, Chrome provides tools related to security and these can be found in the security tab in developer tools (1). Security tools will let the developer know when a page is or isn’t secure, if the page is using HTTP or HTTPS, if the page is secure but requests resources from non-secure origins, and insight into certificate information (1).

The big focus for this security tool is to make sure HTTPS is being properly implemented in the web application. Certificates, connections, and resources are the major areas being evaluated. For connections, this includes an evaluation of the encryption and authentication being used by the web application (1).

Similar to accessibility, reports or audits can be run on the web application from a security perspective. These reports will give a score (3) and provide insight into what if anything needs to be fixed. I’d recommend that a comprehensive analysis including accessibility and security be done using Chrome developer tools prior to pushing a new web application or changes to that web application to a production environment. This should be done to make sure the site is usable, offers a better user experience, and won’t allow the site to be hacked or user information compromised.

**References**

1. Tools for Web Developers, Chrome DevTools. Retrieved from <https://developers.google.com/web/tools/chrome-devtools>

2. JavaScript.Info (2020, January 16) Debugging in Chrome. Retrieved from <https://javascript.info/debugging-chrome>

3. FelDev (2019, August 12) 10 Must-Know Chrome Developer Tools and Tricks. Retrieved from <https://medium.com/better-programming/10-must-know-chrome-developer-tools-and-tricks-d03f75d10cc9>