**Debugging Methodology**

**The bottom-up approach**

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**Debugging Methodology:**

The bottom-up approach involves starting the debugging process by examining the lower-level components of a system and gradually working upwards to identify and fix issues. This methodology is based on the idea that problems in higher-level components often stem from errors in lower-level components.

During the bottom-up debugging process, the focus is on understanding the behavior of individual components and their interactions. Debugging starts with analyzing low-level code, such as functions, modules, or classes, and verifying their correctness. Once the lower-level components are deemed to be functioning correctly, attention is shifted to the higher-level components that depend on them.

This methodology can be effective when dealing with complex systems with many interconnected components. By starting at the bottom and gradually moving up, it allows for a systematic and structured approach to debugging, ensuring that all components are thoroughly examined.

**Debugging Tool:**

One debugging tool that can be used with the bottom-up debugging methodology is Chrome DevTools. Chrome DevTools is a set of web development and debugging tools built into the Google Chrome browser. It provides a wide range of features to inspect, analyze, and debug web applications.

With Chrome DevTools, developers can examine the HTML, CSS, and JavaScript code of a web page, monitor network activity, inspect the Document Object Model (DOM) structure, and interactively debug JavaScript code. It also offers performance profiling, memory analysis, and a console for executing JavaScript commands.

When using Chrome DevTools in conjunction with the bottom-up debugging methodology, developers can start by inspecting the individual components of a web application. They can analyze the code, set breakpoints, and step through the execution to understand how each component behaves. The tool provides real-time insights into the state of the application, allowing developers to identify and fix issues at different levels of the system.

**Work Cited:**

Debugging Methodology**:**

* Zeller, A. (2009). Why Programs Fail: A Guide to Systematic Debugging. *Morgan Kaufmann.*

Debugging Tool:

* Google. (n.d.). Chrome DevTools Overview. Retrieved from <https://developers.google.com/web/tools/chrome-devtools>