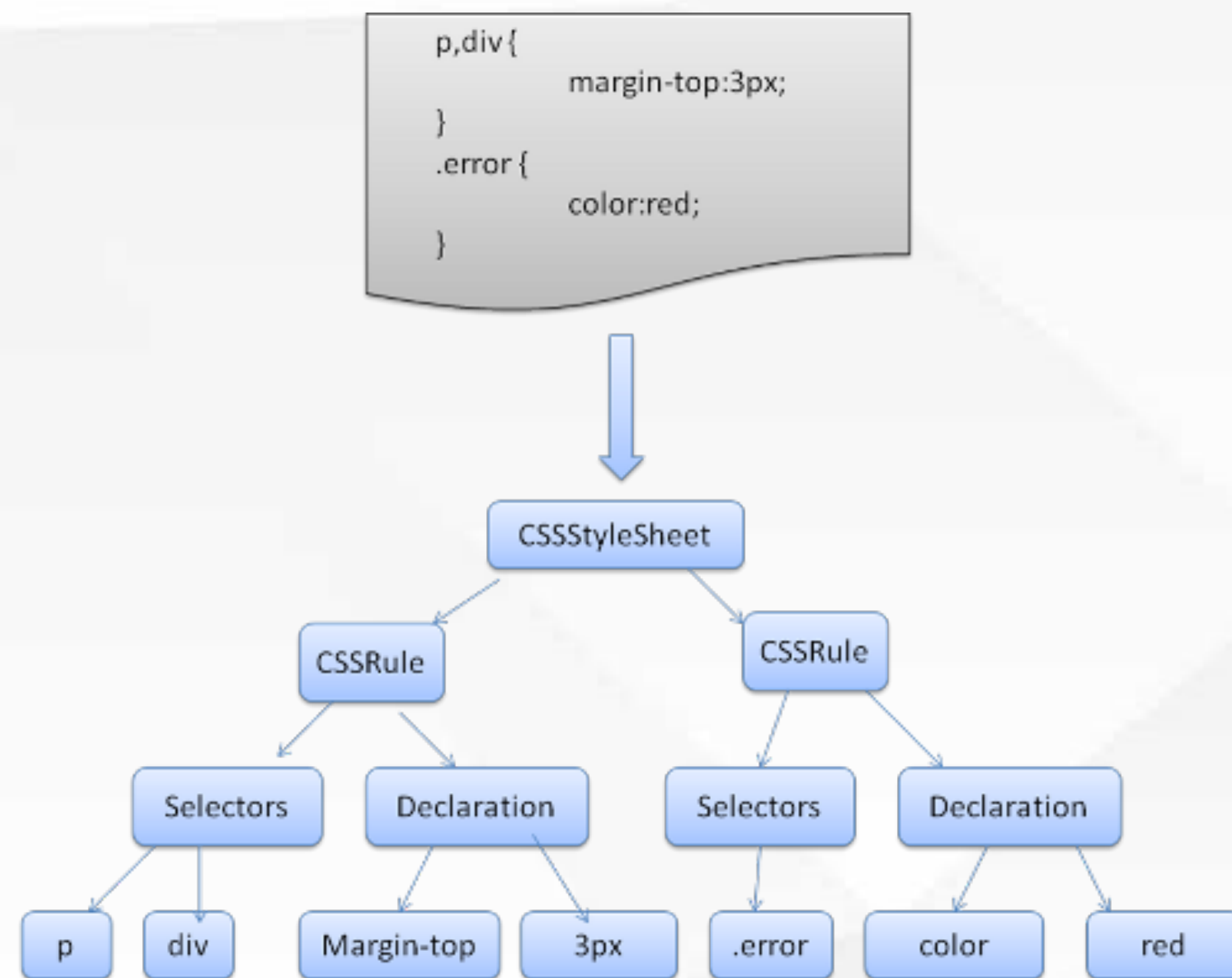


CSS parsing



1. How does CSS parser Defined?

Unlike HTML, CSS is a **context free grammar** and can be parsed using the types of parsers above.

2. WebKit CSS parser

WebKit uses Flex and Bison parser generators to create parsers automatically from the CSS grammar files. **Bison creates a bottom up shift-reduce parser.**

3. Firefox CSS parser

Firefox uses a **top down parser** written manually.

4. How does CSS be parsed?

Each CSS file is parsed into a StyleSheet object. Each object contains CSS rules. The CSS rule objects contain **selector** and **declaration objects** and other objects corresponding to CSS grammar.

The order of processing scripts and style sheets

1. Scripts is executed synchronously

The **model** of the **web is synchronous**. We expect scripts to be parsed and executed immediately when the parser reaches a <script> tag. The parsing of the document halts until the script has been executed. If the script is external then the resource must first be fetched from the network—this is also done synchronously, and parsing halts until the resource is fetched. This was the model for many years and is also specified in HTML4 and 5 specifications.

2. Speculative(推测的) parsing

Both WebKit and Firefox do this **optimization**. While executing scripts, another thread parses the rest of the document and finds out what other resources need to be loaded from the network and loads them. In this way, resources can be loaded on **parallel connections** and overall speed is improved.

— Note: the speculative parser only parses references to **external resources** like external scripts, style sheets and images: **it doesn't modify the DOM tree—that is left to the main parser.**

3. Block scripts when parsing Style sheets

Conceptually it seems that since style sheets don't change the DOM tree, there is no reason to wait for them and stop the document parsing. There is an issue, though, of scripts asking for style information during the document parsing stage. If the style is not loaded and parsed yet, the script will get wrong answers and apparently this caused lots of problems.

- **Firefox blocks all scripts when there is a style sheet that is still being loaded and parsed.**
- **WebKit blocks scripts only when they try to access certain style properties that may be affected by unloaded style sheets.**