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Browsers' isolation mechanisms are critical to users' safety and privacy on the web. Achieving proper isolations, however, is very difficult. Historical data show that even for seemingly simple isolation policies, the current browser implementations are surprisingly error-prone. Isolation bugs have been exploited on most major browser products. This paper presents a focused study of browser isolation bugs and attacks. We found that because of the intrinsic complexity of browser components, it is impractical to exhaustively examine the browser implementation to eliminate these bugs. In this paper, we propose the script accenting mechanism as a light-weight transparent defense to enhance the current domain isolation mechanism. The basic idea is to

introduce domain-specific “accents” to scripts and HTML object names so that two frames cannot communicate/interfere if they have different accents. The mechanism has been prototyped on Internet Explorer. Our evaluations showed that all known attacks were defeated, and the proposed mechanism is fully transparent to existing web applications. The measurement about end-to-end browsing time did not show any noticeable slowdown. We also argue that accenting could be a primitive that is general enough for implementing other domain-isolation policies.

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