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The following is a short analysis of the Digital Millennium Copyright Act of 1998 (DMCA), its purpose and intent, what is banned and restricted under the DMCA, why it is considered to be an anti-reverse engineering law, what exceptions exist to the DMCA in which reverse engineering is legal and ethical, as well as thoughts on the DMCA and its long-term impact on reverse engineering and the computer science field.

The DMCA’s purpose was to protect copywrite protection technologies primarily because the entertainment industry was worried that hackers posed a threat to these technologies and that they could bypass them (Samuelson, 2015). These technologies were intended to help protect their copyrighted works from copyright infringement, including unauthorized copying and dissemination of works (Samuelson, 2015). Because of the threat, the entertainment industry was able to convince Congress to pass the DMCA, making it illegal to circumvent technical protection measures or to provide tools to the public that are capable of circumventing such technologies. The DMCA only applies to copyright protection systems, which are basically Digital Rights Management (DRM) technology and does not apply to any other form of software that is copyrighted (Eilam, 2005).

Under the DMCA, the circumvention of copyrighted protection systems (finding a way around the technology or overcoming it), and the development of circumvention technologies, such as keygens or key generators, are restricted (Eilam, 2005). Essentially, what this means is that no person can do anything to bypass or overcome (circumvent) any Digital Rights Management technology, not even for their own personal use. Also, nobody can create or make available any form of technology (circumvention tools) that would accomplish this for them or any other person (Eilam, 2005).

The reason why this is considered to be an anti-reversing engineering law is because the circumvention of copyright protection systems typically involves reverse engineering. This is because reverse engineering involves breaking down and analyzing products to understand how they work, and once the product is understood, new technologies or products can be developed that essentially overcome or that can defeat what the original technology was intended to do. Therefore, while the law doesn’t explicitly state that copyright protection systems cannot be reversed, doing so would be considered circumvention, which is prohibited by the DMCA.

Many expressions of concern arose after the passing of the DMCA and because of this Congress established a process by which exceptions to the anti-circumvention policies could be made, which would make circumvention or reverse-engineering legal and ethical. These include reasons for interoperability, encryption research, security testing, evaluation purposes by educational institutions and public libraries, government investigations, regulation, and protection of privacy (Eilam, 2005). An example of interoperability would be if a specific piece of software needed to be able to work with a copyright technology, the copyright technology could then be reversed to ensure the additional software can be developed to work with the copyright technology.

I believe that the DMCA is instrumental in a digital age where there is a growing need to protect digital assets, especially in the entertainment industry where a significant amount of content is at risk of copyright infringement. While it has had some significant long-term drawbacks concerning computer science and reverse engineering, such as limiting innovation, negatively impacting security, and creating legal risks, efforts have been made to accommodate legitimate purposes where exceptions can be made to the DMCA. I believe this will continue to be evaluated for other scenarios where reversing this type of technology will become acceptable, hopefully reducing the long-term impact it has placed on reverse engineering and computer science.

**References**

Eilam, E. (2005). Reversing: Secrets of Reverse Engineering (1st ed.). John Wiley & Sons,

Incorporated. <https://ebookcentral.proquest.com/lib/snhu-ebooks/detail.action?docID=227440#>

Samuelson, P. (2015). Legally Speaking Anti-Circumvention Rules Limit Reverse

Engineering. *Viewpoints, 58*(7), 24-27. <https://doi.org/10.1145/2770890>