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CS 410 Software Reverse Engineering

2/18/2024

8-1 Journal

**Reverse engineering IoT: Why can reverse engineering be used to improve cloud-based information technology (IT) systems?**

Reverse engineering is useful for improving cloud-based IT systems especially when it comes with IoT devices. These devices often lack standard communication protocols and have unique software. By reverse engineering them, IT experts can understand how they work, their communication methods, and any weaknesses. This knowledge helps to make IoT devices work better with cloud systems, boost security, and make them more efficient.

**Patching: How is reverse engineering used to patch cloud-based IT systems?**

When security issues arise in IoT devices or cloud services, reverse engineering helps to analyze the code and understand how attackers could exploit weaknesses. With this understanding, developers can create and apply patches to reduce these risks, making cloud-based IT systems more secure and reliable.

**Vulnerability: Why is it that so many IoT devices are already infected with malware and many more are vulnerable to exploitation?**

Many IoT devices are prone to malware and vulnerabilities due to various reasons. Some are made with minimal security measures due to cost and speed considerations. Others have outdated firmware lacking security updates, making them easy targets. Also, the diverse range of IoT devices makes it hard to maintain consistent security standards across all devices leaving many vulnerable to attacks.

**Impact: How does reverse engineering impact new IT technologies, such as IoT and cloud computing?**

Reverse engineering significantly influences the development and implementation of new IT technologies like IoT and cloud computing. By understanding how these technologies work, developers can find and fix security flaws, improve compatibility, and make them more efficient. It also encourages exploration of new uses and solving complex IT problems.

**Future: Are there other new technologies that you can think of that either already use reverse engineering or should consider using reverse engineering in the future?**

In the future, many new technologies could benefit from reverse engineering. For example, in artificial intelligence, reverse engineering can help understand AI algorithms better, increase transparency, and reduce biases. Also, emerging technologies like blockchain and quantum computing could use reverse engineering to boost security, improve performance, and explore new possibilities!