Select **one** of the topics below. Then, answer the “what,” “how,” and “why” questions below about your selected topic. Provide a simple code or code snippet example to further illustrate your thoughts.

* Use CSRF (Cross-Site Request Forgery) tokens
* Implement CAPTCHA (Completely Automated Public Turing test to tell Computers and Humans Apart)

**“What,” “How,” and “Why” Questions**

* **What:** What are you writing about? Give the audience a brief overview of the topic by providing them with foundational information (history, background information, etc.).
* **How:** How is the information relevant? Apply personal knowledge (this can be through research or actual practiced knowledge) to build trust with the audience.
* **Why:** Justify your position and/or course of action. The audience needs proof the information you are presenting is creditable and actionable.

For this discussion, I will be covering Completely Automated Public Turing Test to Tell Computers and Humans Apart (CAPTCHA). It is safe to assume that you have likely encountered CAPTCHA if you are an internet or application user. CAPTCHA helps verify that a user is a human, not a bot or machine (IBM, 2022). It does this by challenging the user in a way that is complex for a machine to achieve (IBM, 2022). CAPTCHA dates back to the late 1990s and early 2000s to defend against malicious actors and bots (IBM, 2022). Sanctum IT made the first CAPTCHA before it was known under that term (IBM, 2022). There is CAPTCHA, reCAPTCHA v1, Google reCAPTCHA v2, and reCAPTCHA v3.

Understanding the background of CAPTCHA and how it works is very relevant. There is so much spam activity online, and bots are sent to websites to flood them or hack accounts. Having safeguards against these protects developers, users, and other stockholders. CAPTCHA can be implemented and used to "prevent fake registrations, guard against suspicious transactions, protect online poll integrity, stop comment and product review spam, and defend against brute-force and dictionary attacks" (IBM, 2022). Some negatives of CAPTCHA are that bad actors can learn to trick these verification processes, it can be annoying or inconvenient for users, and it is less accessible to users with disabilities (IBM, 2022).

This information comes from the official IBM website, which provides reliable information. Using this information is a great jump start for learning how to incorporate CAPTCHA or other versions into your code to improve security.

Here is a code example of how reCAPTCHA can be implemented (GeeksforGeeks, 2020):

<html>  
<head>  
<title>reCAPTCHA demo: Simple page</title>  
<script src="https://www.google.com/reCAPTCHA/api.js" async defer></script>  
</head>  
<body>  
<form action="?" method="POST">  
<div class="g-reCAPTCHA" data-sitekey="your\_site\_key"></div>  
<br/>  
<input type="submit" value="Submit">  
</form>  
</body>  
</html>

**References**

GeeksforGeeks. (2020, August 11). *What is CAPTCHA code*. GeeksforGeeks. https://www.geeksforgeeks.org/what-is-captcha-code/

IBM. (2022, November 10). *CAPTCHA*. Ibm.com. https://www.ibm.com/think/topics/captcha

**Assignment Requirements and Grading:**

* An initial post of approximately 250 words is due by **Thursday, 11:59 p.m., CST**.
* Submit your post by clicking on the assignment link above, then Create Thread. You must create a thread in order to view your peers' posts. Tip: Create your post in a Word document and then copy and paste your work into the thread.
* A minimum of three (3) responses, to the original threads of other students, of 100-200 words each are due by **Sunday, 11:59 p.m., CST**.
* This discussion board is worth **25 Points**.
* To view the rubric grading criteria, click on the following link: [Discussion Board Grading Rubric.](https://content.bellevue.edu/cst/csd/rubricdbv3.pdf)