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(6). (a). • Some sites (eg- Yahoo) ask the user to view an image containing some text and enter the characters seen there on the screen as an added level of authentication.

It's not a hard test. In fact, that's the point for the user, the test should be simple and straight-forward. But for a computer the test should be almost impossible to solve.

This sort of test is a <u>CAPTCHA</u>, an acronym that stands for '<u>Completely Automated Public Turing Test to tell Computer and Human Apart</u>'. They're also known as a type of <u>Human Interaction Proof</u> (HIP). If the user's letters match the ones in the distorted image, you pass the test.

We need such a test because of the people who want to exploit weaknesses in the <u>computer</u> running the website. While these individuals make up a minority of all the people on the internet, their actions can affects millions of users and website. For example, a free email service might get <u>bombarded</u> by account request from an automated program. The CAPTCHA test helps identify which users are real human being and which ones are computer program.
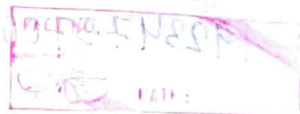
o Two-factor authentication (two-way authentication), also referred to as 2FA, is a security process that combines two security components to properly identify an individual looking to carry out a table - usually when logging into a secure account or performing a specific action within a secure account. For example - your bank may send an approval code to your phone when you send a large money transfer.

It doesn't prove that there's a human completing this action. Infact, two-factor authentication is quite easy to bypass with bot automation.

CAPTCHA is a test to provide human verification and a good CAPTCHA will prevent bots from automating such actions. ∴ 2FA is not a valid replacement for CAPTCHA, especially when privacy, conversion, human identification are priorities.

(b). The term Industry 4.0 was first mentioned at the Hannover table trade fair in 2011. There were several industry iterations before Industry 4.0. The first Industrial revolution or industry 1.0 was built around the development of steam/water based engines. Industry 2.0 gave rise to

the light bulb, telephone, photograph and internal combustion engine.

Starting in the 1980's, Industry 3.0 saw analog technology gave away to digital technology. During this time period, often referred to as the digital revolution SCADA's functionality increased from head end system to SCADA endpoints.

Industry 4.0

If Industry 3.0 was a digital revolution, then Industry 4.0 should be called a quantum leap. By adding embedded system, artificial intelligance and the IOT, Industry 4.0 is pursuing forward at breakneck speed.

lastly, its impossible to discuss industry 4.0 without mentioning IoT. IoT will have a large impact on both AMI and distribution automation systems, thanks to the rise of smart home systems such as Amazon Echo & Google Home. The baseline security measures that must be employed in SCADA include the following :-

(1). Map all your current system - document everywhere your system connects to on the internet and internal network.
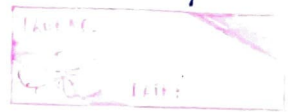
(2). Implement monitoring & deletion Systems — SCADA systems without monitoring and detection system in place are vulnerable to cyber-attacks and malware.

(3). Have Security network protocols

(4). Harden the perimeter for preventing unauthorized access or changes to our system.

(5). Ensure that critical components are redundant & are on reduntant networks.