Offensive Web Security

CS 390 – Web Application Development

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Outline

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WIWYT – Offensive Security

- Adversarial approaches enable a very effective way to build security. It does not rely on assumptions.
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- It is extremely fun. Also very valuable: bug-bounty programs award 5-figure payouts for critical vulnerability disclosures.

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A: Not really! Anyone on the same network can sniff keys, and security is thwarted.

We can improve this by making the keys *asymmetrical* – but this requires us to setup an accompanying security policy.

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Q: Is this secure from intrusion?
A: Still no! If an intruder can inject their *own* public key instead of the server, there is no way for the client to know. Security thwarted.

Certificate Authorities

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A: We **recursively verify certificates**, until we leverage a pre-installed root certificate, that is self-signed by the local machine.

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Example: Until Feb 2022, Purdue's exam portal had a web-based vulnerability that allowed anyone to access student transcripts without authorization.

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A 'vulnerability' may not be classified as one if it doesn't breach their threat model. This distinction is the application's **security boundary**.

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4. Start the interceptor.

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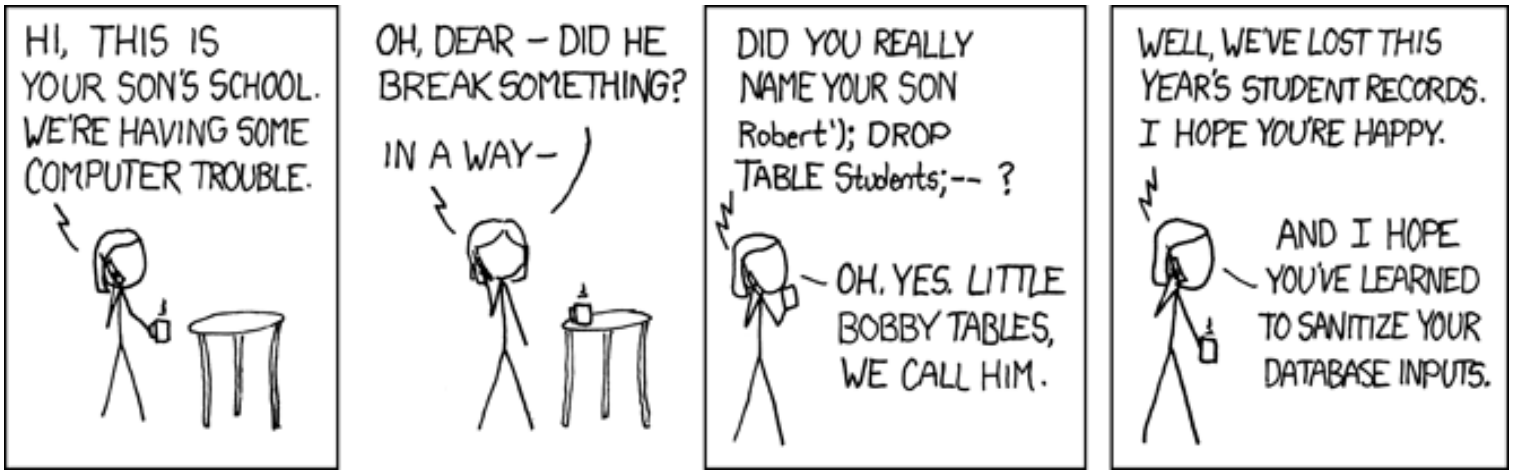

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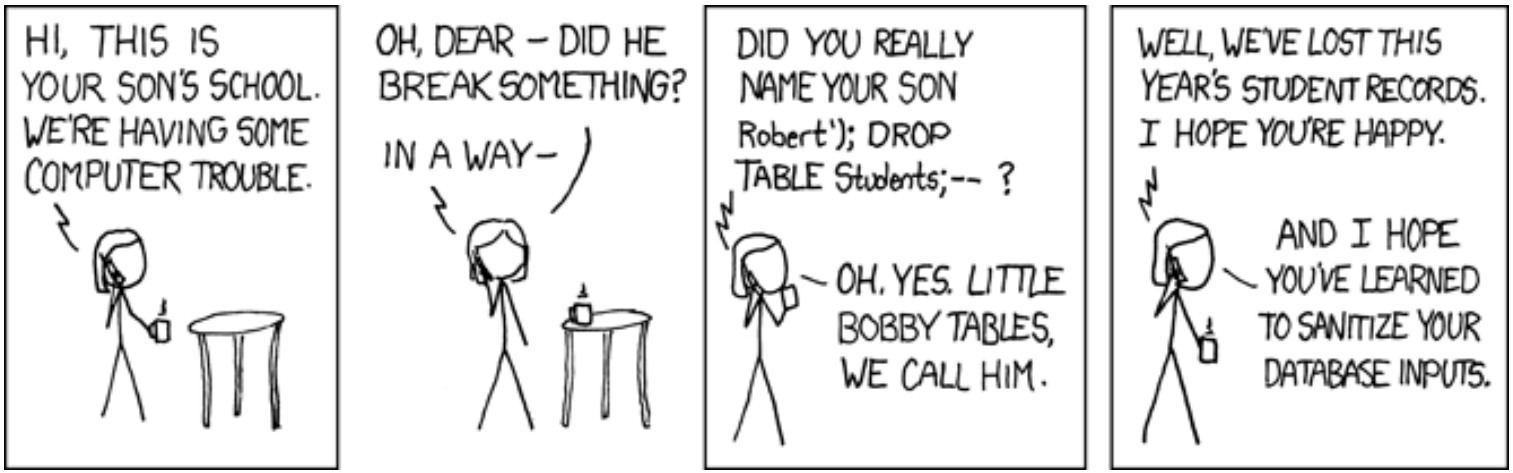

We can use automated approaches to find these vulnerabilities using tools like **sqlmap**.

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Logistics

Homework #4 is due on **November 29 @ 11:59pm**.

Homework #5[2], project presentation orders[3] & instructions will be released on **November 30 @ 12:00am**.

We'll also release a submission for course evaluations, due **December 16 @ 11:59pm** for minor extra credit.

This is the last lecture-based class for the Fall 2023 semester.

[2] extra credit, optional

[3] determined randomly

Thank you!

Have an awesome rest of your day!

Slides: `https://cs.purdue.edu/homes/jsetpal/slides/offsec.pdf`

If anything's incorrect or unclear, please ping `jsetpal@purdue.edu`
I'll patch it ASAP.