CSE 484 / CSE M 584
Computer Security:
SQL, Wireshark, and Policy

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SQL Review

- Structured Query Language (SQL) used to communicate with databases
- Standard SQL commands SELECT, INSERT, UPDATE, DELETE, DROP

More important SQL Commands

- **SELECT** - extracts data from a database
- **UPDATE** - updates data in a database
- **DELETE** - deletes data from a database
- **INSERT INTO** - inserts new data into a database
- **CREATE TABLE** - creates a new table
- **ALTER TABLE** - modifies a table
- **DROP TABLE** - deletes a table

Select

- Used to select (read) data from a database
- SELECT *column_name*,*column_name*
  FROM *table_name*
  WHERE *column_name operator value*;

Insert

- Insert new records in a table
- INSERT INTO *table_name*
  VALUES (*value1*,*value2*,*value3*,...);
- INSERT
  INTO *table_name* (*column1*,*column2*,...)
  VALUES (*value1*,*value2*,...);

SQL Injection

- SQL Injection allows the attacker to insert malicious SQL statements
- Usually caused by incorrect filtering or escaping of user input

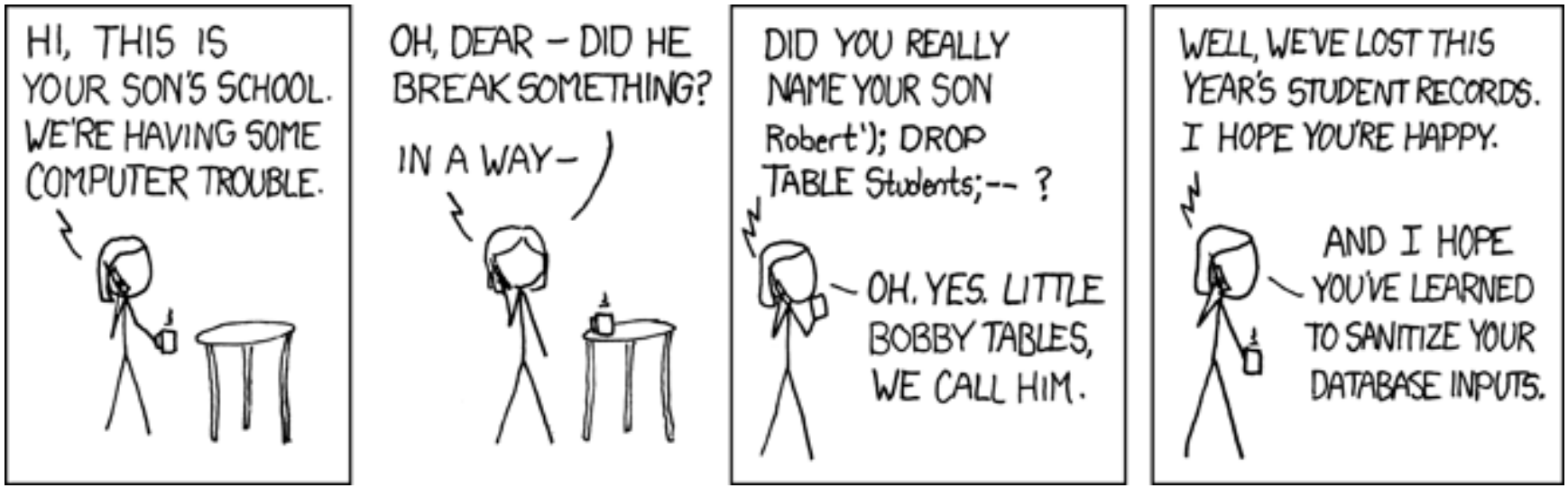
Forms of SQL Injection

- 1=1
  - SELECT * FROM Users WHERE UserId = 105 or 1=1
- “”=“”
  - SELECT * FROM Users WHERE Name =“” or “”=“” AND Pass =“” or “”=“”
- Batched SQL Statements
  - SELECT * FROM Users; DROP TABLE Suppliers

Preventing SQL Injection

- "Sanitizing" input data
  - Can be hard to do well/completely
  - Removing SQL commands, etc.
- Escaping strings often works better
  - Each DBMS has their own version
  - Ex: mysqli_real_escape_string in MySql

SQL Injection



HTTP://XKCD.COM/327/

Helpful resources

- SQL Injection – OWASP https://www.owasp.org/index.php/SQL_Injection
- Cross-site Scripting (XSS) https://www.owasp.org/index.php/Cross-site_Scripting_(XSS)

Tech Policy

- Talk to your neighbors
- Write down 2 or more concerns you have about security
- Write down 2 or more security related policy issues you think would be hard to come up with a policy for

Wireshark

- Free tool to inspect incoming and outgoing packets on HTTP/TCP/Ethernet/etc.
- Notice
  - Massive streams of data to load a single website
  - How many requests are being made to 3rd parties
  - Most content (including cookies) are sent in plaintext

https://www.wireshark.org/