**Example of Client-Side Cheating: Aimbot**

Aimbot is a type of cheating software used primarily in shooting games that makes the player’s crosshair align with enemies automatically essentially creating perfect aim. The aimbot software reads and intercepts the game’s memory to determine the location of other players.

We can prevent this through a few mechanisms:

* By using server-side hit validation instead of trusting the client’s report that a hit happened, the server verifies each shot based on the positions of players at the time the shot was reported. This can figure out any discrepancies caused by aimbots.
* Using heuristic analysis, the server can check player behaviour over time and detect any unusual patterns like impossibly fast reaction times or perfect aiming consistenct.
* Client integrity checks can be done by the game’s anti-cheat software to check on the game files and running processes that might enable aimbotting.

**Examle of Server-Side Attacks: SQL Injection**

SQL Injection is a server-side attack where the attacker exploits vulnerabilities in the game’s server database interactions. It does this by injecting malicious SQL code into a game input field like a username or chat, this way the attacker can manipulate the server’s databases. They could do this to acquire elevated user privilages, alter game balance, or even access player data.

We can attempt to prevent this through a few methods:

* Using input validation and sanitisation to ensure that all inputs from users are properly validated to prevent malicious data from being processed. This includes checking that whatever data matches the expected formats and removes possible SQL characters or statements.
* Use of prepared statements in the game’s backend to use non parameterised queries can prevent SQL injection. This keeps data separate from commands and queries ensuring that data is not treated a executable code.
* Least privilege access is a type of design where the user permissions are minimal and only have the most basic access rights to perfrom its duties.