# ❓ What is Performance Testing?

In today's fast-paced digital world, users expect applications to be:

* ⚡ **Lightning-fast**
* 🔄 **Highly responsive**
* 📶 **Always available**

When these expectations aren't met, the consequences can include:

* 😠 Frustrated users
* 💸 Lost revenue
* 🧱 Damage to brand reputation

**Performance Testing** is a **non-functional testing technique** used to evaluate the **speed, scalability, stability, and responsiveness** of a software application under varying workloads.

It doesn’t focus on finding functional bugs — instead, it aims to:

* Identify bottlenecks
* Ensure optimal system performance
* Validate readiness for real-world traffic

Think of it as putting your system through a **stress simulation** to ensure it's robust enough to perform under real-life pressure.

**🎯 Core Objectives of Performance Testing**

The primary goals of performance testing are to:

* ✅ **Assess Speed and Responsiveness**  
  Measure how fast the system reacts to user interactions, including response time per transaction and overall latency.
* 📈 **Evaluate Scalability**  
  Determine how many users or transactions the system can support while maintaining acceptable performance. This helps with capacity planning.
* 🛡️ **Ensure Stability and Reliability**  
  Observe the system under continuous load to detect long-term issues like memory leaks or resource exhaustion that can lead to crashes.
* ⚙️ **Analyze Resource Usage**  
  Monitor consumption of CPU, memory, disk I/O, and network to identify inefficiencies and support infrastructure tuning.
* 🧱 **Identify Bottlenecks**  
  Detect which parts of the system (e.g., code, database, network) are slowing things down or causing failures.
* 📏 **Validate Performance Requirements**  
  Confirm that the application meets established benchmarks and complies with SLAs (Service Level Agreements).