Non Functional requirements

"Generate a set of non-functional requirements (NFRs) for a software architecture project. NFRs specify system attributes such as performance, scalability, security, and maintainability. Please adhere to the following rules when creating NFRs:

* Specify at least five distinct non-functional requirements.
* Ensure that the NFRs are measurable and quantifiable.
* Cover a range of system attributes, such as performance, reliability, security, and usability.
* Each NFR should have a clear impact on the overall system architecture.
* Provide clear acceptance criteria for each requirement."

Example Non-Functional Requirement (NFR):

NFR Title: Performance Efficiency

Description: The system shall demonstrate high-performance efficiency to ensure rapid response times and optimal resource utilization, even under peak load conditions.

Acceptance Criteria:

* The system response time for critical user interactions, such as login and data retrieval, shall not exceed 2 seconds under normal operating conditions.
* During peak load conditions, system response time shall remain below 5 seconds for critical user interactions.
* The system shall be capable of handling a minimum of 10,000 concurrent user sessions without performance degradation.
* Resource utilization (CPU, memory, network bandwidth) shall not exceed 70% of system capacity under peak load.
* Load testing results shall demonstrate that the system can sustain a sustained transaction rate of 1000 transactions per minute without performance degradation."

This example demonstrates an NFR related to performance efficiency and includes measurable criteria for acceptance, such as response times and capacity under different conditions. You can create similar NFRs for other system attributes like security, reliability, scalability, and more to guide the software architecture project.

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NFR 1: Performance Efficiency

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NFR 2: Security

Description: The system shall ensure robust security measures to protect sensitive user data and prevent unauthorized access.

Acceptance Criteria:

* All data transfers between the client and server shall be encrypted using industry-standard cryptographic protocols.
* User authentication and authorization mechanisms shall be implemented to restrict access to authorized users only.
* Security audits and penetration testing shall be conducted annually to identify and address vulnerabilities.
* The system shall comply with relevant data protection regulations, including GDPR and HIPAA, where applicable.
* Intrusion detection and prevention systems (IDPS) shall be deployed to monitor and mitigate security threats in real-time.

NFR 3: Scalability

Description: The system architecture shall support horizontal and vertical scalability to accommodate future growth and increased user demand.

Acceptance Criteria:

* The system shall be designed to scale horizontally by adding new server instances dynamically to distribute the load.
* Vertical scalability shall be achieved by allowing the system to scale up by upgrading server hardware resources without downtime.
* During load testing, the system shall demonstrate linear scalability, with performance improving as additional resources are added.
* Auto-scaling rules shall be defined to automatically adjust resource allocation based on traffic patterns.
* The system shall support clustering and load balancing to evenly distribute requests among servers.

NFR 4: Reliability

Description: The system shall maintain high reliability, minimizing downtime and data loss.

Acceptance Criteria:

* The system shall have a documented disaster recovery plan, including regular backups and data replication.
* Mean Time Between Failures (MTBF) for critical components shall exceed 10,000 hours.
* Mean Time To Recovery (MTTR) for system failures shall not exceed 4 hours.
* Redundancy shall be implemented for critical system components to ensure failover capabilities.
* Monitoring and alerting systems shall be in place to proactively detect and address system failures.

NFR 5: Usability

Description: The user interface shall prioritize usability to ensure an intuitive and user-friendly experience.

Acceptance Criteria:

* Usability testing shall be conducted with representative user groups to identify and address usability issues.
* The user interface shall adhere to established user experience (UX) design principles.
* Navigation shall be intuitive, with clear and consistent menus, buttons, and labels.
* Accessibility standards, including WCAG compliance, shall be followed to ensure inclusivity.
* User feedback mechanisms shall be incorporated to gather input for ongoing usability improvements.

These NFRs cover a range of system attributes, including performance, security, scalability, reliability, and usability, and provide clear acceptance criteria for each requirement. They will guide the software architecture project to ensure that these critical aspects are addressed effectively.