Test creaeting pdf from markdown

Circuit Breaker & Resilience - Discussion Topics

Architecture & Design

1. **When should you use circuit breaker vs retry vs both?**
    - Transient vs persistent failures
    - Combining patterns effectively
    - Order of pattern application
2. **How do you determine the right failure threshold for a circuit breaker?**
    - Balancing sensitivity vs stability
    - Service-specific considerations
    - Monitoring and tuning approaches
3. **What are the trade-offs between thread pool isolation and semaphore-based bulkheads?**
    - Resource overhead
    - Timeout handling
    - Use cases for each approach

Real-World Scenarios

1. **Design resilience patterns for a payment processing system**
    - Which patterns are critical?
    - Fallback strategies for financial transactions
    - Idempotency considerations

2. **How would you handle a cascading failure in a microservices architecture?**
    - Detection and alerting
    - Automatic vs manual intervention
    - Recovery strategies
3. **What happens when your circuit breaker opens during peak traffic?**
    - Capacity planning implications
    - Fallback capacity requirements
    - User experience considerations

Implementation Challenges

1. **How do you test resilience patterns effectively?**
    - Chaos engineering approaches
    - Simulating failures in staging
    - Load testing with failure injection
2. **What metrics should you monitor for circuit breakers?**
    - State transitions
    - Failure rates and patterns
    - Latency distributions
3. **How do you handle circuit breaker state in a distributed system?**
    - Local vs shared state
    - Consistency across instances
    - Coordination challenges

Advanced Topics

1. **How do you implement graceful degradation without losing critical functionality?**
    - Feature prioritization
    - Partial response strategies

- User communication during degradation

2. **What’ s the relationship between circuit breakers and rate limiting?**
    - Complementary patterns
    - When to use each
    - Combined implementation strategies
3. **How do you handle retry storms in a distributed system?**
    - Jitter strategies
    - Backpressure mechanisms
    - Coordinated retry policies