Assignment 2 Report: Advanced Implementation of GBC_SpringSocial

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This report delves into the advanced stages of developing our project, GBC_SpringSocial, where we enhanced and scaled the SpringSocial platform. Building upon our initial project, this phase introduced complex features like Inter-Service Communication, API Gateway & Security, Resilience & Monitoring, and JPA Modeling.

Challenges Faced:

- **Inter-Service Communication:** One of the most challenging aspects was ensuring efficient communication among the microservices. We faced issues with network latency and data consistency, which required us to implement robust communication protocols and error handling mechanisms.
- **Security Implementation:** Implementing security through IAM and Keycloak presented a steep learning curve. Configuring these tools for optimal security while ensuring user accessibility was a complex balance to achieve.
- **Resilience & Monitoring:** Ensuring system resilience using the Circuit Breaker pattern was challenging, as we had to anticipate potential points of failure and configure fallback methods. Moreover, setting up monitoring tools like Zipkin and Spring Actuator to track system activity and performance was a complex task requiring detailed understanding.
- **JPA Modeling:** Adapting JPA modeling to work efficiently with our microservices architecture posed significant difficulties. We encountered issues with object-

relational mapping, which demanded a deep dive into JPA's advanced features.

Lessons Learned:

- **Deepened Technical Knowledge:** This phase of the project significantly deepened our understanding of SpringBoot and associated technologies. We learned how to effectively design and implement a microservices architecture.
- **Problem-Solving Skills:** Facing and overcoming the challenges in inter-service communication and resilience strategies enhanced our problem-solving skills. We learned the importance of anticipating potential system failures and proactively designing solutions.
- **Importance of Security and Monitoring:** Implementing robust security measures and monitoring tools underscored the importance of these aspects in software development, especially in a distributed environment like microservices.

Conclusion:

The journey through the advanced stages of the GBC_SpringSocial project was both challenging and enriching. We navigated through complex technical landscapes, enhancing our skills and knowledge significantly. These experiences have not only fortified our technical prowess but also equipped us with a deeper understanding of scalable system design, security, and resilience in software development.