Backend Technology Selection Rationale

Movimingle

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Introduction

Movimingle is the project I will be working on during this semester. It aims to become a useful application for collaborative movie watching for big groups of people. This document will outline the thought process behind the decision to use Spring boot as my backend technology. Considering the requirement for the application to be able to handle a large number of users, the technology to be chosen is a very important part of the development process. After looking into the semester learning outcomes, which serve as some kind of broad requirements, I can say that Spring Boot was from the very start positioned as a prime candidate. My experience with it served as another point in choosing the tech stack.

Criteria for Framework Selection

Several critical criteria form the decision to use a specific framework:

Performance and Scalability: the application must be able to support a large number of concurrent users, meaning a lot of requests being made to the application with minimal chance of something breaking down.

Rapid Development: time constraint is another important part that should be considered when starting this project, as I as a solo developer have a limited time during the course of the semester to go through the learning outcomes.

Security: to comply with the security requirements for the semester the framework should have a solid infrastructure to protect sensitive user data and interactions.

Familiarity: in my opinion, my existing knowledge of the framework can help accelerate the development process and reduce the learning curve.

Analysis of Alternatives

Based on the above criteria, several backend development frameworks were evaluated. Below is the analysis of Spring Boot against other popular alternatives.

Spring Boot (Java)

Spring Boot stands out with the set if features designed to streamline the development process and also support enterprise-level applications. The key strengths of the framework are the ability to create production-grade applications with minimal upfront configuration. This significantly speeds up the development timelines. Another great benefit of Spring boot is that it includes built-in support for microservices architecture. This means that the goals for this semester can be accomplished since the application will be highly scalable and suitable for handling large volumes if concurrent user requests.

[Pros and Cons of Using Spring Boot - Bamboo Agile](#)
[What Is Java Spring Boot? - IBM](#)
[Exploring the Magic of Spring Boot: Simplifying Java Development - DEV Community](#)

The framework is good for its simplicity in development, accomplished by automating configuration tasks and providing out-of-the box support for common application functionalities. Additionally Spring Boot has compatibility with wide range of IDEs and tools like Azure Spring Cloud, which improves the cloud deployment.

[Deploy Spring Boot applications by leveraging enterprise best practices – Azure Spring Cloud Reference Architecture](#)

Django (Python)

Django is a Python alternative to Spring Boot. It offers a big suite of tools and functionalities that come right out of the box. This benefit is good for a developer wanting to build and run something for a short amount of time, without integrating various separate components. Django's other features, such as admin panel, security measures and Django REST, for making APIs, help make the development rapid. These features are what makes it a good candidate for building complex application that can grow over time.

[5 Reasons To Choose Django in 2024 - DZone](#)
[9 Pros and Cons of the Django Framework: A Coder's Guide (careerfoundry.com)](#)
[11 Advantages of Django: Why You Should Use It – Pythonista Planet](#)

Flask (Python)

Contrary to Django, Flask offers a minimalist approach. This means that it gives you the bare essentials to get started. This framework is considered as "micro-framework", which can be best used for smaller projects or applications, where a lightweight, modular setup will be best.

[Flask vs Django: Which Python Web Framework to Use in 2024? (hackr.io)](#)

Node.Js/Express (JavaScript)

Based on my research, when comparing the Node.js and Spring Boot frameworks, the decision of which one to choose comes mostly to personal preference. The reason being that Node.js with its event-driven, non-blocking I/O model is particularly well suited for data-intensive real-time applications that operate across distributed devices. Express is used to simplify the server-side logic of web apps atop Node.js, providing robust set of features for web and mobile applications with minimal overhead. Meanwhile when dealing with complex software or CPU-intensive duties, the Spring Boot will prove more beneficial.

[Node.js vs. Spring Boot: Choosing the best Backend Architecture with Lucent Innovation](#)

Conclusion

Each of these frameworks has its strengths and should be considered for the development of Movimingle. This all depends on specific requirements such as development speed, scalability needs, and the complexity of operations involved. Best fitting for the project, however, is Spring Boot. With its extensive support for enterprise-level features, community, robust security measures, and efficient handling of large-scale applications. The last thing that tips the scales its way is my familiarity with the framework.