Mainak Sengupta

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EXPERIENCE

Software Engineer   May 2023 - Present
@Affinsys.ai | git, postgres, golang, fastapi, django, k3s, docker, K8s

- ⬈ Design and Develop a robust and fault tolerant application for online payments. Optimized API configuration with **caching and stage logging** to achieve **2.4k TPS**
- Migrated code from monolith to microservices with **Domain Driven Architecture**, and wrote unittests and integration tests to achieve **93.4% Coverage**.
- Designed a **fault tolerant payment system** which can be easily integrated with external payment providers and banks. Improved logging and debugging by integrating Jaeger, Prometheus and Grafana, **reducing time to debug by 56%**
- Implemented Golang binary to abstract **compute heavy operations and concurrent tasks**(push notifications and emails) **using GRPC apis and a Goroutine pool. Improving 99%ile latency by 66%** and **increasing TPS by 52%**

INTERNSHIPS

Software Engineering Intern   Sept 2022 - May 2023
@Affinsys.ai | git, postgres, django, python, shell scripting, docker

- ⬈Worked on a converting OracleSQL scripts to **Database Agnostic Load Scripts** for loading data from CSV.
- Implemented Action Authorization microservice based on the **4-Eyes system**. Optimizing Implementation to handle **100k actions /s**. Extended implementation to be able to be easily integrated in any FastAPI or Django Implementation (via decorators or function call)
- Created an **ETL CLI Tool** to extract data from any Database, perform transforms and load into another Database. Extend system to be **configurable using a YAML** configuration file.

Software Engineering Intern   May 2022 - August 2022
@Trademarkia.ai | git, C#, ASP.NET, .NET, Google Analytics, Google API

- ⬈Implement Appointment booking with the **Google Calendars API.**
- Clean up and Improve Performance of **Legacy ASP.NET and .NET Core** codebase. Succeeded in **improving latency by 60%**
- Create **ETL Script in C#** and **Schedule the Script to sync data** from **Google Analytics API** to Website Analytics Database.
- Create **MSSQL Scripts** to summarize and export CSV results for analytics

SKILLS

Languages: Python, Golang, Rust, C#
Libraries and Frameworks: Django, DjangoRestFramework, FastAPI, Pydantic, SQLAlchemy, Gorm, Chi, .NET, ASP.NET
Technologies: Authentication(OAuth, RBAC, ABAC), Access Control, RESTful APIs, GRPC
Databases: PostgreSQL, Redis(Cluster, Persistence and Events), RabbitMQ, Kafka
Tools: Postman, DBeaver, PGBouncer, Docker, Kubernetes, Golang Vegeta, Nginx, Locust.io, Git/GitHub, etc
Operating Systems : Windows, Ubuntu, Debian

EDUCATION

Electronics and Computer Science Engineering   June 2019 - 2023
@Vellore Institute of Technology, Vellore   *CGPA: 8.69*

PROJECTS

gogeta | *golang, YAML, go-cobra, goland, unix/zsh scripting*   ⬈

- Developed gogeta, a load testing tool utilizing Go and Cobra, to **enable distributed and customizable load testing** of web endpoints. Utilized YAML configurations and CLI flags to define Test Plans for both single-endpoint swarming and chained request scenarios, offering **flexibility and adaptability**. Implemented **custom Event Handling with Go channels** for precise timing and throughput management, ensuring **accurate simulation of user loads** and **avoiding Coordinated Omission Issue for load testing** . Achieved positive user feedback for its **ease of use, flexibility, and effectiveness in identifying performance bottlenecks**.

bamboo | *git, C#, WPF, Visual Studio*   ⬈

- Developed a Notepad clone in C# WPF. Leveraging window's **Fluent Design** paradigms, created a **modal Editing Software**. Implemented **real time** character updates.