Exploring the design space of back-end services: Or how to lose your mental sanity with C

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Abstract—Most of the popular modern web-development frameworks, like Node.js, Flask or the standard library of Go, handle the creation and management of a running back-end service, in a mostly abstracted high-level way that does not allow a developer much freedom of modification of the inherent system architecture of the server. Such an inflexible and abstracted, often plug-and-play, server implementation helps to facilitate web development by concealing the system-level design choices from the end user. The problem of blindly relying in a web framework without understanding its internal architecture is that it might not be the most suitable choice for a particular web application, which then ends up having unnecessarily bloated and difficult to maintain dependency-prone services. The aim of this paper is to explore the design space of a dependency-free, cloud-deployable back-end service purely written in C, through a literature review and an actual software implementation. In order, to

Index Terms—Back-end services, C, Databases, Software architecture, Systems programming, Software engineering, Design principles

I. Introduction

Describe that a chat app is being used as an example implementation.

A. State of the art

Describe how the systems architecture of other popular web frameworks is, for instance Go and its goroutines.

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