Project 4 -Part 1 Report

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# Facebook REST API Server

The Facebook REST API server is built on the spray-can framework built on top of Akka. Each time a user performs a Put on the endpoint for the Profile objects (Page and User), it corresponds to the server creating a new Profile Actor responsible for handling all the requests sent with regard to that user. This means every time that user creates any object, that actor will be delegated to for handling the request. Similarly, if another user tries to get any objects from a user, that user's actor will be responsible for completing the request. All the supported objects include Post, Picture, Album and Friendlist.

A pool of Delegator Actors is responsible for accepting the initial connections from clients and forwarding requests to their appropriate Profile Actors. All objects are stored in memory and there is no database layer present. A single Debug Actor is responsible for a single "/debug" endpoint and is used to keep track of various runtime metrics of the server such as average number of requests completed per second and total number of objects created. It provides a way to periodically probe the server and get a snapshot of its status.

# Client Simulator

The Client Simulator is implemented as a separate actor system within the same program that starts up after a short delay once the server system has been initialized. Each Client actor registers itself with the server as a Profile in the form of either a User or a Page. After another short delay, each Client actor begins a process by which every second they perform one or many requests to the server depending on the behavior they have been assigned to. Additionally, there is a single Matchmaker Actor responsible for simulating Clients meeting each other in real life and subsequently creating a connection within the Facebook server.

There are three types of Clients created in the simulator created based on the metrics collected in the paper written by Ryan and Xenos and published to Computers in Human Behavior. The paper aimed at correlating the personalities of Facebook users categorized into one of five types, with their activity patterns on Facebook. The Big Five or Five Factor model of personalities include the following categories: Extraversion, Agreeableness, Conscientiousness, Neuroticism and Openness.