Project 3 Proposal

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Scope

For project three, I would like to implement Paxos. From the papers we have read throughout the semester, it is clear that Paxos is a fundamental algorithm in distributed computing. While other consensus algorithms, such as Raft, may eventually replace Paxos in real-world services, Paxos is the starting point. If I want to be successful in understanding the derived consensus algorithms, I need to understand Paxos.

Specifically for the project, I would like to create a generic consensus service based on Paxos. This service will expose a Java based API that can be used in distributed applications that require consensus. To demonstrate this service, I will create a sample application that uses distributed locking to modify a single file.

I'd like to do this in a repository under my name if possible. It will be private during the semester. After the semester, with your permission, I would like to make it public as a sample application that I can use to demonstrate my experience with distributed computing.

https://github.com/robreeves/Agreed

Checkpoint 1 (4/27/17)

To start this project, I plan to implement any infrastructure components that will make develop and debugging easier. The main service that comes to mind right now is a logging service. I will also have the command line interface implemented.

Before starting, I will come up with a more concrete plan for the distributed lock application and how it will use Paxos. This should be done by checkpoint one.

I expect to be started on the membership portion of the Paxos implementation at this point.

Checkpoint 2 (5/11/17)

At this point I should have the majority of Paxos and the sample application implemented. I will be testing, fixing bugs and adding support for corner cases that I deferred on between this point and the final demonstration.