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Distributed Systems

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Checkpoint 1

We did not meet our initial checkpoint 1 goals, but have begun designing the architecture of our system. Perhaps it should not come as a surprise that several of our initial implementation decisions needed more research than we initially thought. We investigated the possibility of establishing TCP connections with sockets between our nodes or using ØMQ, but decided that for prototyping the simplicity of using HTTP was worth the slight performance hit.

Currently, we have non-functioning code that sketches an outline of our worker and coordinator programs, as well as several scripts that will help us test and manage our system. These scripts are also not done- we are taking some time to learn more beyond the basics of shell scripting, which has been interesting. However, they should save us quite a lot of time, as they automate the processes of deploying new code to each node as well as starting and stopping worker processes. Our coordinator node will probably be started by hand, as we currently imagine passing in information about the job to be done from the command line of the coordinator node.

The worker and coordinator programs envision an initial architecture in which the workers drive communication with the coordinator by making RPCs. For example, once they start up, they periodically check with the coordinator to see if there is work to be done. This has a downside of incurring unnecessary network traffic when no work is in the queue, but also simplifies the coordinator's job, as it does not need to track which nodes are actively in the network- worker nodes will reach out to the coordinator instead.