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## NYU Distributed Systems: Final Project Ideas

These are all suggestions. You do not need to pick from these lists, these are just some ideas. However, thinking about a project that leads to you building something (e.g., an application) that you can use (and is hopefully fun) is a good way to go about finding a final project.

- AT Proto is a protocol that was first developed for Bluesky, but has since been used to build a number of decentralized applications including a Git repository hosting service and a blogging platform. People have been collecting ideas of things to build on top of AT Proto, see for example [here](#) and [here](#).

Build an interesting application using AT Proto. You could build an idea listed in the list, or your own.

- Cap'n Web (also see [this blog post](#)) is an updated version of Cap'n Proto that supports a capability based security mechanism. The core idea is that reference to an object proves that you have access to it. Concurrently, Ink & Switch have been discussing a local-first capability based access control approach called Keyhive. Build and evaluate a text document sharing system that uses capability based security. In particular, you should compare this to existing systems, e.g., Google Drive or Dropbox for sharing data.
- Local-first software (also see [this](#)) is a distributed programming paradigm that has been proposed as a way to build distributed programs where data is not centralized, but yet enable collaboration. Build a collaborative text editor or game using the local-first approach.
- Recently, Amazon and others have been using “lightweight formal methods” to prevent bugs. This approach, which has been described in [this paper](#) and other places combines verification and theorem proving approaches with other techniques to improve the reliability of distributed programs. Apply this approach an open-source distributed program (e.g., etcd, ZooKeeper, some smart contract) or build a distributed system to which you apply this approach.