Final Project Clarifications

Grading: The final project will be evaluated on two broad categories:

1. Scope. The scope of your project will determine the maximum grade you can receive. For examples of projects that would receive full points for scope (and therefore have a maximum possible grade of 100%), see below.

2. Execution. How well you deliver on the promised scope of your project. This includes the video, write-up, and code deliverables and determines your final grade on the assignment.

If you have any concerns about whether your project will receive full points for scope, the TAs will be holding precepts at the usual times this week specifically to answer those sorts of questions. *We highly recommend at least one person from each group attend one precept slot to double check your project falls within the expected scope for the course.*

Example Projects: Here are 8 example projects that would all have a maximum grade of 100%.

1. Extending assignment 4 (DORM) to support arbitrary SQL queries

2. Implementing and evaluating a *non-queue-based* caching algorithm. Examples of such algorithms include: LIRS, ARCS, and Hyperbolic.

3. Implementing and evaluating a *machine learning-based* caching algorithm. Examples you could use for inspiration include: Cacheus, LRB, and LeCaR

4. Building a shell in Go (or another language of your choice) that supports process backgrounding. See this page for help/guidance getting started on implementing a linux shell

5. Build a browser plugin that does something cool. There are lots of options here: analyzing a user's traffic, encrypting/decrypting form inputs, etc

6. Build an IPTables-like application in Go. See the *Basic Concepts* section on this page for an overview of what IPTables does. You do not need to replicate all this functionality - a very basic firewall will suffice.

7. Survey several capability systems in practice, for example, KeyKOS, Capsicum, Fuschia OS, sel4, Tahoe-LAFS. See the following section for more details on what a survey project should entail.

8. Build a cache for some other medium such as a file system, SSD, or Hard Drive

Extra Clarification/FAQs:

I want to do one of the example projects but don't know how to get started!

- Come to office hours, make an Ed Post, or send us an email! We're happy to help you get off the ground.

Can we extend assignment 3 with more caching algorithms?

- As long as the algorithms you pick aren't queue-based. Queue-based algorithms include: LFU, LRU, FIFO, LIFO, etc.

How much work should we put into the final project?

- As stated on the website, about twice as much as the average programming assignment.

Does our project fulfill the expected scope for the course?

- Come to precept this week and we'll tell you

I want to work on a project that isn't included in the examples

- Please do! We do recommend running it by us just to double check that you won't be doing too much or too little

What does it mean to do a survey project?

- We expect you to read 3-5 papers in related fields and provide us with a detailed comparison of all the systems you selected.
- This should not just be a summary of three papers! Your analysis should demonstrate a thorough understanding of all the systems as well as well-reasoned analysis of the systems in relation to one another.
- While code isn't required for this kind of project, conducting an evaluation that compares the systems would be an excellent addition.

What should we include in our video?

- The video should be 5 minutes or shorter, should include a screen share demonstrating your project's functionality (if applicable), and explain how and why it works. If you want to show specific code snippets that's fine as well.
- The goal is for you to show us that you built something systems-y that works.

Problem Set 5: Problem set 5 will be released today and will be shorter and easier than prior ones. You will have the normal two weeks to submit it, but it should be quick, and we recommend you get it over with as soon as possible. We hope this gives you ample time to work on your projects.