

ACS7301

Class Project Guidelines

The class project will make up the bulk of your mark in ACS-7301. The project is intended to get you involved in some aspects of research in peer-to-peer systems, and in particular, to acquire skills that you will need for your thesis work. The project consists of four deliverables: the project proposal, the project presentation, the project report, and the project implementation (if an implementation is part of the project). The deadlines for these components are:

Proposal	5pm, March 2nd, 2009
Report and Implementation	5pm, April 23rd, 2009
Presentation	In class, during last two lectures

The next four sections describe what you must do to successfully complete the class project. Feel free to speak to the instructor if you have any questions or concerns about the project.

Choose a Project

First you will need to select what to do for a class project. You have a lot of flexibility as to what to do for a class project. However, it is important to choose something that you can accomplish within a period of about one and a half months. Broadly speaking, your project should take one of the four forms:

Literature Survey : An in-depth literature survey of one of the selected topics we covered in class. Specifically, you should select a topic area from the following list:

- Distributed Hash Tables
- Structured Overlays
- Incentive Based Systems
- Reputation Based Systems
- Anonymizing Systems
- Security Issues in Peer-to-Peer Systems

Then, you must compile a literature survey of the work in the area, using the papers read in class as starting point. The literature survey must describe the outstanding problems and technical challenges in this area, contrast and compare the systems that attempt to address these challenges, and discuss the open questions in this area, possibly identifying those that would make an interesting thesis topic.

The survey should be at least 5000 words long and have at least 25 citations. This kind project involves a lot of reading, analysis, and writing, but no software implementation.

Extension of an Existing Implementation : Select an existing peer-to-peer system (the code for most systems is freely available) and extend the code to do something interesting. That is, add some interesting functionality to an existing system. This type of project involves you finding an appropriate system to extend, determining what extension to perform, learning the code of the existing system, and then modifying the code to implement the extension. Examples, of extensions could include: adding some security mechanisms to an insecure system, adding fault tolerance mechanisms (such as replication) to a peer-to-peer system, improving routing mechanisms, etc. Another option is implementing a system on top of an existing system. For example, implementing a simple distributed web server by using a distributed hash table. The opportunities are endless. Your proposal will need to justify why what you propose to do is interesting.

A New Implementation : Design and implement a system from scratch that does something interesting. Again, what is considered “interesting” has a relatively wide interpretation. The benefit of this option over the preceding one is that you do not have to spend time to learn existing code, but you may have to spend more time coding. Your proposal will need to justify why what you propose to do is interesting.

Extend the Assignment : A variant of the last two options is to take your implementation from your assignment and to extend it in an interesting manner. Note, that your system from the assignment is quite rudimentary. Consequently, the extension to the implementation must be substantial and must involve the underlying functionality of the system, and not a cosmetic change. For example, adding functionality other than just broadcast, adding various security mechanisms, directory services, etc. Your proposal will need to justify why what you propose to do is sufficiently substantial.

Your selection may depend on a variety of criteria, including your coding ability, the amount of additional reading you will need to do, etc. Most importantly, you should be interested in the project. The best way to get ideas as to what you wish to do is to read some more research papers, and see what has been done by others already. Note: Your project does not need to be novel. You are strongly encouraged to discuss what you would like to do for your project with the instructor before writing the project proposal.

The Project Proposal

The purpose of the project proposal document is for you to present what you will do for your class project and to justify it. The proposal should be approximate five pages (2000 words) long and must comprise four sections:

1. Introduction,
2. Background and Related Work,
3. Project Description, and
4. Project Timeline and Deliverables.

The first section, *Introduction*, should be a brief summary of what you propose to do, just a two to four paragraphs long. It should briefly motivate and summarize what you propose to do.

The second section, *Background and Related Work*, should be about one page long and provide the context for the description. For example, it should briefly discuss similar projects from the literature, describe general problems and design issues that the project will tackle, etc. Note, if you choose to do a literature survey as your project, this section should briefly describe your topic and related topics in the area. You will likely need to cite a few references. The references should be placed at the end of the proposal in a standard citation format.

The third section, *Project Description*, should provide a two to three page description of your project. It should describe the scope of the work, the anticipated challenges that you will face, the primary and secondary goals of the project, e.g., features that you will implement, and features that you want to implement, if you have time. You will also need to justify why these features are interesting. Typically, this is accomplished by citing similar projects.

If you are planning to do the literature survey as your project, instead of describing what you will build, you should describe the topic of the literature survey, provide an initial list of papers that will go into the survey, and justify (briefly) why these papers are being included, i.e., how they relate to the topic of the survey. This will demonstrate that your survey will be of sufficient depth and breadth.

The fourth section, *Timeline and Deliverables*, should be a short half page description of the proposed timeline for the project, and what items will be completed. This ensures that you do not take on too much work, and that you can finish in a reasonable amount of time.

Any citations in your proposal should be listed at the end of it.

The Project Presentation

Each student will prepare and present a 20 minute talk, describing their class project. These talks will occur in the last two lectures of class. It is expected that each student will prepare a set of slides for the talk. The talk should have the following basic outline:

1. Introduction and motivation,
2. Related work,
3. Project description,
4. Insights learned from the project, and
5. Conclusions and (possible) open questions or issues.

After the talk, there will be about a few minutes for questions.

The Project Report

In the last one and a half months of the course, the students are expected to work and complete their projects and a project report. The project report should take the form an

academic paper, with a form that is similar to the ones that were read in class. That is, the report should comprise a number of sections, including an introduction, related work, conclusion, and several sections detailing your project, including what work was done and what was not done. The length of the project report should be around 4000 words (about ten pages). These report should also include all the citations at the end.

If you are planning to do a literature survey as your project, your report will constitute the literature survey. In this case the survey should be approximately 5000 words, 11-12 pages, plus references.

Part of the evaluation will depend on how well the report is written. It is expected, at minimum, that the report will be spell checked, and grammar checked. The report should be nicely formatted, and should use standard line spacing. Do not use double or 1.5 line spacing because this inflates the report and makes it hard to read. Diagrams and charts should be included the report as needed, but there is no need for colour. That is, standard black and white printing is sufficient. Again, many of the papers we read in class provide a good example of what is expected.