Fatih University
Faculty of Engineering, Department of Computer Engineering
CENG 564/463 Network Programming

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Course Project

Introduction

The evaluation of the course is based *heavily* on the project and survey paper report. The project grade is normally based on your

- Project Proposal (submitted with the Survey Paper Assignment),
- Final Report,
- Submitted Code and its Documentation, and
- Demonstration

A weak initial proposal is forgiven and forgotten if you recover to produce a good final project and its documentation.

You may do the project as an individual, or you may work in a team of up to 3 students. (Larger groups will naturally be expected to do more difficult projects.) I encourage you to work in groups, since this will generally allow you to manage a more interesting project.

Project Requirements

The project that you will work on in this course may become a vehicle for the students to take an active part in exploring the subject area, as appropriate for an advanced course. Thus, a project must be chosen that will clearly extend your knowledge and understanding of some area of Network Programming and Distributed Systems.

Moreover, the primary criterion for evaluating your project will be what you have learned and discovered from the project, not the amount of work involved or the amount of code written or the number of pages of written report. Thus, you should define your project with this strongly in mind and prepare submissions that communicate what you have learned to the instructor and your TA.

The project is also intended as a useful prototype experience for those going on to advanced design work or research.

There are three aspects to a project:

1. **Problem Definition and Literature Background**
2. **Design**
3. **Implementation and Experimentation**

The *Problem Definition and Literature Background* should explore and describe the problem or area of interest and provide some background work in this area. It should examine the research literature in the selected area, according to what are the important problems, to what degree are these problems understood and solved, how do different solutions interrelate, and what are the important issues for the future. Original thoughts, solutions, insights are strongly encouraged and will be rewarded. Because of the time limits of the semester and our emphasis on *software implementation*, this stage is generally expected to be very limited, e.g. read a couple of papers, think hard for awhile and write your project proposal.

The *Design* should try to map out a software solution that is implementable with the available time, human, knowledge, hardware and software resources. With the intended "prototyping" nature of the projects, design, implementation and evaluation may be performed iteratively. However, there is merit in trying to think things through before doing at each iteration.

In the *Implementation and Experimentation* phase, the design, or some aspect of the design is implemented to demonstrate feasibility. The experimentation involves developing a reasonable hypothesis and designing and performing an experiment to test this hypothesis.

In general, the course project should constitute work done for this course and not be derived from outside work activities or work done for other courses.

You may work alone or in groups of 2 or 3 with the prior consent of the instructor.

Structuring the Project

The project is to be structured into the following three stages (or requirements):

Initial Proposal - due: 5 December 2003 or earlier: A written proposal describing the area and problems to be explored, the motivations for choosing this area, possible directions of investigation, proposed type of project, and the expected results. This should be roughly 1-3 typewritten pages.

Intermediate Progress Reports: Brief oral and (optional) written reports on the status of the work, new issues, problems and insights. To be given by e-mail or at the weekly meetings.

Final Report and Demonstration: A final description of what was attempted, what was accomplished, and what was learned from the project. Ideally, this will be a revision of the proposal, changing the descriptions of proposed work to descriptions of accomplished work; refining the goals and objectives, including a brief literature survey for completeness and extended with some final conclusions and observations. The idea is for this to be the cumulation of the previous steps, not an entirely new document. The demonstration should provide some working evidence of the work accomplished, ideally demonstrating some point to the project, i.e. the performance of some critical aspect to the design, etc.

Project Proposal

The following describes what is expected in the **Project Proposal**. It is also hoped that this will help in the selection and definition of a suitable project. Please follow the outline given below.

Overview of the Proposal
Briefly state the topic chosen, why it is of interest, the goals, and how you intend to carry this out. This should be a short paragraph of about 4-5 sentences.

Background and Motivation
Describe the chosen area, which should be fairly narrowly defined, giving a few references to relevant work (if known). This description should be terse and at a high technical level (e.g. do not spend time defining technical terms used). Next give reasons why the area is of current interest to the technical community in general and to you in particular. Finally, list (at least three) potential problems which merit further investigation. (Note: your project need not necessarily advance the state of the art, but it must advance the state of your knowledge and skills.)

Proposed Project
Describe in some detail the problem which you have chosen to attack and the reasons for its importance in relation to the other problems, if any, listed above. Describe your proposed method of investigation. Give some convincing reasons why you believe you will be able to complete the project as proposed by the end of the semester. A division of the work into phases with a timetable for completion of the phases would be helpful (These phases are distinct from the parts described in the course overview handed out earlier). It is better to propose a modest project and complete it successfully by the end of the semester than to make a vague or grandiose proposal which you are unable to complete.

Expected Results
Describe as specifically as possible the results which you expect to obtain. Give an outline of the design which you think will solve the problem at hand. State what you think the experiments will show. The objective of this portion at this stage is to get you to focus your thinking somewhat, based what you can do so you have something to say at the end of the project.

References
You should be able to include some Internet or other references at this stage to relevant research papers or background articles. The style of references follow that used in some recognized Computer Science academic publication, such as the ACM Computing Surveys, IEEE Computer, CACM, etc.

Projects Ideas and Areas

In general, every project must be clearly related to Network Programming, Distributed Systems, or Computer Communications. Some suggestions are given on the project web page. They indicate the general type of projects acceptable as well as hopefully suggest further project ideas.

If you have suggestions for the project, or questions about your project ideas, please talk to me or email them to me. Some proposals are listed on the project page of the course web site.

When designing a project to do '**Distributed X**', getting the "Distributed" part right is more important than getting the "X" part right. For example, if you want to build a distributed game, the majority of your time should be spent on the distributed aspects of the game, not on the graphics.