

Course Project

The purpose of this project is to provide you an opportunity to practice the principles of network security, and use different security software and tools. There is some flexibility in what you do and how you do it. This document outlines the requirements and the milestones of this project. Please read all sections of this document and the suggested topics and **start early**.

This project is divided into three phases. Each phase provides a well-defined point for the instructor to provide feedback and evaluate your team's effort. Here are the details of what is expected and what needs to be delivered for each phase.

Grading: This project accounts for 30% of the final course grade, allocated among the three phases as follows: Phase I (5%), Phase II (10%), Phase III (15%).

- **Phase I: Project Proposal and Team Forming [Due Oct 17]**

Each project is undertaken by an individual or a team of 2 to 5 students. It is *strongly recommended* that you work in a team. You can greatly benefit from the discussions with other team members and accomplish a project with better quality in a team. Moreover, after graduation you will most likely work in a group. So working on a team project will help you to become an effective team player in your future working environment.

Your team can propose to conduct any security-related project of your interest. For your reference, a list of suggested topics are provided at the discussion board of the black board system (<http://www.vanderbilt.edu/oak/>). The instructor will assess your proposed topic. And if it is believed to have suitable scope and difficulty, the proposal will be approved and you can go ahead for the next phase. Otherwise, you have to revise or refine the topic. For this reason, it is *strongly recommended* that your team schedules an appointment with the instructor to go over your proposed topic before you submit the proposal. By the due date, you need to submit a proposal which includes the following information.

- Title of your topic.
- Names of your team members.
- The goal of your project. If the project aims to build a security system, explain what the system will do and what properties your system would hold. If the project explores a research topic, explain what problem your project addresses – if it has not been addressed by existing work, explain why it would be an interesting and important problem; if it has been studied, explain how your project is different from existing efforts, and makes progress towards solving the problem.
- Your approach to conduct the project. Discuss what technical areas you will explore in order to identify the algorithms and protocols for your project. This section should contain specific references to sections of textbooks, reference books, or other published literatures, and web resources.

- The evaluation method of your project. Explain how you would evaluate your project. For system-oriented project, describe how you would implement your system and what experiments you would like to conduct to validate your system design. For research-oriented project, you first need to identify one of your evaluation methods – theoretical analysis, simulation study, system implementation and experiment, or a combination. Then explain how the method(s) would provide validation and/or evaluation of your design.

- **Phase II: Progress Report and Design Review [Due Nov 07]**

You are required to finish the design of your algorithm, protocol, or system by the due date of phase II. Submit a progress report that describes your design and the challenges you have faced in designing your solution. For system-oriented projects, present the system functional specifications, modules and interfaces. For research-oriented projects, present the model, the algorithm and/or the protocol with a focus on the novelty and uniqueness of your design.

- **Phase III: Final Report and Demonstration [Due Dec 07]**

In this phase, you will evaluate your design and wrap up your project. The final deliverables are listed as follows.

- *Final report.* Submit the final report of your project by **Dec 05**. The final report extends the progress report with the evaluation results. It needs to be well-organized, and well-written. For research-oriented project, this final report counts for a major portion of the final grade. It needs to have a quality of a conference paper. For system-oriented project, the final report and the system demo are considered jointly for your final grade.
- *Team member peer evaluation.* A brief evaluation report of each team member's contribution in this project needs to be submitted along with your final report [Due **Dec 05**].
- *Presentation.* A presentation that is given by one or more members of your team using Powerpoint slides in the class of **Dec 07**. The presentation should last 10-15 minutes depending on the size of your project and your team. Rehearse the presentation well — the time limit will be strictly enforced, and the quality of your presentation counts. The presentation should: (i) remind us what your system does, (ii) discuss the “security content” of this effort, (iii) describe what design or implementation innovations were required to complete the project, (iv) explain why your design is a good one, and (v) explain why we should believe that your system is secure.
- *System demo session.* If your project is a system-oriented one, you need to sign up for a 30-min demo session by **Dec 07**. During the demo session, your team will be asked about your system – functionality, design choices, and related work. Questions may be directed to any member of the group. Your team needs to hand in the code of your project after the demo session.
- *Question/Answer session.* If your project is a research-oriented one, you need to sign up for a 30-min question/answer session. During the session, your team will be asked about your solution and related works. Questions may be directed to any member of the

group. Your team needs to hand in the simulation code of your project, if any, after the Q/A session.