CS 6393 SPRING 2016
PROF. RAVI SANDHU
EXAMINATION 1
DUE MONDAY FEB 15, 2016 BY 5:00pm

- **Each solution must be accompanied by the following honor code statement: I have not taken any help on this examination from <u>anybody</u> and have not given any help to <u>anybody</u>. Put this statement in a cover page to your solution. Sign it electronically by putting your name under it.**

- Each examination is to be solved by students individually. Students can access whatever material they choose but cannot discuss with **<u>anyone</u>**.
- It is highly unlikely that web browsing will effectively help with the solution. Anything you find on the web may well be wrong and too complicated. Spend more time and effort thinking. Don't waste all your time browsing. Some browsing is appropriate and should help craft a good answer.
- If your answer is based on material you found elsewhere, you must cite the source.

- I am not looking for a specific or "correct" answer. I am looking for demonstration that you can think through the question and answer it coherently based on my lectures and supporting material.
- Each solution must be within the length limits provided.
- Solutions are to be submitted by email in pdf to <u>ravi.cs6393@gmail.com</u> with subject title Exam 1.
- Text must be typed. Hand drawn figures are acceptable if appropriate but must be scanned and incorporated in submitted pdf. Figures must fit within the specified size limit for the entire answer.

- If you have doubts about the meaning of any of the questions, note that in your answer and explain how you understood the question.
- Discussion and mention of irrelevant issues will be penalized.
- Use of incorrect and sloppy English will be penalized.

- I have not thought through what my own answer to these questions might be. I am really interested in seeing what answers the class can come up with.

<div align="center">

Answer both questions. Both questions have equal weight.
Each question has maximum 1 page allowance for answer in 11 point font single space.
You are not required to use the full page.
A significantly shorter answer is likely to be inadequate.

</div>

1. Consider Lipner's composite lattice in Figure 5 of the Sandhu 1993 paper discussed in Lecture 2. You are required to adopt this lattice model as the foundation for addressing the confidentiality and integrity properties that Lipner's 1982 paper addresses. Your task is to (i) identify shortcomings of this lattice model to solve the requirements, and (ii) recommend how RBAC can be applied to augment the lattice solution to address some of these shortcomings. In (ii) you are not allowed to go beyond RBAC.

2. Discretionary access control (DAC) has been known to have fundamental weaknesses from its earliest days. Nevertheless it has been the dominant form of access control in commercial products until the mid 1990s when RBAC took over. Explain the reasons for DAC's success for a quarter century, and for its continued relevance today.