

**CS 6393 SPRING 2016**  
**PROF. RAVI SANDHU**  
**EXAMINATION 3**  
**DUE MONDAY APRIL 25, 2016 BY 5:00pm**  
**Earlier submissions are welcome.**  
**There is only 1 question with 2 parts.**

- **Each solution must be accompanied by the following honor code statement: I have not taken any help on this examination from anybody and have not given any help to anybody. 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 **anyone**.
- 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 [ravi.cs6393@gmail.com](mailto:ravi.cs6393@gmail.com) with subject title Exam 2.
- 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.

**There is only 1 question with 2 parts. Grading will follow rubric of Exam 1.**

**There is maximum 1 page allowance for each part of the answer in 11 point font single space (2 pages total).**

**You are not required to use the full page.**

**A significantly shorter answer is likely to be inadequate.**

1. Consider the following models discussed in class:

- a) OpenStack Access Control (OSAC) model with HMT (Zhang et al 2015 OpenStack2)
- b) AWS Access Control within a Single Account (Zhang et al 2015 AWS)
- c) Azure Access Control (Azure-AC) Model (Zhang et al 2016 Azure)
- d) Multi-Tenant ABAC<sub>0</sub> Model (Pustchi et al 2015b)
- e) Multi-Cloud OpenStack Access Control Model (MC-OSAC) with Domain-Trust (Pustchi et al 2016a)

PART A: Select one of these models. Describe one distinct way in which this model could be extended or modified. Explain what advantage would be gained by the proposed extension/modification.

PART B: Repeat part A for the same model or a different one. If you choose the same model as part A the extension/modification in part B must be materially different than in part A. Grading will take this difference into account.