Project Ideas
for
ECE 458

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Project Guidelines

• Give us the names of your team-members by end of week

• No more than 2 members per team

• A proposal is a must to get a grade (10% of the project grade)

• Proposals due via the Learn system before Jan 29th, 2013

• Implementation and demo is a must to get a grade (70% of the project grade)

• 5-10 page final report is a must to get a grade (20% of the project grade)
Project Ideas

• Bio-metric based login mechanism
  
  • Phones/Tablets have many more sensors in them than laptops/desktops. Can you build a bio-metric based login mechanisms that leverage this aspect of phones.

• Create an electronic voting system
  
  • Electronic voting is increasingly being used in many countries. Build a “secure” electronic voting system, and discuss the security measures you have added.

• An arithmetic server
  
  • Build a server that accepts request and performs arithmetic computation (basic arithmetic operations such as +, -, *, /, %, and !(factorial). Counter-measures must be implemented to protect against DoS attacks
Project Ideas

• Work with tools like Klee, Blast, C-Cured (bug-finders and model-checkers) to find exploitable bugs
  
  • Software bugs are often the first step in an exploit. Tools such as Klee help find such bugs. Your goal is to apply these tools to non-trivial software and find some interesting bugs, and propose an exploitation strategy. (Refer papers on Klee, Blast, etc. These tools are open-source)

• Build a SAT solver based system to cryptanalyze hash functions
  
  • SAT solvers have become so efficient that they can used to partially automate cryptanalysis. Download a SAT solver and morph it to automate aspects of hash function analysis (refer 2006 paper by Ilya Miranov)

TALK EARY AND OFTEN ABOUT PROJECT WITH ME AND TAs