

# Introduction to Computer Security

Instructor:

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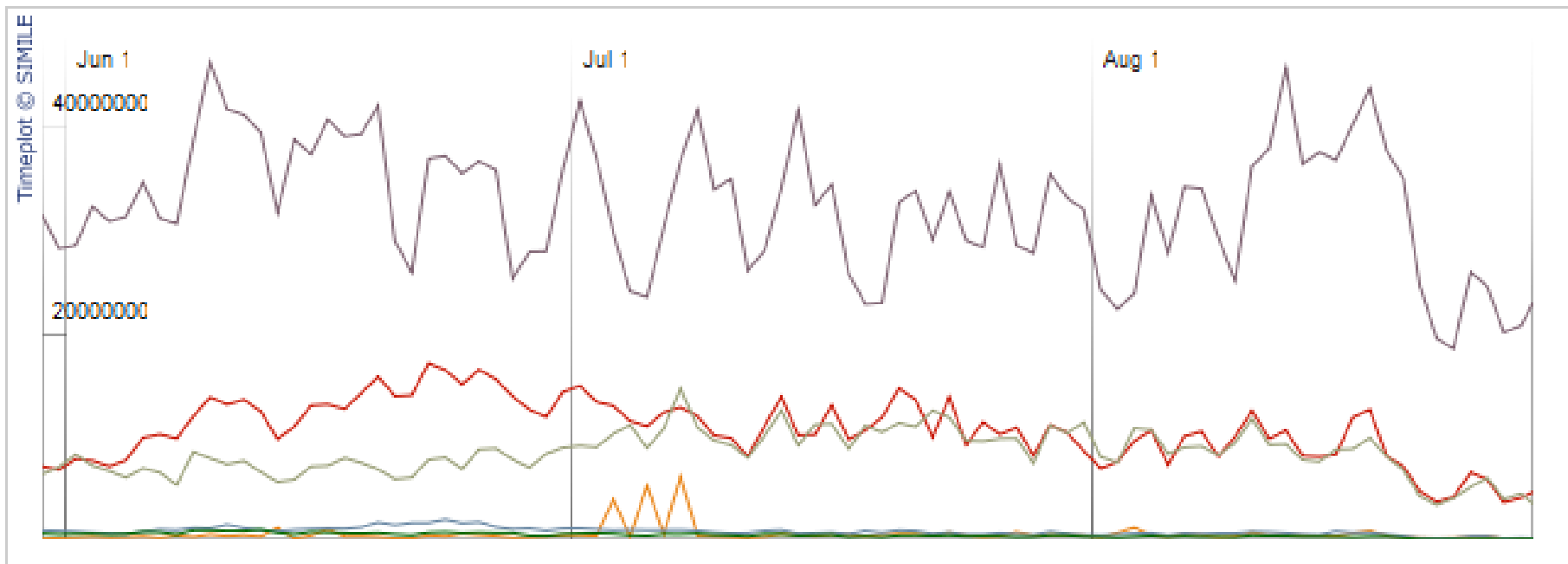
- Why study computer security ?
  - Increase in Computerization -> Increase in vulnerabilities
    - 541.7 Million computers are connected by Internet by Jan 2008 (US CERT Report)
    - Critical Infrastructures are computerized
      - Power, Communications, Water

- Why study computer security ?
  - Increase in Incentives -> Increase in Threats
    - Financial Incentives
    - National Incentives
    - In 2007 (source: [DefenseTech](#))
      - 37,000 reported breaches of government and private systems.
      - 13,000 direct cyber-attacks on federal agencies
      - 80,000 attempted computer network attacks on Defense Department systems.
      - Economic impact of cyber attacks on businesses has grown to over \$226 billion annually.
  - Over 5.9 Million unique viruses (CERT Report)

# Motivation

## 90 Day Attack Trends By Region i

Australia Africa N. America Europe S. America Asia



Source: Symantec

# Motivation

## Monthly Stats:



Source: Message Labs

# Motivation

- Why study computer security ?
  - Fastest growing job market
    - 25<sup>0</sup>% of Budget is allocated for Cyber-Security
  - Of course it is Fun!

- What do we learn in this course ?
  - common security terminology, threats, vulnerabilities, and security design principles.
  - basic cryptography concepts, and specific commonly used algorithms and protocols.
  - basic network security issues and controls.

- What do we learn in this course ?
  - common program vulnerabilities, and secure programming techniques.
  - security models, including Bell-La Padula (MLS), Biba, and Chinese Wall security.
  - administrative issues in security, such as planning, security policies, and risk analysis.

- What do we learn in this course ?
  - hands-on experience in using common security tools, such as firewalls, intrusion detection systems and scanning.

- How do we learn ?
  - Acquire
    - Lectures, Reading Materials, Online Resources
  - Assimilate
    - Discussions, Assignments, Exams
      - 3 to 4 Assignments
      - Mid-term and Final exams
      - No make-up unless prior permission is obtained
  - Apply
    - Lab Exercises (F237)

- Text book
  - Security in Computing, 4<sup>th</sup> Edition, Charles P. Pfleeger and Shari Pfleeger
    - Available in UNT Bookstore and online
- References
  - Mark Stamp, *Information Security: Principles and Practice*, John Wiley & Sons, 2006.
  - William Stallings, *Cryptography and Network Security*, 4th edition, Prentice Hall, 2006.
  - Alfred Menezes, Paul C. van Oorschot, Scott A. Vanstone, "Handbook of Applied Cryptography", CRC-Press , 1996.

- Teaching Assistant
  - Anju Suryawanshi
    - [AnjuSuryawanshi@my.unt.edu](mailto:AnjuSuryawanshi@my.unt.edu)
- Office Hours
  - NTRP F227 Tue & Thu: 2 – 3 PM
  - Also by appointment
- Course Website
  - <http://www.cse.unt.edu/~5550s001>
  - BlackBoard <http://ecampus.unt.edu>

- Assignments 20%
- Project 25%
- Midterm Exam 25%
- Final Exam 30%

# Pre-requisites

- CSCE 1040 (CSCI 1120)
  - Basic programming knowledge
- CSCE 2610 (CSCI 3100)
  - Basic computer organization knowledge

- **Academic Dishonesty**

- Cheating in exams/assignments, plagiarism in exams/assignments, collusion and falsification of academic records or the attempt to do these things constitute academic dishonesty. Students need to include proper citation for books and/or Internet based resources on their submissions. All submissions will be checked against plagiarism. Any direct copying from a book, from an Internet site, from a paper, etc. without proper citation to the author (of the book or the Internet article) is considered as plagiarism. All assignments need to be done individually. Any type of academic dishonesty will be handled immediately and strictly, resulting in a zero on the exam/assignment and an F in the class.

- **Students with special needs**
  - Students in need of academic accommodations for disability can refer to the UNT Policy Manual for initiating the required arrangements based on ADA terms. Also, disabled students can arrange an appointment with me to discuss their special needs for academic accommodation during office hours.

- **Observation of Religious Holidays**
  - In accordance with Texas state law, a student absent due to the observance of a religious holiday may take examinations or complete assignments scheduled for the days missed, including those missed for travel, within a reasonable time after the absence. Students should notify the instructor in each course of the date of the anticipated absence as early in the semester as possible. Only holidays or holy days observed by a religion whose place of worship is exempt from property taxation under Section 11.20 of the Tax Code may be included. A student who is excused under this provision may not be penalized for the absence, but the instructor may appropriately respond if the student fails satisfactorily to complete the assignment or examination.

- Computer Security
  - Important and Imminent
  - Great to learn at UNT
    - Good resources
    - Good researchers
- Will learn both the good and bad sides of computer security
  - Do not “experiment with” systems that you are not allowed to
  - Do not use what you learned in this class for unethical / illegal / dishonest behavior



The screenshot shows the DC3 Digital Forensics Challenge website. On the left is a navigation menu with links: Home, Challenge, Prizes, Sponsors, Press, Stats, Rules, Archives, Contact, and Apply Now. The main content area features the DC3 logo, a quote from Mr. Steven D. Shirley, and a 'News' section with two articles. A terminal window in the bottom left shows a file listing of important dates.

## 2009 DC3 Digital Forensics Challenge

*"The Department of Defense Cyber Crime Center Challenge is a call to the digital forensics community to pioneer new investigative tools, techniques and methodologies. We thank you for your time and contributions to the community."*

Mr. Steven D. Shirley, SES - Executive Director, DC3

### News

21 Aug 09 **DC3 Challenge is now over 1,000 approved teams**

As of today, the DC3 Challenge now exceeds over 1,000 approved teams for the DC3, SANS, and IMPACT prizes. This is the first time in the contest's history to break this barrier. We encourage all teams to submit early to beat the rush! Our stats page has been updated to reflect this update.

[MORE INFO](#)

04 Aug 09 **DC3 Challenge gets press and spikes to 900+ teams**

The DC3 Challenge now exceeds over 900 teams, with a 300+ teams added since the U.S Cyber Challenge announcement last Monday and DC3's presense at both Black Hat USA 2009 and DEFCON 17 last week.

Be sure to read our rules for U.S. and non-U.S. participants, and catch up on the new articles published by the press and U.S. government officials about these exciting opportunities in the computer security field.

[MORE INFO](#)

```
root@localhost:~# ls /Important_Dates
2009-02-04: Registration_Opens
2009-03-06: Challenges_Sent
2009-11-02: Solutions_Due
2009-12-01: Winner_Announced
root~#
```