Four Week Summer Program in Cyber Security for High School Students
• Hands-on, intensive program during summer
  – Mid-July to early August
  – Four days each week (Mon. – Thurs.)
  – Six hours each day, including breaks
• Focused on cyber security
  – Cryptography (Charles Lam)
  – Network/Computer Security (Melissa Danforth)
Cryptography Schedule

• Week 1
  – Substitution ciphers, Euclidean algorithm, Modular arithmetic

• Week 2
  – Fermat’s Little Theorem, Modular exponentiation algorithm, RSA encryption

• Weeks 3 & 4
  – Work on hands-on project & prepare poster
Cryptography Projects

• Students used knowledge gained in first two weeks to develop a project in cryptography

• Students developed three projects
  – Fact-or Fiction (factoring and its effects on RSA)
  – Elliptic Enigma (elliptic curve cryptography)
  – Zero Knowledge, We Know Everything (zero knowledge protocols)
General Security Schedule

• Week 1
  – Ethics and legality (reinforced throughout), security principles, authentication, passwords, password cracking, how to use Linux/CLI

• Week 2
  – Passwords continued, secure authentication, network attacks, social engineering
  – Start projects: primarily in the afternoon
• Week 3
  – Social engineering continued, malware, access control, protecting information, best practices
  – Continue working on projects

• Week 4
  – Watch videos on recent security topics
  – Prepare posters, print posters, practice for poster competition
• Students spent the afternoon of Week 2 and most of Week 3 on projects

• Students developed two projects
  – Crack Me if You Can: Using GPU Machines to Crack Passwords
    • Highest placing Mathematics/Engineering/Computer Science poster in the poster competition
  – Defense Against Human Hacking (social engineering)
Lecture notes, presentations, worksheets, activities, and posters are available at

http://www.cs.csub.edu/~melissa/revs-up/

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