

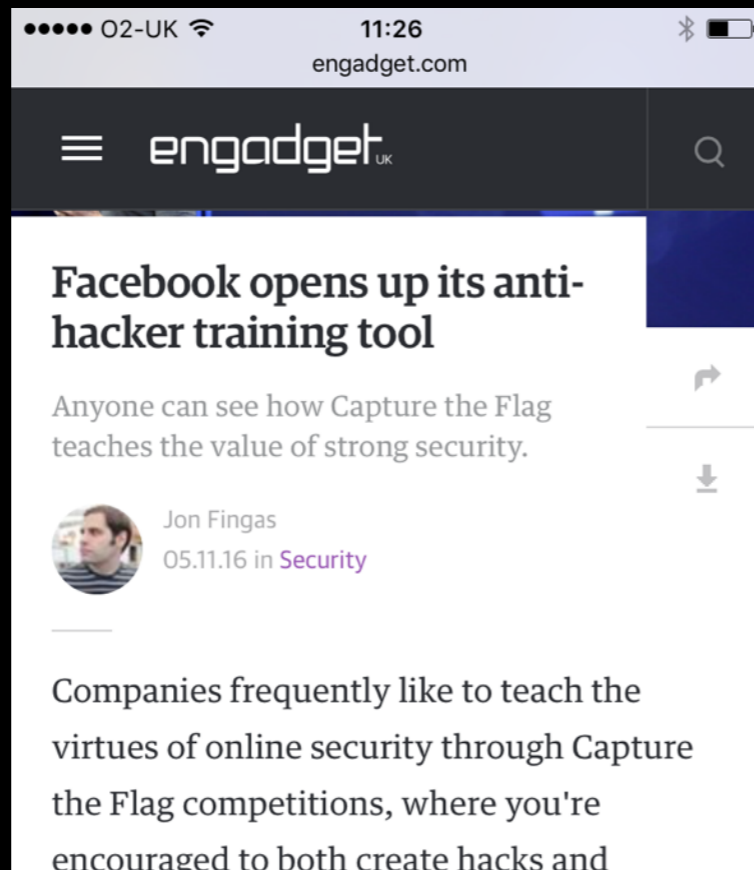
# Facebook CTF Platform

[github.com/facebook/fbctf](https://github.com/facebook/fbctf)

Paul Marinescu

# Capture The Flag

reverse engineering, forensics, web  
application security, cryptography,  
binary exploitation



## Facebook opens up its anti-hacker training tool

Anyone can see how Capture the Flag teaches the value of strong security.

Jon Fingas  
05.11.16 in Security

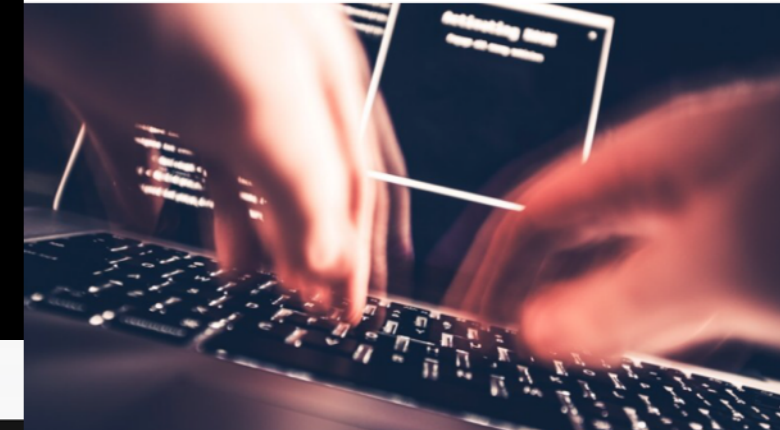
Companies frequently like to teach the virtues of online security through Capture the Flag competitions, where you're encouraged to both create hacks and protect against them. Developing those competitions isn't always easy. However, Facebook is giving trainers an upper hand by open sourcing the code for its own CTF platform, letting anyone host a similar cybersecurity challenge or build on what Facebook has learned. The move should be particularly useful for companies and



## Facebook open-sources Capture the Flag competition platform to teach developers about cybersecurity

PAUL SAWERS MAY 11, 2016 3:00 AM

TAGS: CAPTURE THE FLAG, FACEBOOK, TOP-STORIES



Above: Hacker in Work. High Speed Computer Keyboard Typing by Professional Hacker. Image Credit: Shutterstock



## Facebook's plan to train a new generation of cybersecurity pros

Alexandra Samuel  
13 May 2016

Facebook likes hackers. Not the kind that break into its accounts, but the ethical kind that can find and fix software vulnerabilities that plague massive tech companies.

In fact, it is so committed to educating and encouraging this kind of bug hunting that it's sharing its internal Capture the Flag (CTF) security training platform with high schoolers, college students, and anyone who wants to learn how to think more like a hacker.



## You Can Now Play Capture the Flag Through Facebook

by Robert Hackett @rhhackett

MAY 11, 2016, 6:00 AM EDT



Home screen of Facebook's Capture the Flag game.



# Motivation

Demand for **Infosec** professions is **growing 3.5x faster** than the overall IT job market (12x faster than total labor market)

# Motivation

The U.S. Bureau of Labor Statistics predicts more than two thirds of the **1.4 million security jobs** needed by 2020 will go **unfilled**

# Infosec at Facebook

Security Engineers

Whitehat Program

# Educational Tools

- Scarce for schools, students and non-profits
- CTFs can teach more technical skills than an average computer science program

# History







# We Organized CTFs

- From middle schools to Girl Scouts of America to University of Cambridge to Security Conferences
- ...and dozens of places in-between

# Open Source@FB Gained Momentum

- HHVM
- Flow
- osquery
- React
- ... and a lot more

LEADERBOARD

ADMIN  
YOUR RANK: 11  
YOUR SCORE: 0 PTS

**CAMBRIDGE**  
RANK 1  
3476 PTS

**IMPERIAL COLLEGE**  
RANK 2

ANNOUNCEMENTS

- ▶ We have snacks downstairs if you need a break!
- ▶ Hint: The biggest flag has 256 bits.
- ▶ Egypt is open again.
- ▶ Angola just got easier (32bits all the way!)
- ▶ Belarus Crypto challenge is open.
- ▶ Egypt challenge will be reopened later. Work on something else for

ACTIVITY

- ▶ [ 11:14:51 ] **oxford** captured United Kingdom
- ▶ [ 11:15:16 ] **oxford** captured Austria
- ▶ [ 11:17:25 ] **Cambridge** captured Austria
- ▶ [ 11:17:25 ] **phishnchips** captured Austria
- ▶ [ 11:17:33 ] **phishnchips** captured Yemen
- ▶ [ 11:17:40 ] **Cambridge** captured Vietnam
- ▶ [ 11:17:42 ] **Cambridge** captured United Kingdom
- ▶ [ 11:17:54 ] **Cambridge** captured Yemen

NAVIGATION

POWERED BY FACEBOOK

○ ○ ○  
▲ YOU ▲ OTHERS ALL

SCOREBOARD

TEAMS

FILTER

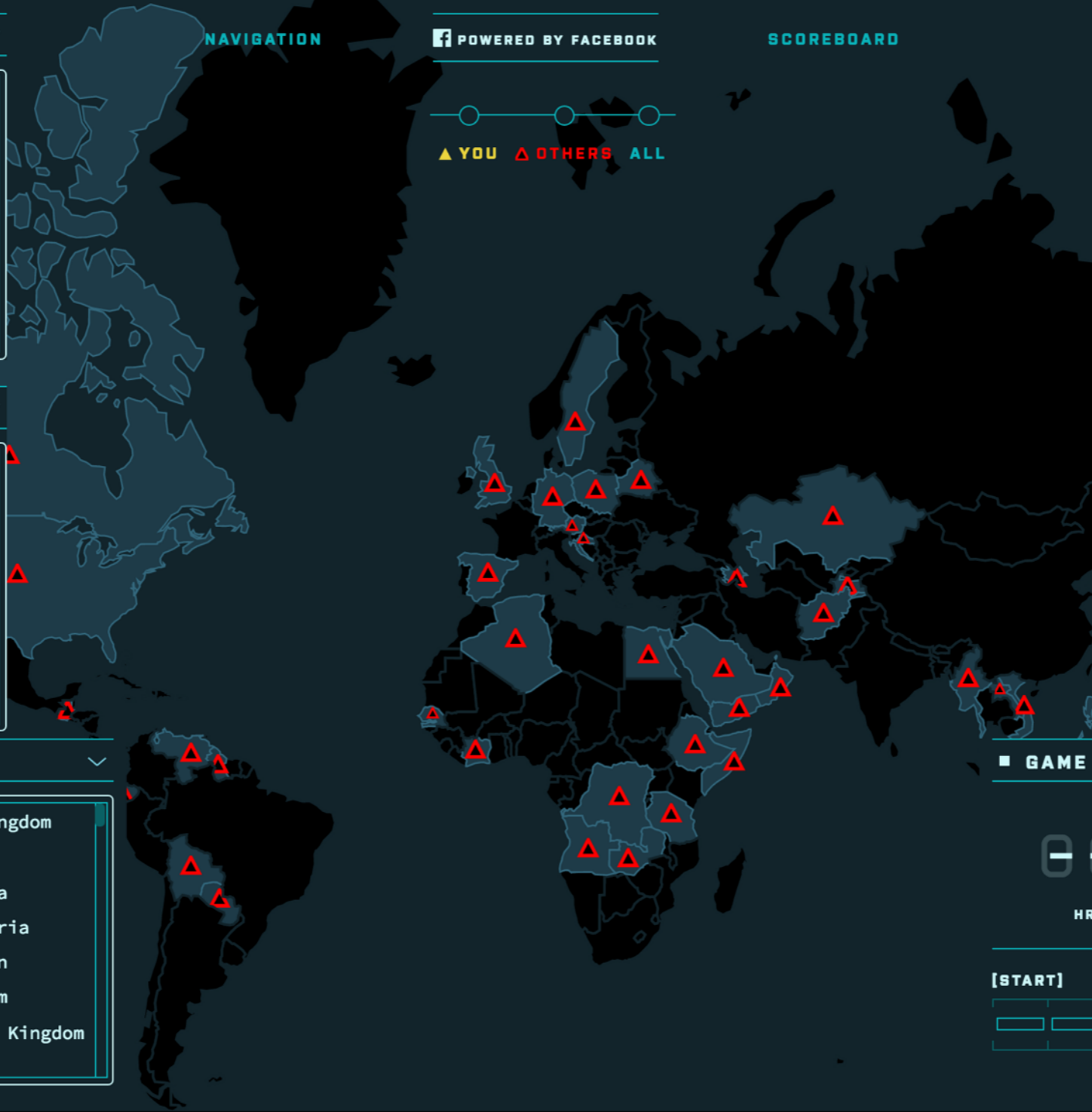
CATEGORY STATUS

- ALL
- NONE
- QUIZ
- FORENSICS
- CRYPTO

GAME CLOCK

00 : 00 : 00 : 00  
HR MIN SEC M.SEC

[START] [END]



[PLAY CTF](#)

[RULES](#)

[POWERED BY FACEBOOK](#)

[REGISTRATION](#)

[LOGIN](#)



CONQUER THE WORLD

[PLAY](#)



# TEAM REGISTRATION

Register to play Capture The Flag here. Once you have registered, you will be logged in

01 NAME

EMAIL

TEAM NAME

PASSWORD

## CHOOSE AN EMBLEM



SIGN UP

LEADERBOARD

OXFEEDFACE  
YOUR RANK: 1  
YOUR SCORE: 200 PTS

OXFEEDFACE  
RANK 1  
200 PTS

ANNOUNCEMENTS

Flag challenge is open!  
The game has started!

ACTIVITY

- [ 24 secs ago ] 0xFEEDFACE captured Algeria
- [ 3 mins ago ] 0xFEEDFACE captured Egypt
- [ 4 mins ago ] 0xFEEDFACE captured Finland
- [ 13 mins ago ] 0xDEADBEEF captured Finland
- [ 14 mins ago ] 0xDEADBEEF captured

JAMIFX

POWERED BY FACEBOOK

SCOREBOARD

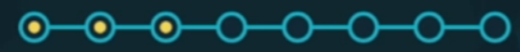
TEAMS

FILTER

GAME CLOCK

# tutorial\_Captures

Countries marked with an ▲ are captured by you.  
Countries marked with an ▲ are owned by others.



NEXT

SKIP TO PLAY

LEADERBOARD

OXFEEDFACE  
YOUR RANK: 4  
YOUR SCORE: 0 PTS

 OXDEADBEEF  
RANK 1  
90 PTS

ANNOUNCEMENTS

The game has started!

ACTIVITY

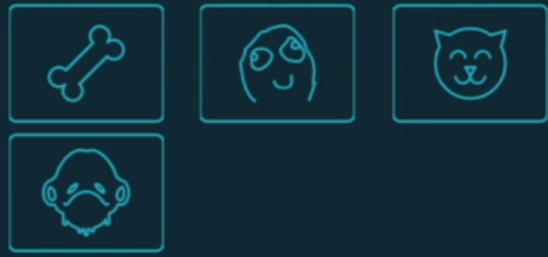
- [ 8 mins ago ] 0xDEADBEEF captured Finland
- [ 9 mins ago ] 0xDEADBEEF captured Venezuela
- [ 10 mins ago ] 0xDEADBEEF captured Germany
- [ 10 mins ago ] Derp it Derp captured North Korea

NAVIGATION

POWERED BY FACEBOOK

SCOREBOARD

TEAMS



FILTER



GAME CLOCK

04:46:16:34

HR MIN SEC M.SEC






## capture\_Egypt - Protocol



What protocol is described in RFC 2324?

Hyper Text Coffee Pot Control Protocol

NO HINT

 SUBMIT

10

PTS

type  
quiz

category  
Quiz

first\_capture  
Uncaptured

completed\_by >

## capture\_Algeria - RSA public key



You've recovered 3 encrypted files and an RSA public key. Since the files are RSA encrypted and RSA hasn't been broken yet, I guess you should just give up now.

[ tooSmall\_b641b3a6f878b8f2b4915b358be80197.tar.gz ]

flag{RSA\_i5\_n00b}

REQUEST HINT

YES!

100

PTS

type  
flag

category  
None

first\_capture  
Uncaptured

completed\_by >

LEADERBOARD

NAVIGATION

POWERED BY FACEBOOK

SCOREBOARD

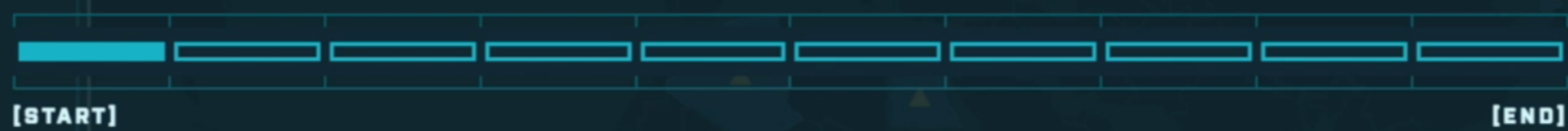
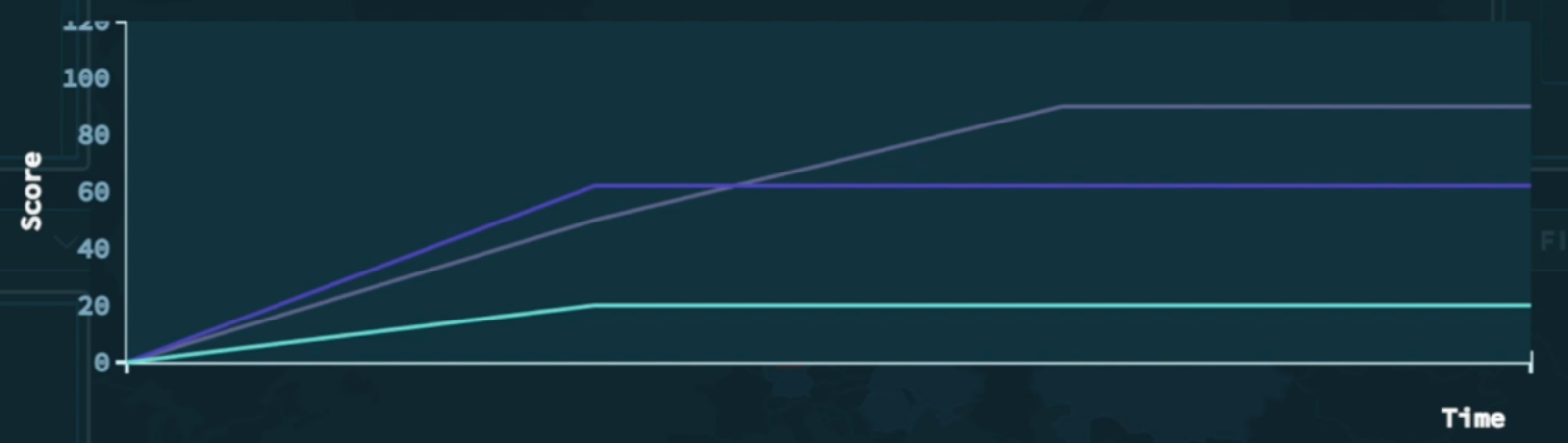
TEAMS

OXFEEDFACE  
YOUR RANK: 1  
YOUR SCORE: 200 PTS



OXFEEDFACE  
RANK 1  
200 PTS

scoreboard\_



TEAMS

- OXFEEDFACE
- OXDEADBEEF
- DERP IT DERP
- NYAN CATS

FILTER

ANNOUNCEMENTS

Flag challenge is open!!  
The game has started!

ACTIVITY

- [ 9 secs ago ] OXFEEDFACE captured Algeria
- [ 3 mins ago ] OXFEEDFACE captured Egypt
- [ 4 mins ago ] OXFEEDFACE captured Finland
- [ 13 mins ago ] OXDEADBEEF captured Finland
- [ 14 mins ago ] OXDEADBEEF captured

filter_	rank_	team_name_	quiz_pts_	flag_pts_	base_pts_	total_pts_
<input checked="" type="radio"/>	1	OXFEEDFACE	70	130	0	200
<input checked="" type="radio"/>	2	OXDEADBEEF	90	0	0	90
<input checked="" type="radio"/>	3	DERP IT DERP	62	0	0	62
<input checked="" type="radio"/>	4	NYAN CATS	20	0	0	20

GAME CLOCK

```
$ git clone \  
https://github.com/facebook/fbctf
```

```
$ cd fbctf
```

```
$ vagrant up
```

# Challenge library available on demand

reverse engineering, forensics, web application  
security, cryptography, binary exploitation

# Two Weeks Later

> **4,000** stars

> **650** forks

3rd party contributions

# Under the Hood

- Hack/HHVM
- XHP
- Flow

# Bug Bounty

Report through the bug bounty system before sending a pull request



# Cambridge CTF

April 2016



Inter-ACE  
Cyberchallenge 2016  
Champions

Inter-ACE Cyberchallenge  
2016  
1st place - Team Event

Inter-ACE Cyberchallenge  
2016  
2nd place - Team Event

Inter-ACE Cyberchallenge  
2016  
2nd place - Team Event

Inter-ACE Cyberchallenge  
2016  
1st place - Solo Event

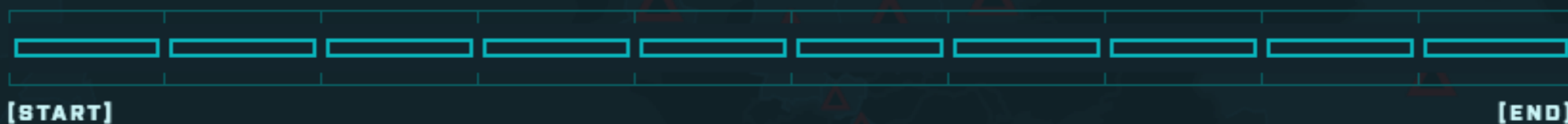
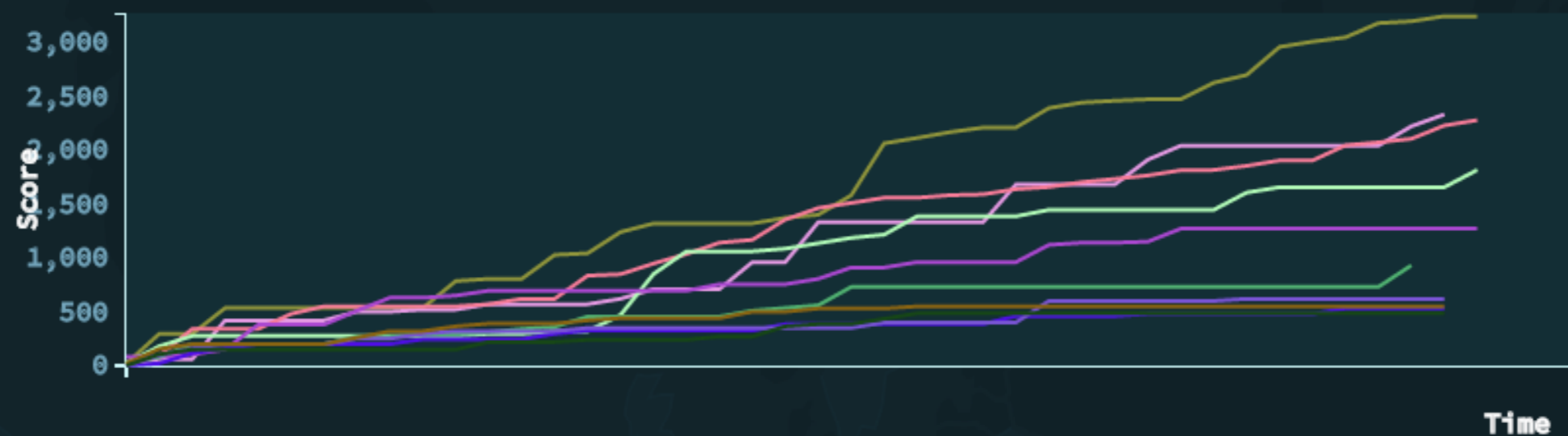
Inter-ACE Cyberchallenge  
2016  
2nd place - Solo Event

- Organized by Cambridge University and Facebook
- 10 participating UK universities
- Two parallel CTFs (on-site and online)
- 5 hours

# Challenges

- 30 challenges
- Equal number of quizzes and flags
- One *base* (king of the hill)
- Guest challenges
- 2 left unsolved

3 Amazon EC2 instances per CTF



filter_	rank_	team_name_	quiz_pts_	flag_pts_	base_pts_	total_pts_
	1	CAMBRIDGE	330	2425	741	3476
	2	IMPERIAL COLLEGE	330	2020	0	2330
	3	SUCSS_2_BU	330	1010	967	2307
	4	PHISHNCHIPS	330	1485	0	1815
	5	OXFORD	330	980	0	1270
	6	AFNOM	330	750	0	1080
	7	QUB	330	400	0	730
	8	4DUMBKENTS	330	290	0	620
	9	SURREY	330	220	0	550
	10	UCL-THOR	330	205	0	460

Happy Hacking!

[github.com/facebook/fbctf](https://github.com/facebook/fbctf)