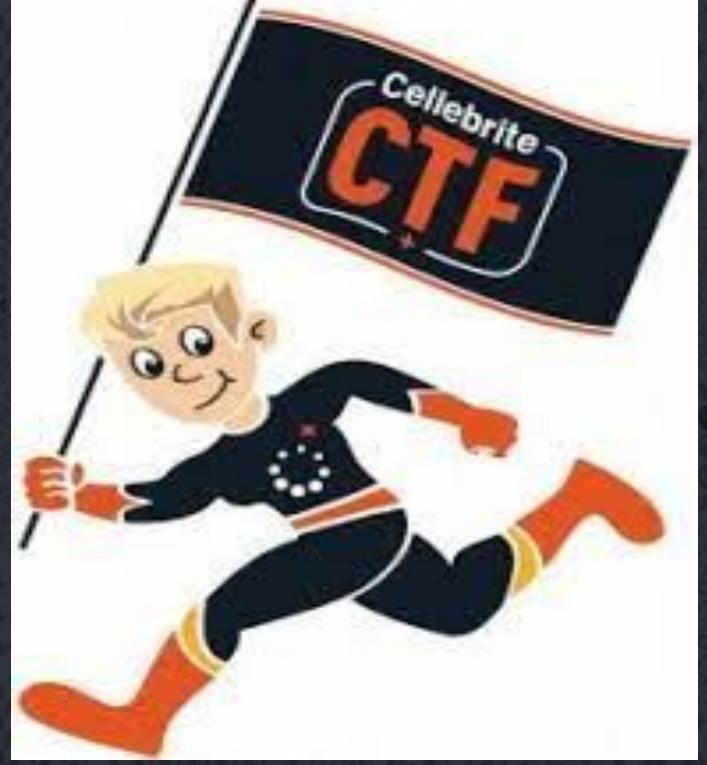

INTRODUCTION TO CYBER-DRILLS & CTFS

KANSIIME JOEL

passionate penetration Tester
soc analyst & threat hunter
CTF Developer that crafts solvable challenges to sharpen skills of cybersecurity enthusiasts
co-founder Uguntu infosec community
CTF-PLAYER
Mentored 1000+ cyber security passionate people,this year
Introduced 1000+ people into the infosec community,

Inspired From

Offsec, DEFCON, YCN, PENTESTERLABS, HTB, MyHardwork, Failures, My journey

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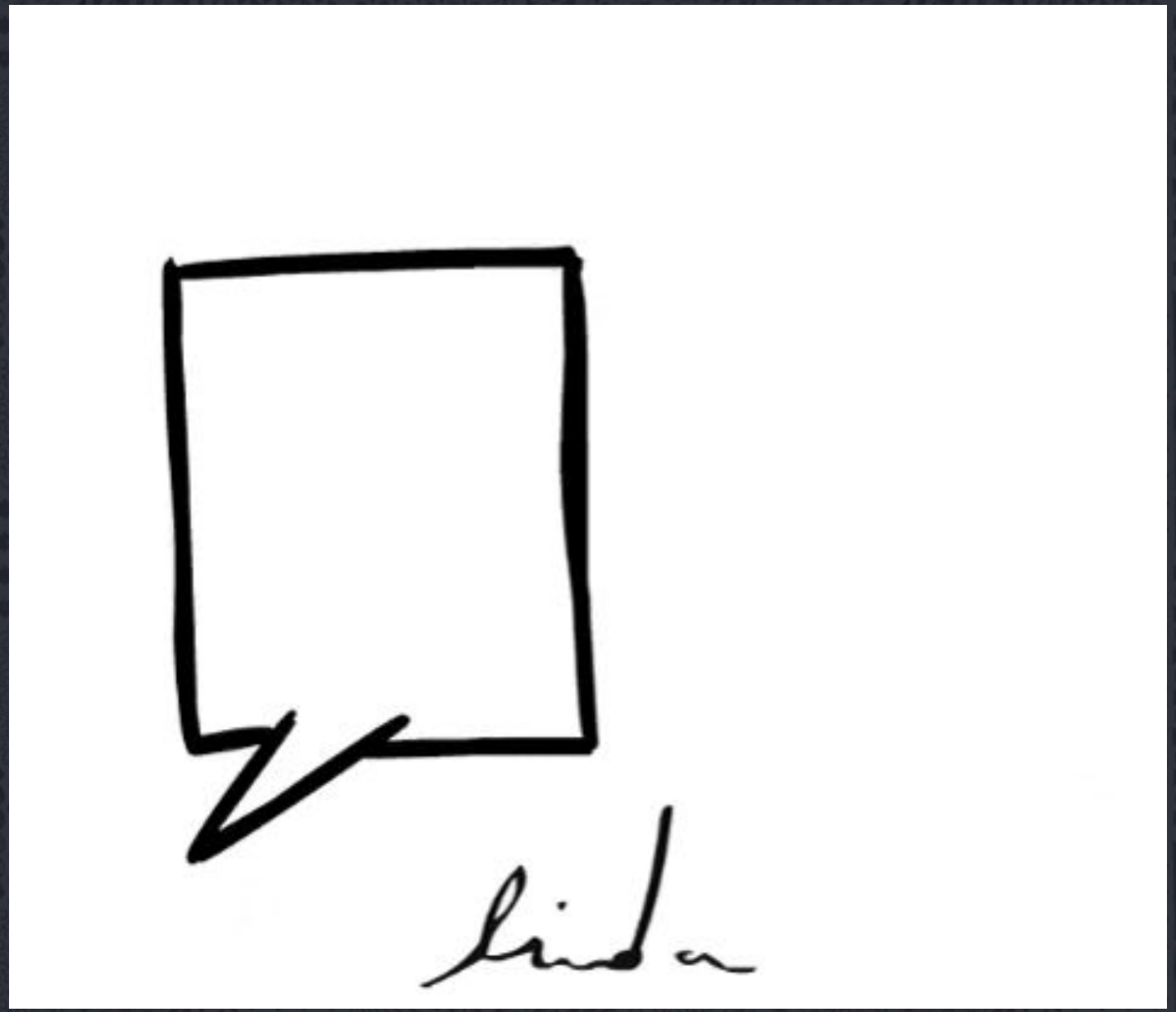
Introduction to CTFs & cyber Drills


START YOUR ENGINES!



CTF/cyber-drill

- **Capture the Flag (CTF) is a cybersecurity competition that is used test and develop computer security skills.**

- **CTFs have been shown to be an effective way to improve cybersecurity education through gamification.**

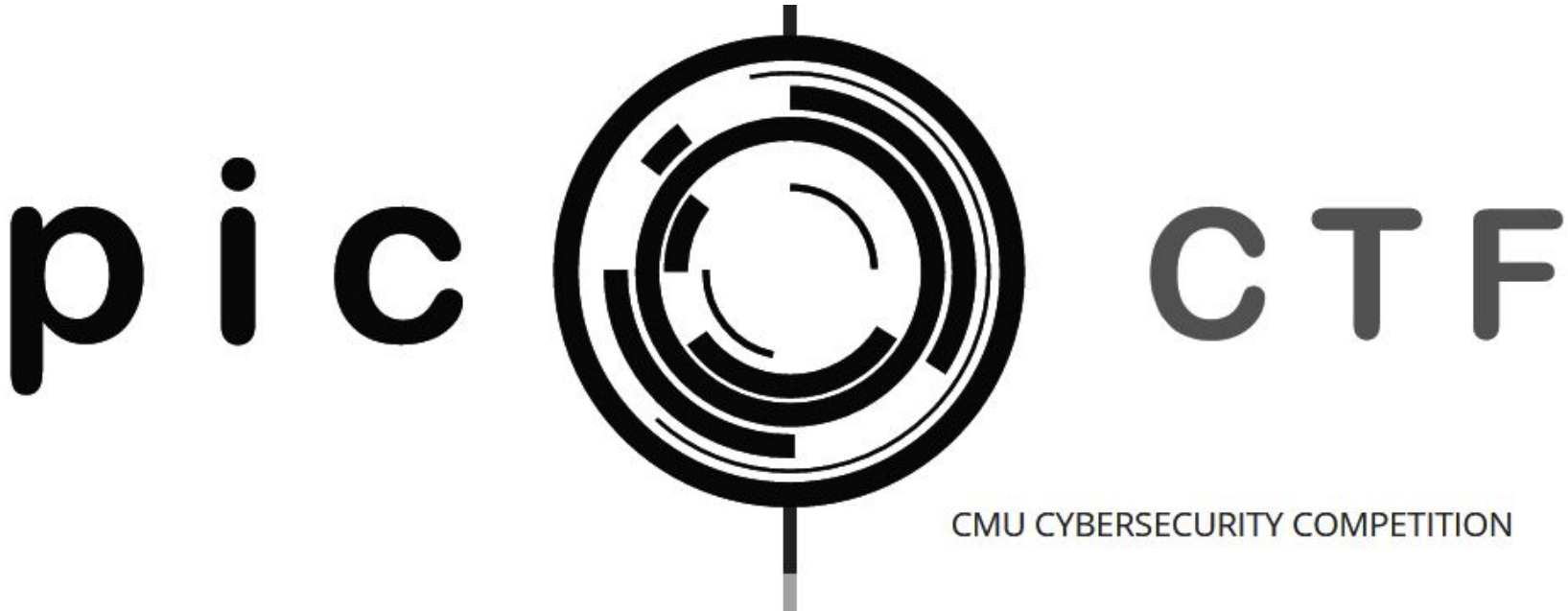
Government-supported competitions

- **Governmentally supported CTF competitions include the DARPA Cyber Grand Challenge and ENISA European Cybersecurity Challenge. In 2023, the US Space Force-sponsored Hack-a-Sat CTF competition included, for the first time, a live orbital satellite for participants to exploit**

CTF/cyber-drill

Educational-supported competitions

There are many examples of CTFs designed to teach cybersecurity skills to a wide variety of audiences, including PicoCTF, organized by the Carnegie Mellon CyLab, which is oriented towards high school students, and Arizona State University supported pwn.college.



CTFS HISTORY

- **Starting from Defcon 4 in 1996**
  - **Format is a mystery…**
  - **Held every year since 1996**
  - **The most important CTF now**

CTFS HISTORY

- **UCSB iCTF first held in 2001**
- **The first CTF be held by academic organization[University Of Carlifonia]**

Traditional Course Practice

- More theory and basic concept, but less practice and lab
- Offensive Thinking
  - Think like a hacker
-


CTF TYPES

JeoPardy

- Problems are classified into different disciplines
  - Most JeoPardy CTF contain 20~30 problems
  - Pwn, Reverse Engineering, Web security, Forensics and Cryptography
  - More difficult problem worth more score
- About 90% CTFs are in JeoPardy style
  - Can be held online and hundred of teams can involve

Attack & Defense

The competitors are put into the closed environment and try to attack each other's.

The server with vulnerable programs running

- **Competitor needed to patch(fix) the vulnerability and exploit(attack) the other teams**

Need good support of networking environment

Less CTFs are in Attack & Defense style

Can do many interesting things

Attack & Defense

- Skills needed
  - Vulnerability discovery and patching
  - Network flow analysis
  - System administrator
  - Backdoor

King of Hill

- There are several servers provided
  - Competitors should compromise and keep control to the server
- The more time you own the machine, the more score can be got
  - Just like real-world cyber war
- Attackers not only need to attack, but also need to prevent other exploit server you owned

Real World Attack

- Overall attack life cycle
  - Reconnaissance
  - Gaining Access
  - Maintain Access
  - Clearing Tracks

The other way for security training

- CTF as the training for offensive security

- Spread security techniques
- Measure security skill
- Practice, practice and more practice
- Emulate real world problems
  - Environment close to real environment
  - Eliminate the boring task and focus on advanced security skill

□ THE ART OF PROBLEM SOLVING


gifak-net
h2
h1
b
a
S=a*h1
S=b*h2

CYBER DRILLS

- The competition to steal data, a.k.a flag, from other computers
  - EX. Steal admin password from a web server,
- Most problems are related to information security


THE ROOK | STARZ
WHY YOU?

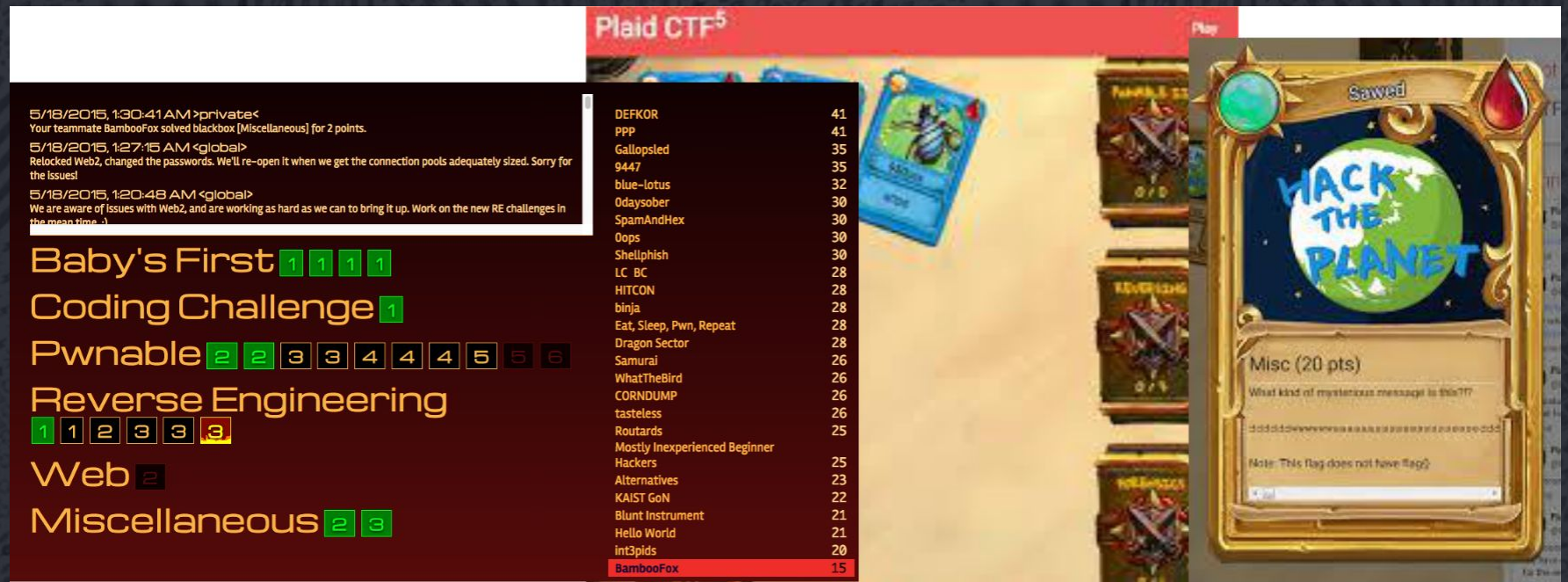
Why you Should try drills

- Practice your hacking skills
- Compete with top hackers among the world
- Grow your critical thinking capabilities
- Earn
- certify
- Network

$$\hat{f}(\xi) = \int_{-\infty}^{\infty} f(x) e^{-2\pi i x \xi} \, dx$$

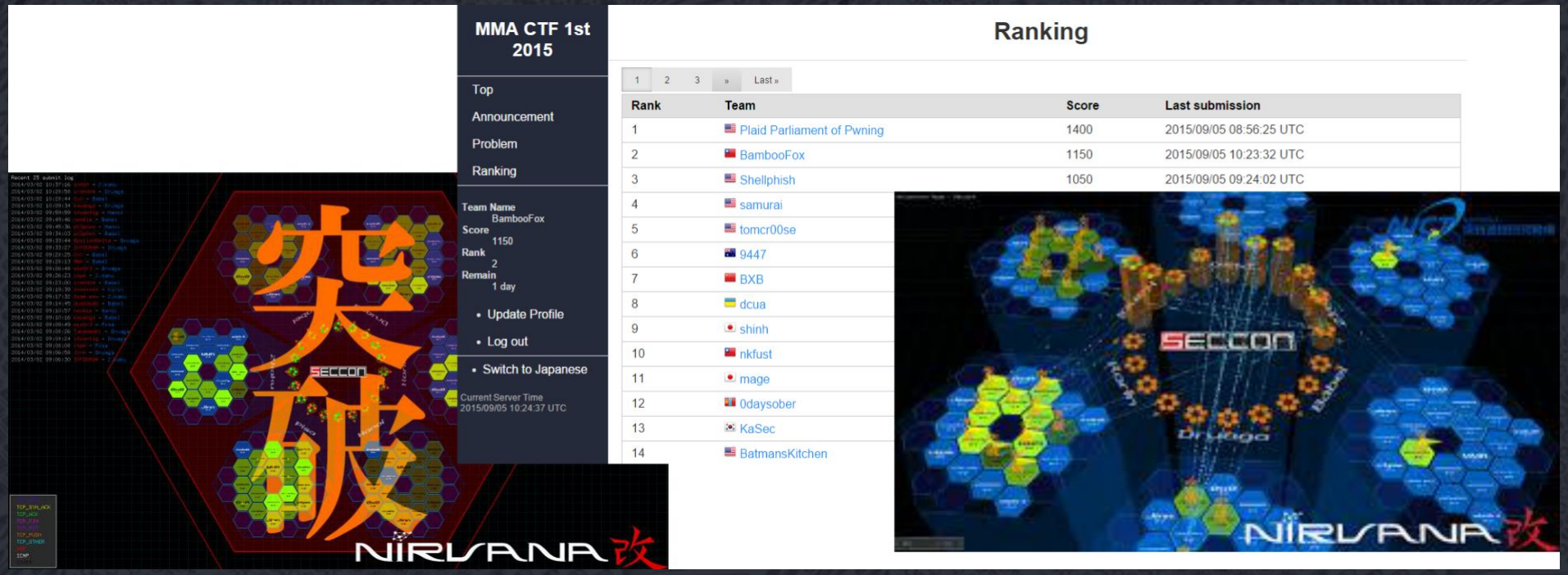
CTFs around the world

- To enhance education of offensive security, CTFs are held in many country
  - U.S: DEFCON, Ghost In the Shellcode, PlaidCTF



CTFs around the world

- Japan: SECCON, TMCTF, MMACTF



CTFs around the world

- Korea: CodeGate, SECUINSIDE
  China: XCTF, BCTF, 0CTF, ...
  Russia: RuCTF
  France: Nuit du HackCTF

CTFs around the world

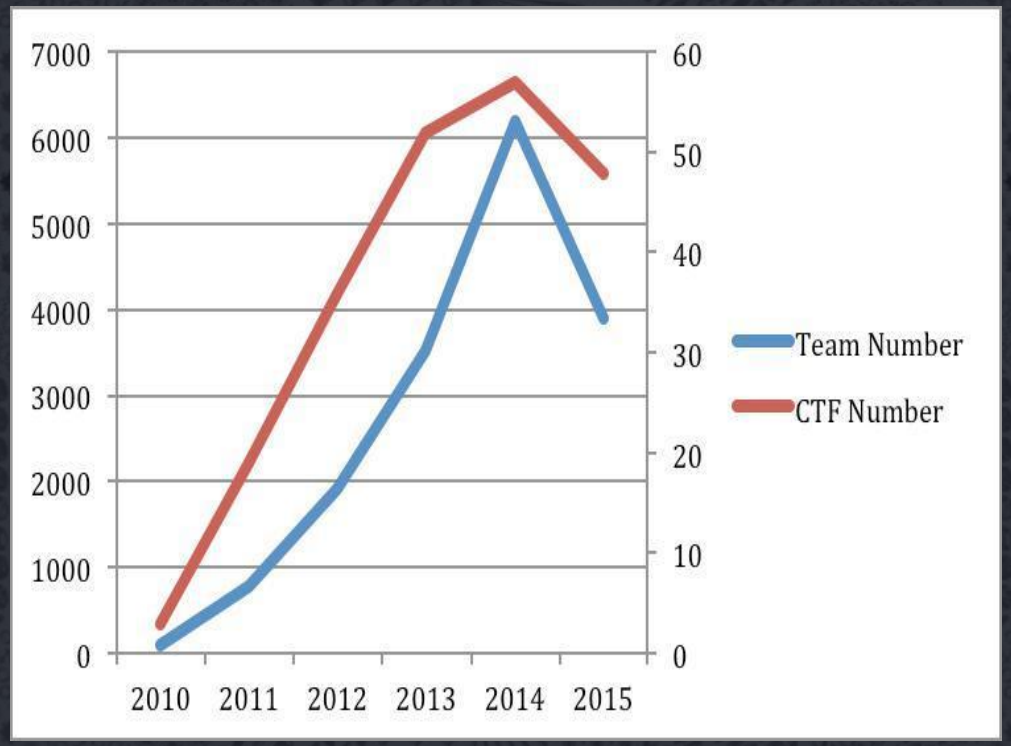
AFRICA: CYBER TALENTS, URCHINSEC, BUG PWN CTF ETC

Africa has less involvement in the cyber drills competitions


SO UNIQUE
AR

Trend of CTFs

- **CTF contest**
  - **Less than 10 in 2010**
  - **More than 50 CTFs in 2014**
  - **More than 1 million CTFs 2020**
- **CTF teams**
- **More than 6000 teams in 2014**
- **1 million+ 2023**



CTFS TO PLAY

More than 100 CTF’s each year, you can find the proper

CTF

Beginner CTFs

PICOCTF

- Backdoor
- CSAW Qualification
- ASIS

CTFS TO PLAY

More than 100 CTF's each year, you can find the proper CTF

Advanced CTFs

- DEFCON
- PlaidCTF
- CodeGate
- SECCON

PHD Qals

EXPERIENCE SHARING

Focus !

When you start to CTF/DRILLS, it is best to focus on one type of problem.

- **E.g. Pwn, Reverse, Web….**

When playing CTF, keep up with 1 problem in the same time

Following New Techniques

- Hackers like new techniques
- CTF organizer often proposes problem with these new techniques
- Follow up new technique
  - Freebuf
  - ippsec
  - johnhammond
  - liveoverflow

  Reddit Hacking, NetSec and Reverse Engineering Channel

Customize Your CTF Toolset

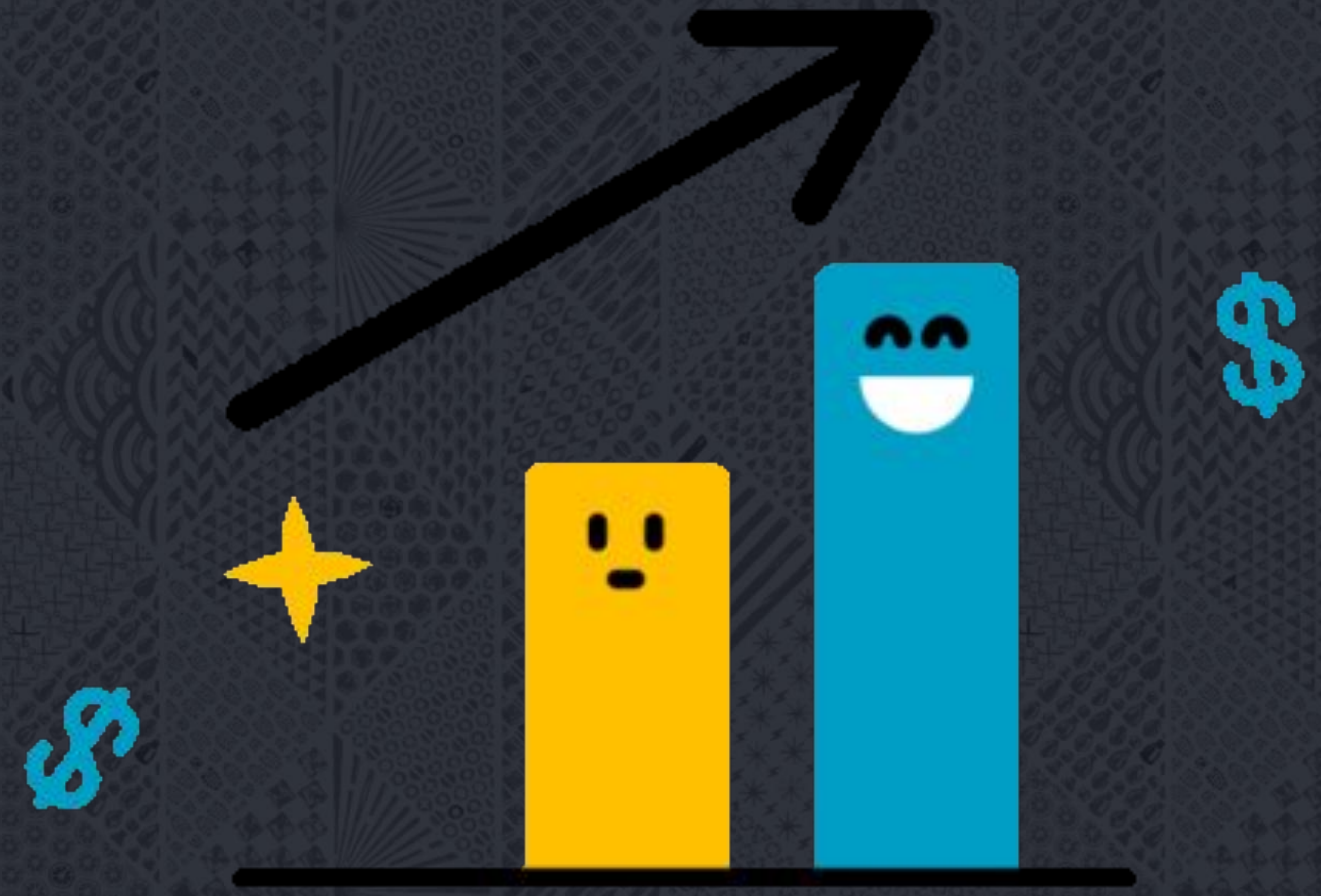
- Prepare your own environment
  - With your favorite tools

Customize it. Make your operation more efficient.

Keep and refine the toolset and program after every CTF

  - Even better to come up with the writeup

Tools/Hacks



Review the Problems

- Review the problem you are unable to solve during CTF
- Read the writeup

Practice, practice and practice

- Experience and proficiency play the important role in CTF
- Experience make you find the right way earlier
- Proficiency make you try more approaches than others
- Practice, practice ,practice , practice .....

STUDY HARD & MAKE RESEARCH

Enjoy the Game

- Don't panic. Keep calm and carry on.

Thanks
Good Luck

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