Homework 1
Install FreeBSD & WireGuard

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Requirements

- Basic (15%)
  - Install FreeBSD 13.0-RELEASE or other allowed operating systems
  - Apply security patches (latest: patch 4)
- Root on ZFS (15%)
  - Zpool name : zroot
- Add a user and a group
  - User should also be in the "`wheel`" group
  - Use this user to do this homework instead of root (using `sudo`)
- Add a user called "`judge`" for Online Judge
  - User should also be in the "`wheel`" group
  - Please Using "`sh`" as default shell (10%)
  - This user needs to **run `sudo` without password** (15%)

Requirements (Cont.)

- Set your machine to current time zone and adjust current time (10%)
  - CST
- Enable sshd (20%)
  - Install this public key to your `/home/judge/.ssh/` for Online Judge.

```
$ fetch https://nasa.cs.nctu.edu.tw/sa/2021/nasakey.pub
$ cat nasakey.pub >> /home/judge/.ssh/authorized_keys
```

  - You can use Fingerprint to check "`nasakey.pub`"

```
$ ssh-keygen -l -f nasakey.pub
2048 SHA256:FKznGEAAy6gcVC4x+JpiTo34zbaHRYIc9WShzqR+yF4 no comment (RSA)
```

Requirements (Cont.)

- Login into NASA Online Judge.
- There are some information in your profile
  - ID
    - Your IP in WireGuard is 10.113.0.ID
  - WG_PRIVATE_KEY
    - Using this private key to connect WireGuard Server
  - WG_SERVER_PUBLIC_KEY
    - Using this public key to connect WireGuard Server

Requirements (Cont.)

- Install WireGuard (Installation Guide)
  - Server Address
    - nasa.nycucs.org:51821
  - Using this information to connect Online Judge's WireGuard Server :
    - 10.113.0.ID
    - WG_PRIVATE_KEY
    - WG_SERVER_PUBLIC_KEY
  - You can install WireGuard with pkg or port

Requirements (Cont.)

- WireGuard Config Example

```
[Interface]
Address = 10.113.0.ID/32
PrivateKey = [WG_PRIVATE_KEY]

[Peer]
PublicKey = [WG_SERVER_PUBLIC_KEY]
AllowedIPs = 10.113.0.0/16
Endpoint = nasa.nycucs.org:51821
PersistentKeepalive = 25
```

wg0.conf

Requirements (Cont.)

- You can use "`ping -c 3 10.113.0.254`" to test whether you have connected to WireGuard Server
- Online judge server can ping your server (15%)

```
$ ping -c 3 10.113.0.254
PING 10.113.0.254 (10.113.0.254): 56 data bytes
64 bytes from 10.113.0.254: icmp_seq=0 ttl=64 time=1.879 ms
64 bytes from 10.113.0.254: icmp_seq=1 ttl=64 time=1.996 ms
64 bytes from 10.113.0.254: icmp_seq=2 ttl=64 time=1.915 ms

--- 10.113.0.254 ping statistics ---
3 packets transmitted, 3 packets received, 0.0% packet loss
round-trip min/avg/max/stddev = 1.879/1.930/1.996/0.049 ms
```

Requirements (Cont.)

- Online judge system is designed for FreeBSD 13.0-RELEASE and CentOS 8-Stream only
- Doing your homework with other OS may not pass online judgement

Requirements (Cont.)

- BACKUP your server before judge EVERY TIME
  - We may do some things bad when judging.
- TAs reserve the right of final explanations
- **Start from 9/24 12:00**
- **Deadline 10/13 23:59**

Hints

- Virtual machine is good for doing homeworks
  - Easy to install and backup
- Try to make your VM hardware configuration better
  - Disk controller
    - IDE → SATA, NVMe, …
  - NIC: paravirtualized net, ...

Sign Up CS Account

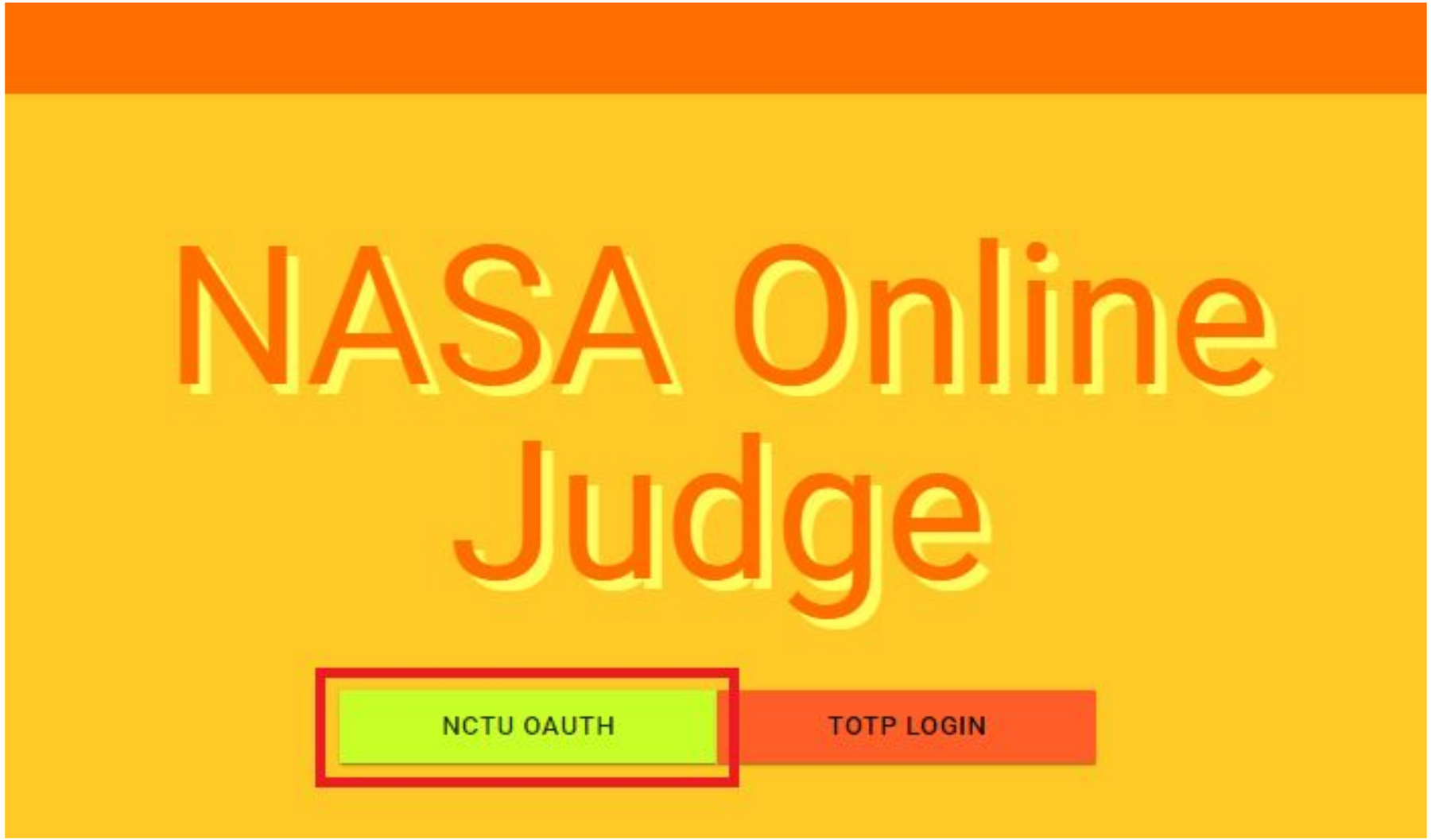
Requirements

- CS account
  - Sign up your own account at CSCC account system
    - https://account.cs.nctu.edu.tw/
  - Active your account in EC320
- Try to login to Git.cs using CS account
  - We will using Git in the next homework.
    - https://git.cs.nctu.edu.tw/
- SIGNUP CS ACCOUNT EARLY!
  - We will not grade in this stage
  - If you aren't major in CS, you need to get Teachers/Professor's signature to activate your CS account!

How to use Online Judge

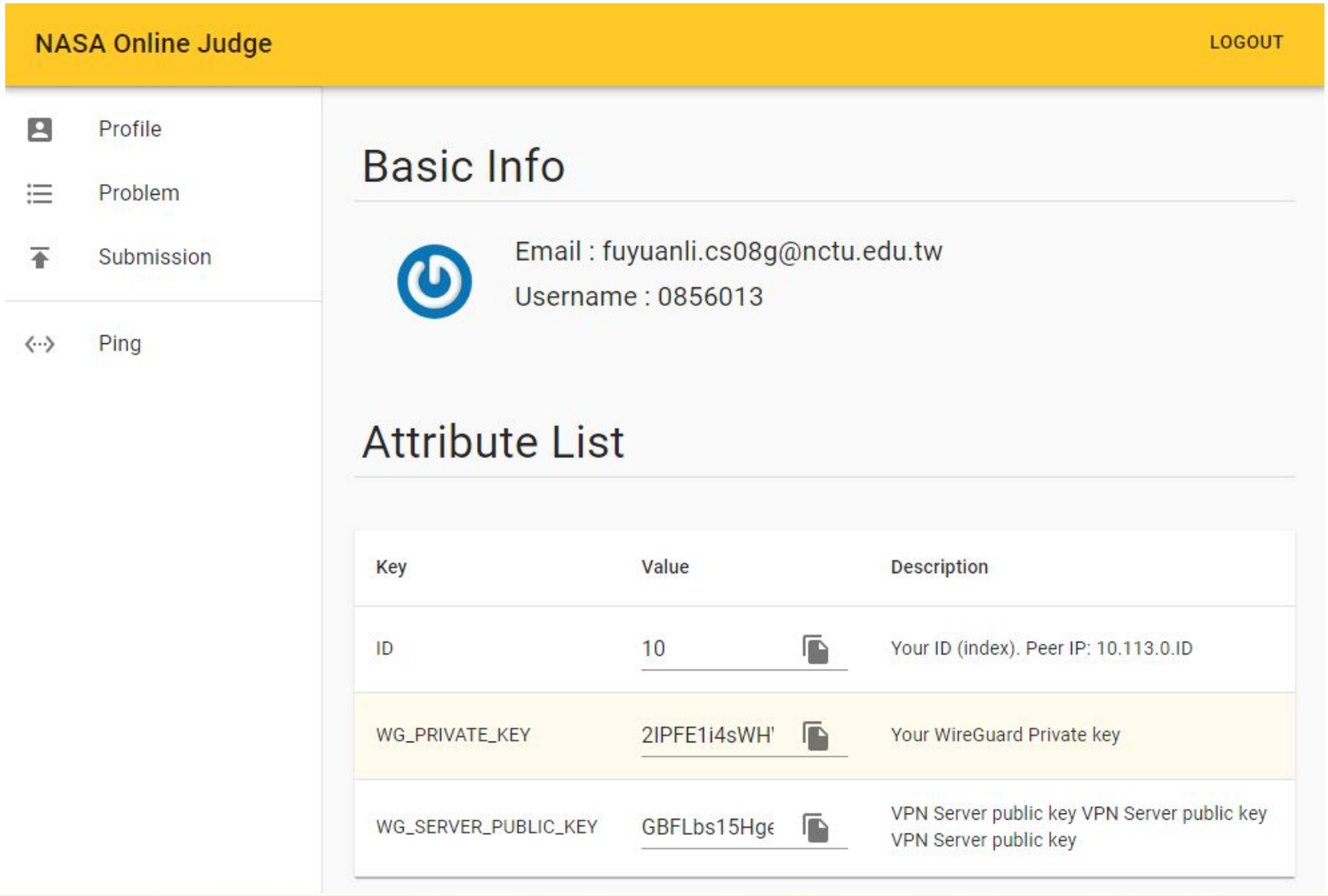
Online Judge

- https://nasa.nycucs.org

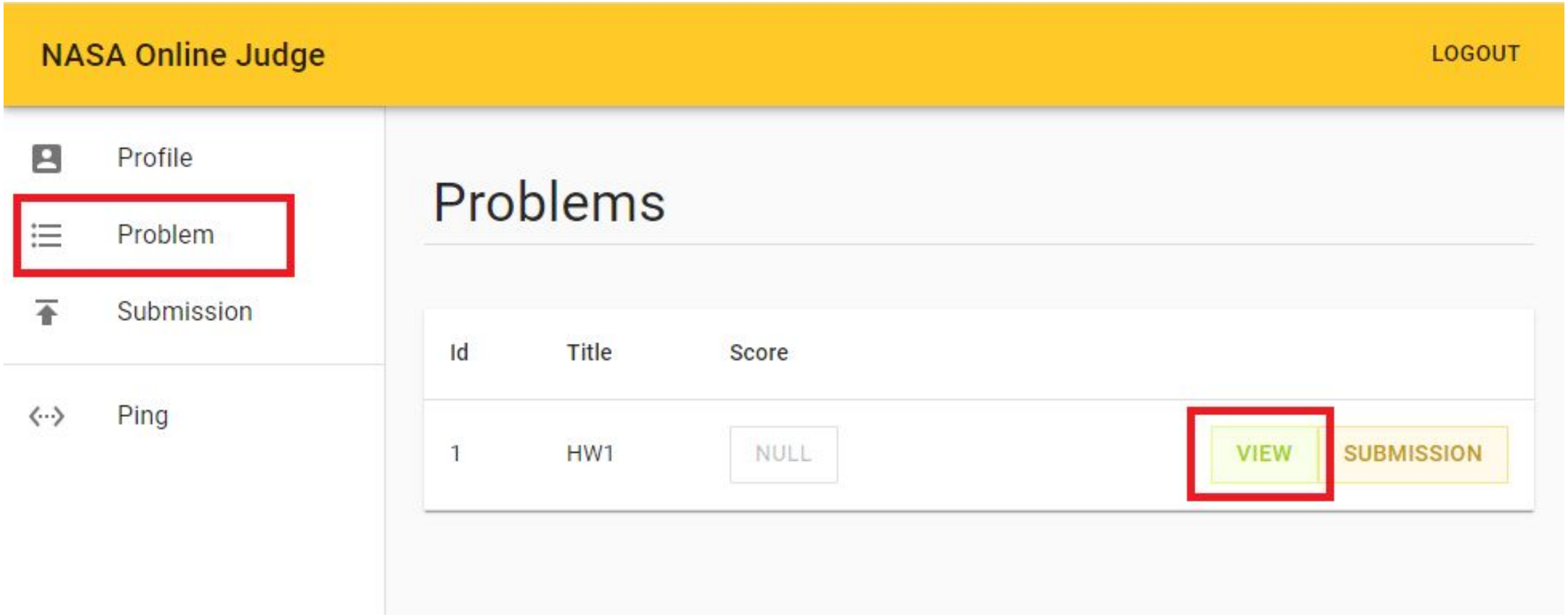


Profile

- https://nasa.nycucs.org/profile



Problem


NASA Online Judge
LOGOUT
Profile
Problem
Submission
Ping
Problems
Id
Title
Score
1
HW1
NULL
VIEW
SUBMISSION

NASA Online Judge

LOGOUT

- Profile
- Problem
- Submission
- DNS Setting
- Ping
- DNSSEC
- Mail

HW1

BACK SUBMIT

Released At	Start Scoring At	Deadline
2021/09/24 12:00 GMT+8 (4 hours ago)	2021/09/24 12:00 GMT+8 (after 19 hours)	2021/10/13 23:59 GMT+8

Description

SA HW1, for FreeBSD 13 and CentOS Stream 8

Check Points

Title	Score
Ping: ping your BSD	15
SSH: SSH into your BSD	20
Check: Shell	10
Check: OS	15
Check: sudo	15
Check: Timezone	10
Check: ZFS	15

Help!

- Join NCTUNASA google group
  - If you have any question, you can post your problem in this group, TAs and Students will help you.
  - https://groups.google.com/g/nctunasa
- UNIX 常見指令教學
  - https://cscc.cs.nctu.edu.tw/unix-basic-commands
- How To Ask Questions The Smart Way
  - https://github.com/ryanhanwu/How-To-Ask-Questions-The-Smart-Way