CS2030S

Programming Methodology II

PE

Screen Recording

Screen Recording

Softwares

Softwares

1. Panopto
2. ffmpeg
3. OBS

Other *(possibly licensed)* softwares includes Camtasia studio or ink2go

> You should get yourself familiar with at least one

What to Record

- The entire screen
- No need camera input
- To avoid complication with Canvas, try to have audio input

Screen Recording

Softwares
Testing

Testing

- Try to record your attempt at practice PE1 later
- Try to record around 1 hour
- Try to upload to Canvas Panopto *(manually if using other softwares besides Panopto or even with Panopto on different setting)*

> For practice, upload to
> Video/Panopto > Upload > Test [assignment]

> For PE1, you will upload to
> Video/Panopto > Upload > PE1 > PE1 [assignment]

Connection

Connection

Tunneling

Tunneling

- Setup SoC VPN
  - This is the FortiClient software
  - This is different from NUS VPN
- Connect to SoC VPN using
  - Username: ***NUSNET ID***
  - Password: ***NUSNET Password***

Connection

Tunneling
SSH Hop

SSH Hop

- Connect to either one via ssh
  - `stu.comp.nus.edu.sg`
  - `sunfire.comp.nus.edu.sg`

```
ssh cs2030s@stu.comp.nus.edu.sg
```

    - Replace `cs2030s` with your username

- Connect to plab server via ssh
  - This can only be done during the PE itself
  - But you should get yourself familiar with the command

Connection

Tunneling
SSH Hop
Testing

Testing Connections

> This should be done ***OUTSIDE*** of SoC

- Connect to SoC VPN
- Ping one of the plab server *(e.g., **pe111**, since this is only a ping no username/password needed)*

```
ping pe111.comp.nus.edu.sg
```

  - If you can ping, you can connect
  - To stop the ping, simply press **ctrl+c** *(you see it as ^C)*

> This will always be successful in the lab *(test @ home)*

Connection

Tunneling
SSH Hop
Testing
- Success

Testing Connections

Sample Successful Ping

```
cs2030s@stu2:~$ ping pe111.comp.nus.edu.sg
PING pe111.comp.nus.edu.sg (192.168.48.113) 56(84) bytes of data.
64 bytes from pe111.comp.nus.edu.sg (192.168.48.113): icmp_seq=1 ttl=64 time=1.34 ms
64 bytes from pe111.comp.nus.edu.sg (192.168.48.113): icmp_seq=2 ttl=64 time=1.40 ms
64 bytes from pe111.comp.nus.edu.sg (192.168.48.113): icmp_seq=3 ttl=64 time=1.47 ms
64 bytes from pe111.comp.nus.edu.sg (192.168.48.113): icmp_seq=4 ttl=64 time=1.48 ms
64 bytes from pe111.comp.nus.edu.sg (192.168.48.113): icmp_seq=5 ttl=64 time=1.34 ms
^C
--- pe111.comp.nus.edu.sg ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4013ms
rtt min/avg/max/mdev = 1.342/1.405/1.475/0.057 ms
```

Connection

Tunneling
SSH Hop
Testing
- *Success*
- *Failure*

Testing Connections

Sample Failed Ping

Unknown IP Address

```
cs2030s@stu2:~$ ping pe111.comp.nus.edu.sg
ping: pe111.comp.nus.edu.sg: Name or service not known
```

Unreachable

```
cs2030s@stu2:~$ ping pe111.comp.nus.edu.sg
PING pe111.comp.nus.edu.sg (192.168.48.113) 56(84) bytes of data.
^C
--- pe111.comp.nus.edu.sg ping statistics ---
4 packets transmitted, 0 received, 100% packet loss, time 3076ms
```

Basic Commands

Basic Commands

Unix
- Basic

Unix

Basic

- `ls`: ***l***i***s***t directory content
  - `ls` *(list current directory content)*
  - `ls <dir>` *(list the given directory content)*
- `cd`: ***c***hange ***d***irectory
  - `cd ~` *(go to user directory, similar to "Documents" on Windows)*
  - `cd ..` *(go to parent directory)*

Basic Commands

Unix
- Basic
- File/Folder

Unix

File/Folder

- `mkdir`: ***m***a***k***e ***dir***ectory
- `mv`: ***m***o***v***e *(i.e., cut)*
- `cp`: ***c***o***p***y

- `rm`: ***r***e***m***ove
  - `rm -r <dir>` *(for directory)*
  - `rm -f <file>` *(forced removal)*
  - `rm -rf <dir>` *(forced + directory)*
    - Do **NOT** do this!

File Content

- `cat`: ***cat***enate *(from concatenate)*

Basic Commands

Unix
- Basic
- File/Folder
- Executables

Unix

Executables

- `javac`: ***java*** ***c***ompiler
- `java`: ***java*** program

Input Redirection <

```
java Main < <input file>
```

Output Redirection >

```
java Main > <output file>
```

#Output file is NOT the expected output file but a temporary file

Basic Commands

Unix
- Basic
- File/Folder
- Executables
- Testing

Unix

Testing

1. Compile

```
javac Main.java
```

2. Test input, produce temporary output file for comparison

```
java Main < input1.in > myoutput1.out
```

3. Check difference

```
diff output1.out myoutput1.out
```

#File names `Main.java`, `input1.in`, `myoutput1.out`, and `output1.out` may be different with possibly different file extension

No News Is Good News

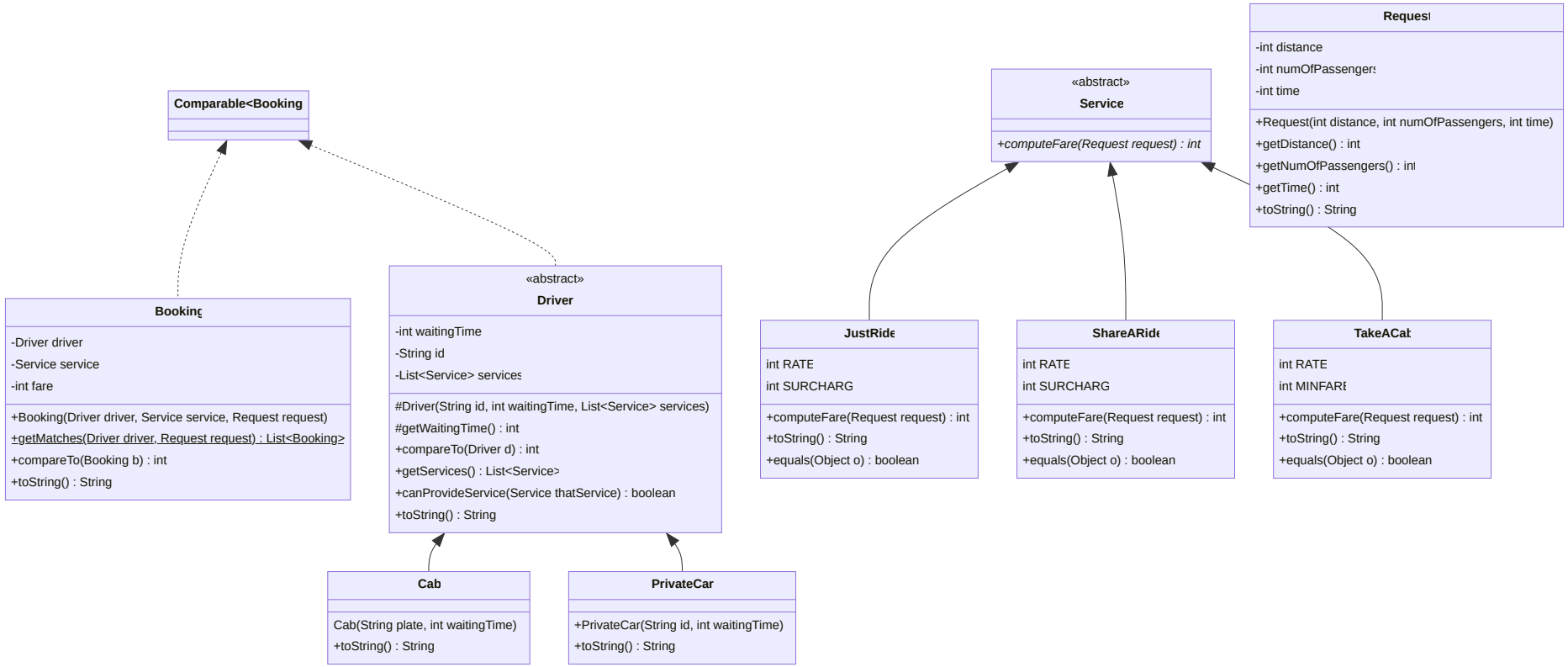
Practice PE1

Try it out! (*30 mins - 1 hour*)

Practice PE1

Class Diagram

Class Diagram



Practice PE1

Class Diagram
Good Practices

Good Practices

1. Use `@Override` when overriding
2. Use `this` when referring to a non-static field
3. Use class name *(e.g., C.x)* when referring to a static class attribute
4. Use `private` for non-static fields *(`public` may be used for some static class attribute if necessary)*
5. Don't add getter/setter unless really *really* ***really*** necessary
6. "Tell-don't-Ask"
7. Reduce code duplication if possible *(via inheritance without violating LSP, etc)*
8. Use one file per class *(and make it a public class, with the file name the same as the class name)*
9. Write comments and *(if time permits)* javadoc

Practice PE1

Class Diagram
Good Practices
Problem Solving

Problem Solving Skill

Design

- Design your solution *(e.g., class diagram)* before coding
- Check design before continuing
- Write some additional test cases *(e.g., regarding type such as about PECS)*

> It is recommended to spend at least 15 minutes on design to minimize bugs which will take longer to debug

Coding

- Translate from design to code
- Continually test with relevant test cases

Best of Luck!

"Mario games teach us that even if something is essentially the same, psychologically it can be completely different. This example is very easy to understand."

```
jshell> /exit
|    Goodbye
```