

Week 7 Lab Session

CS2030S AY21/22 Semester 2

Lab 14B

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Admin

- Contact tracing & QR code
- Lab 4 graded
- PE1 this Saturday (5 Mar)
 - Familiarise with logging into exam host PEs
 - Ensure Panopto running in the background
 - Failure to submit may lead to PE1 result voided

Lab 4 Review

Grading Scheme

- Style - 2 marks
- Correctness - 14 marks, -1 for each bug, no deduction for testcases
 - Factory method
 - `EMPTY` box
 - `Box::equals` handles null and calls `equals` on the item to compare
 - PECS
 - `@SuppressWarnings` at the smallest scope
- Abuse of raw types / `@SuppressWarnings`: -1 for each occurrence
- Missing `@Override`: -0.5 for each occurrence

Common Mistakes

- PECS
 - Hidden test case: `Box<Number> b = Box.of(4).map(new AddOne())` compiles without error
 - `public <U> Box<U> map(Transformer<? super T, ? extends U> transformer)`
- `@SuppressWarnings`
 - Only apply to the smallest scope! Not before the method signature
 - `@SuppressWarnings("unchecked")`
`Box<T> box = (Box<T>) EMPTY;`

```

class Box<T> {
    private final T t;

    private static final Box<?> EMPTY = new Box<>(null);

    private Box(T t) {
        this.t = t;
    }

    public static <T> Box<T> empty() {
        @SuppressWarnings("unchecked")
        Box<T> box = (Box<T>) EMPTY;
        return box;
    }

    public static <T> Box<T> ofNullable(T t) {
        if (t == null) {
            return empty();
        }
        return new Box<>(t);
    }

    public static <T> Box<T> of(T t) {
        if (t == null) {
            return null;
        }
        return new Box<>(t);
    }

    :
}

```

```

@Override
public boolean equals(Object obj) {
    if (obj == this) {
        return true;
    }
    if (obj instanceof Box<?>) {
        Box<?> box = (Box<?>) obj;
        if (this.t == box.t) {
            return true;
        }
        if (this.t == null || box.t == null) {
            return false;
        }
        return this.t.equals(box.t);
    }
    return false;
}

public Box<T> filter(BooleanCondition<? super T> condition) {
    if (!isPresent()) {
        return empty();
    }
    if (condition.test(this.t) == false) {
        return empty();
    }
    return this;
}

public <R> Box<R> map(Transformer<? super T, ? extends R> trnsfmr) {
    if (!isPresent()) {
        return empty();
    }
    return Box.ofNullable(trnsfmr.transform(this.t));
}

```

Mock PE1

Admin

- Not graded, but pretend it is PE1 and solve the question now
 - Questions taken from last year's PE1, one question per hour
 - We will not go through the mock PE questions today
- No separate submission for Mock PE1, leave the files in the account
 - But make sure you save them!
- The teaching team will retrieve the files and email them to you tomorrow afternoon
- Exam accounts will be disabled tomorrow noon

Prerequisites

- You should have already received the email from Prof
 - Username, private password, host
 - Public password will be announced before the PE
- `ssh <username>@pe1xx.comp.nus.edu.sg`
- `<private password> + <public password>`
 - Public password `mock123`, private password `pikapika`
 - Actual password: `pikapikamock123`

On The Day Itself

- 5 min for setting up `.vimrc` and any other configuration
- Home directory should be empty, report immediately if you see any files
- Run `~cs2030s/start-pe-0900` or `~cs2030s/start-pe-1030`
- For now: `~cs2030s/start-pe`
- You should see the following files:

<code>BooleanCondition.java</code>	<code>Questions.md</code>
<code>CS2030STest.java</code>	<code>SourceList.java</code>
<code>EmptyList.java</code>	<code>StringToLength.java</code>
<code>GreaterThanTwo.java</code>	<code>Test1.java</code>
<code>IntegerToString.java</code>	<code>Test2.java</code>
<code>InvalidOperandException.java</code>	<code>Test3.java</code>
<code>Operand.java</code>	<code>Test4.java</code>
<code>Operation.java</code>	<code>Test5.java</code>
<code>Pair.java</code>	<code>Transformer.java</code>

My Tips

- PLAN before coding
 - You don't want to redo the whole thing
- If possible print out your previous labs
- Do not panic if it does not pass test cases!
- Check the password, failures to login can be mostly attributed to incorrect password being keyed in
- Sleep early!!!

Good luck for PE1! 