AY2021S2-CS2113_CS2113T-Mock

Your Name: ________________________________ **Your ID:** ________________________________

# of Questions: 26

Duration: 90 minutes

Total Exam Points: 25.00

Answers are written/marked in bold

Question #: 1

[Note: this question has 2 parts. Use bullet points and indicate the answer to each part explicitly]
Your team has been asked to implement BikeShare, a software application for managing a bicycle-sharing system where bicycles are made available for shared use to individuals on a short-term basis.
Part 1: Give one must-have user story
Part 2: Give two *non-functionalrequirements* of BikeShare that are directly related to functional requirement above

Part 1:
- **As a bike user, I can unlock the bike so that I can start the trip**

Part 2:
- **The app should handle updates for 1000+ bicycles at a time without crashing.**
- **The app should update the status of the bike in less than 10 seconds.**

Item Weight: 3.0
____

Question #: 2

Design an efficient and effective test cases for the method given below. Show the intermediate steps to your test case design. Give at least 7 but no more than 10 test cases.

```
/**
  * Returns the class size of the specified module.
  * @param moduleCode should be in the range 1000..6999
  * @throws Exception if the moduleCode is not in range or the user is
  * not logged in or if the user is not an instructor
  */
int getClassSize(int moduleCode)throws Exception{
    //...

}
```

	Equivalence classes	**Values to test**
moduleCode	=< 999	999
	1000…6999	1000, 6999
	>= 7000	7000
Is instructor?	Yes	Yes
	No	No
Is logged in?	Yes	Yes
	No	No

Test cases:

	moduleCode	**Is instructor?**	**Is logged in?**	**Expected**
1	1000	Yes	Yes	Success
3	6999	Yes	Yes	Success
3	999	Yes	Yes	Exception
4	7000	Yes	Yes	Exception
5	Any value in 1000…6999	No	Yes	Exception
6	Any value in 1000…6999	Yes	No	Exception
7	A non-boundary value in 1000…6999	Yes	Yes	Success

Item Weight: 4.0

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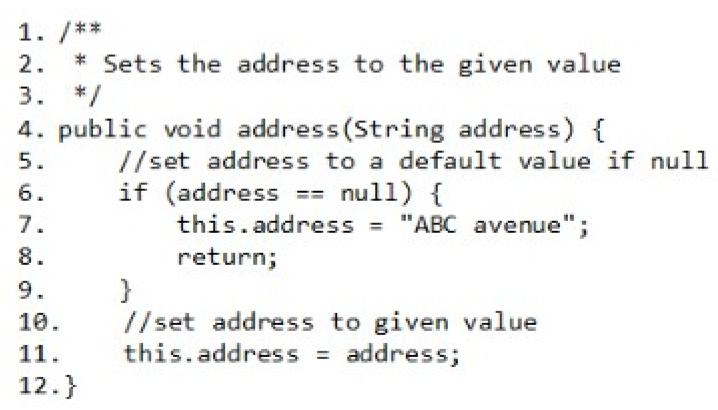
Question #: 3

Suppose you are reviewing the code below. Assume the coding standard is similar to the one you used in the CS2113/T.



```
/**
 * Sets the address to the given value
 */
public void address(String address) {
    //set address to a default value if null
    if (address == null) {
        this.address = "ABC avenue";
        return;
    }
    //set address to given value
    this.address = address;
}
```

Choose the incorrect option.

A. The method is named inappropriately
B. The header comment is missing some vital information about the method’s behavior
C. The commenting intensity inside this method (i.e. excluding the header comment) is a perfect
D. The code has an issue related to magic numbers

Item Weight: 1.0

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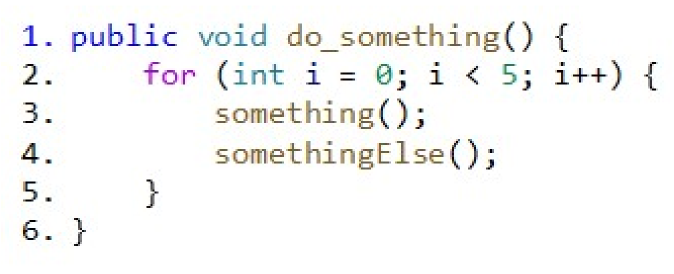
Question #: 4

Identify the coding standard violation(s) in this code



```
1. public void do_something() {
2.     for (int i = 0; i < 5; i++) {
3.         something();
4.         somethingElse();
5.     }
6. }
```

Write your answer in the following format:
LineNumber: violation
(Example format: for a piece of code unrelated to this question:
10: redundant comment

1: Method names should be in camelCase

Item Weight: 1.0

Question #: 5

Choose the incorrect option:

You may not want to reuse components in your software because:

A. The code may be immature
B. The code may not have the appropriate license
C. The code is bug-free
D. The code may be malicious

Item Weight: 1.0
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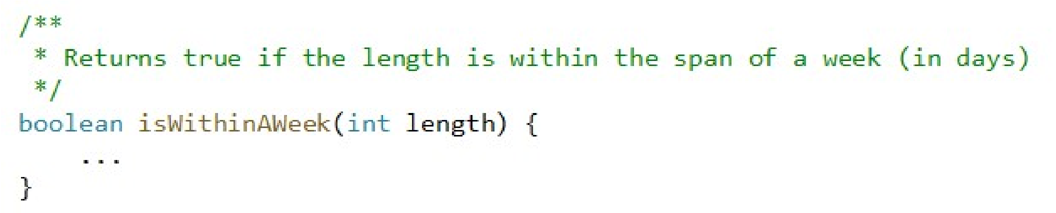
Question #: 6

You are testing the isWithinAWeek() method below. You have already chosen 4 as one of the test inputs.



```
/**
 * Returns true if the length is within the span of a week (in days)
 */
boolean isWithinAWeek(int length) {
    ...
}
```

Which of the following inputs is least suitable as the next test case?

- **A. 3**
- B. 1
- C. 7
- D. 8

Item Weight: 2.0

____

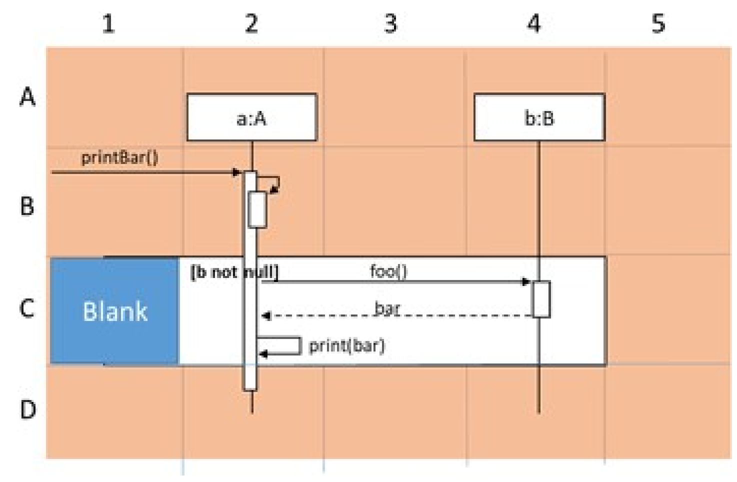
Question #: 7

Consider the code fragment below:

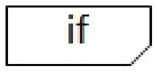
```
class A {
    B b;
    // ... more code

    void printBar() {
        // some self call
        if(b != null) {
            bar = b.foo();
            print(bar);
        }
    }
}
```

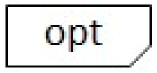
Choose the appropriate block to fill the blank cell, C1.



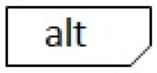
A.



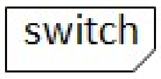
B. (Answer)



C.



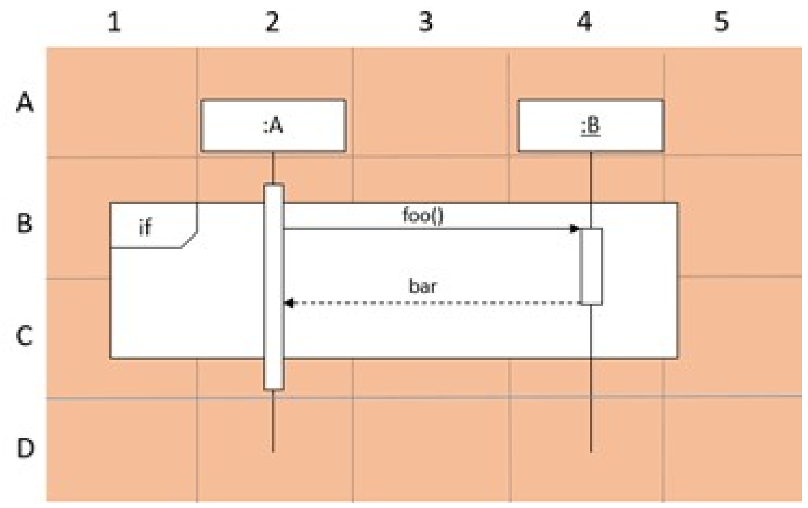
D.



Item Weight: 1.0

Question #: 8

Identify the errors in the following sequence diagram (using the cell(s) (i.e., A1, A2, ..., D5))



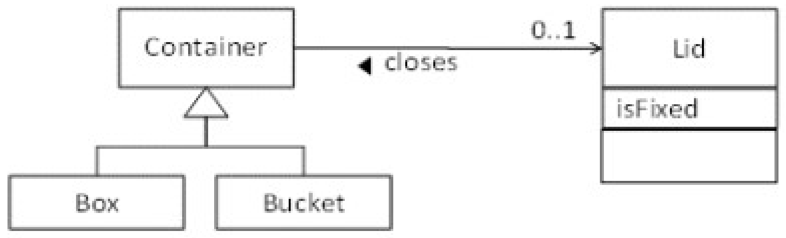
[Note: No partial credits]

A. B1 → opt
B. A4 → no underline for object in sequence diagram
C. B2 → lifeline should be dashed, not solid
D. B4 → lifeline should be dashed, not solid
E. D2 → lifeline should be dashed, not solid
F. D4 → lifeline should be dashed, not solid
G. C3

Item Weight: 2.0

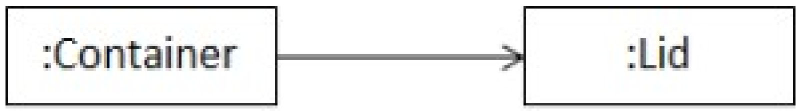
Question #: 9

Consider the class diagram below.

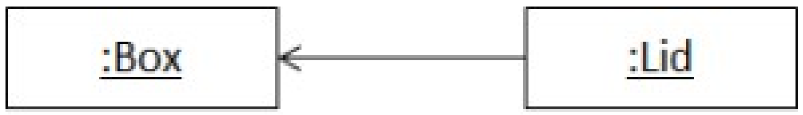


Which of the following diagrams is an object diagram compliant with the given class diagram?

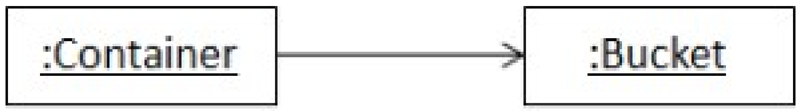
A.



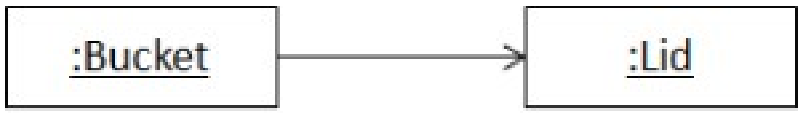
B.



C.



D. Answer

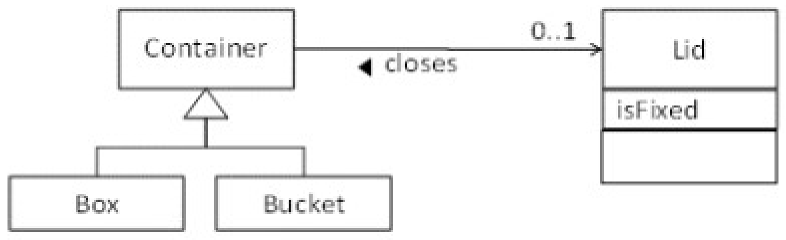


Item Weight: 1.0

____

Question #: 10

Consider the class diagram below.



Identify the correct statement

A. The following code compiles

```
Container c = new Box();
```

B. Container is an abstract class

C. A Lid must be associated to a Container but it is optional for a Container to have a Lid

D. There is a dependency and coupling but not association between Container and Lid

Item Weight: 1.0

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Question #: 11

When developing software to compete with Facebook, an iterative approach is more suitable than a sequential approach.

A. True
B. False

Item Weight: 0.5

____

Question #: 12

Testing is a verification type QA activity

A. True
B. False

Item Weight: 0.5

____

Question #: 13

Refactoring can improve performance of the refactored code.

A. True
B. False

Item Weight: 0.5

____

Question #: 14

The module TP uses both CI and CD.

A. True
B. False

Item Weight: 0.5

____

Question #: 15

Gradle is a continuous integration tool.

A. True
B. False

Item Weight: 0.5

____

Question #: 16

Method overloading can happen within a single class.

A. True
B. False

Item Weight: 0.5

____

Question #: 17

System testing covers mostly negative test cases while acceptance testing covers mostly positive test cases

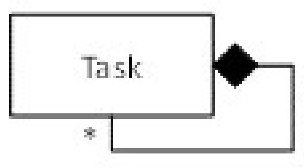
A. True
B. False

Item Weight: 0.5

____

Question #: 18

This is a correct usage of composition to represent the fact that a Task may consist of smaller Tasks



A. True
B. False

Item Weight: 0.5

____

Question #: 19

A coding standard can contain rules that can be objectively enforced

A. True
B. False

Item Weight: 0.5

____

Question #: 20

This is a valid functional requirement: "The quiz should be accessible to 250 students concurrently"

A. True
B. False

Item Weight: 0.5

____

Question #: 21

When writing developer documentation, it is more important to be comprehensive than comprehensible

A. True
B. False

Item Weight: 0.5

Question #: 22

Grayed out code reported by Intellij IDEA is an example of static analysis

A. True
B. False

Item Weight: 0.5

Question #: 23

The module project uses a depth-first iterative model

A. True
B. False

Item Weight: 0.5

Question #: 24

The code below compiles

```
void bar(boolean isValid) throws Exception{
    if(!isValid){
        throw new String("Invalid data");
    }
}
```

A. True
B. False

Item Weight: 0.5

Question #: 25

The following command feeds the text in input.txt into AddressBook program and saves the output in the output.txt file.

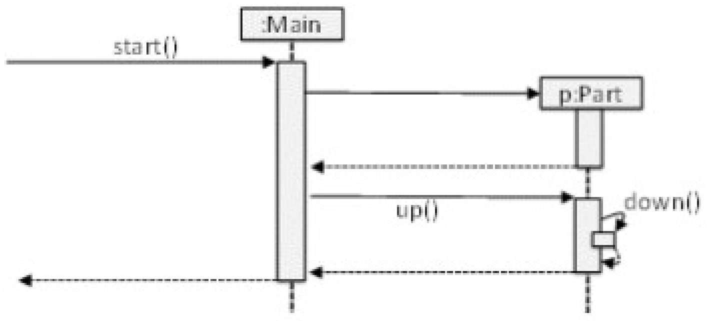
```
java input.txt > AddressBook > output.txt
```

A. True
B. False

Item Weight: 0.5

Question #: 26

Consider the sequence diagram below:



The code below is compliant with the diagram

```
class Main{
  void start(){
    // some code here
    Part p = new Part();

    // some more code here
  }
}
```

A. True
B. False

Item Weight: 0.5