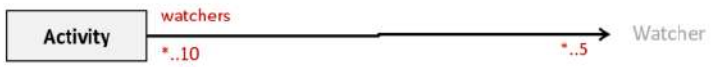
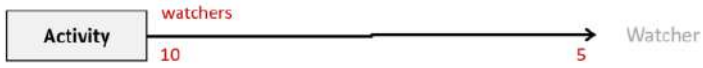
CS2103/T Practice Exam - Part 3 (Model Answers)

> ! **You are strongly encouraged to attempt this exam via Examplify** at least once before looking at these model answers. The password for the exam is `hello123`.
>
> This file is provided to you for convenience, because Examplify exam performance report (that you can access via https://examsoft.com) does not show images or give answers for short-answer questions.

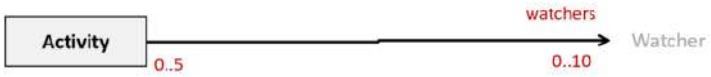
○ [p3.01] UML: CD: code to CD

? Which of these partial diagrams is the best match for the code?

○ 

○ 

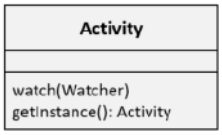
○ 

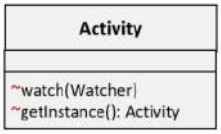
● 

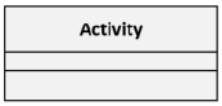
○ 

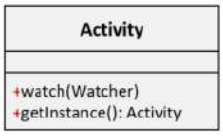
[p3.02] UML: CD: code to CD

? Which of these partial diagrams is the best match for the code?





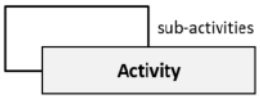




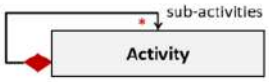
○ [p3.03] UML: CD: code to CD

? Assuming an activity keeps track of its sub activities, which of these partial diagrams is **not** compliant with the code?

○

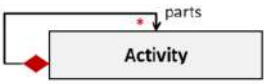


○

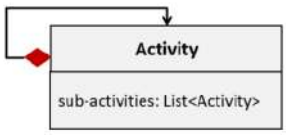


○

○

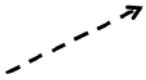


✓



[p3.04] UML: CD: code to CD

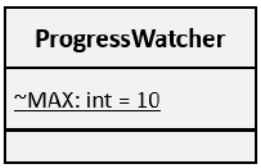
? There should be a dashed arrow from ____ to ____

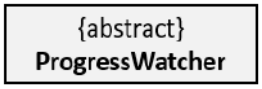


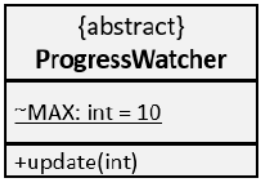
- from Activity to Watcher
- from ProgressWatcher to Watcher
- from ProgressWatcher to Activity
- from UiWidget to ProgressWatcher
- ✓ from Activity to ProgressWatcher

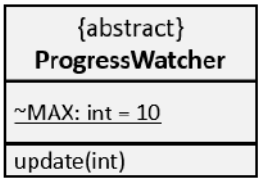
[p3.05] UML: CD: code to CD

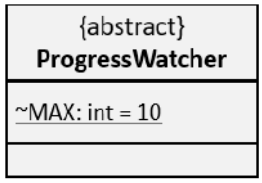
? Which of these is the best match for the code?





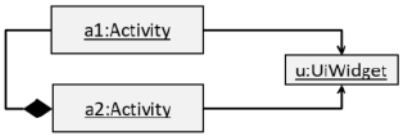


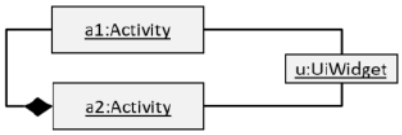


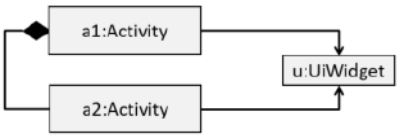


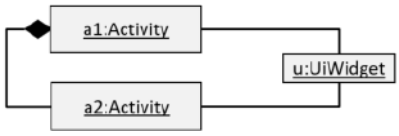
○ [p3.06] UML: CD: code to CD

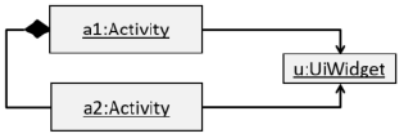
? Which of these is the best match for the code, for part (b)?

○ 

○ 

○ 

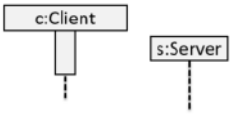
○ 

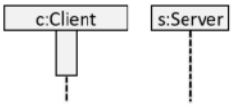
● 

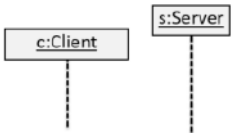
○ [p3.07] UML: CD: code to SD

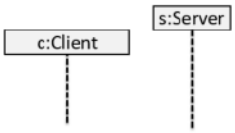
? Which of these partial diagrams is the best match for the code?

○ 

○ 

○ 

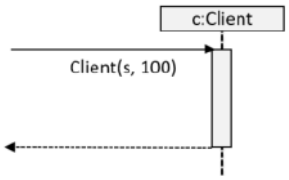
○ 

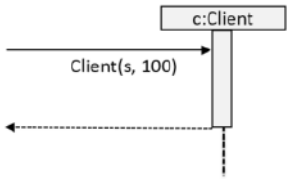
● 

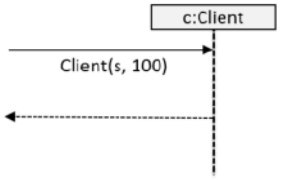
Examiner note: Examiner note: As s exists before c is created, s lifeline should start from a higher point compared to the c lifeline.

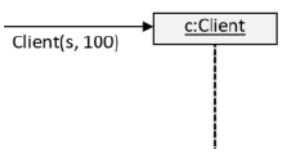
[p3.08] UML: CD: code to SD

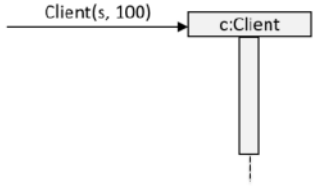
? Which of these partial diagrams is the best match for the code?







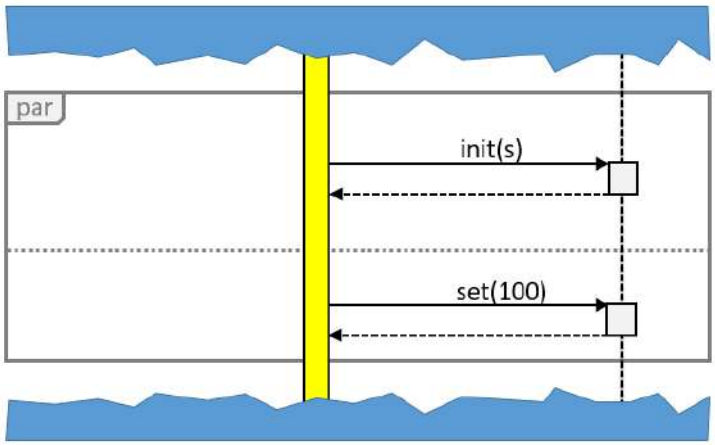




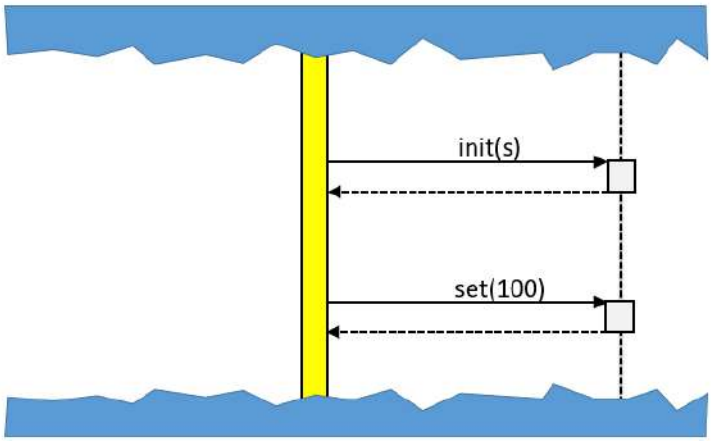
○ [p3.09] UML: CD: code to SD

? Assuming the yellow bar on the left is the constructor of the `Client` class, which of these partial diagrams is the best match for the code?

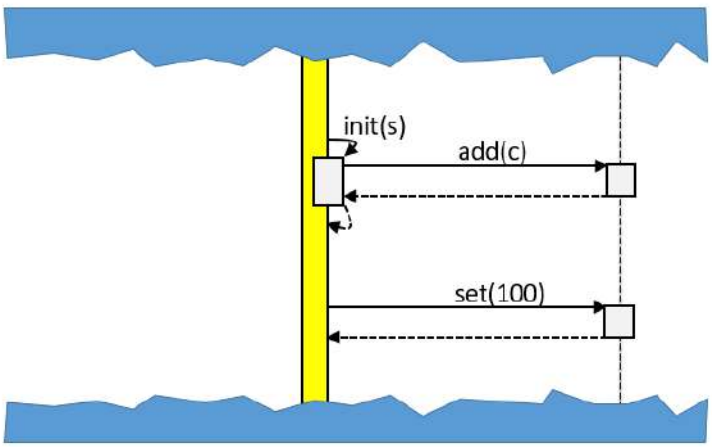
○

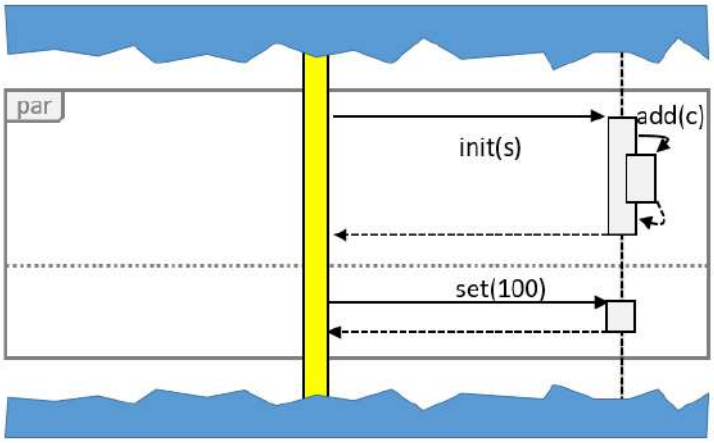


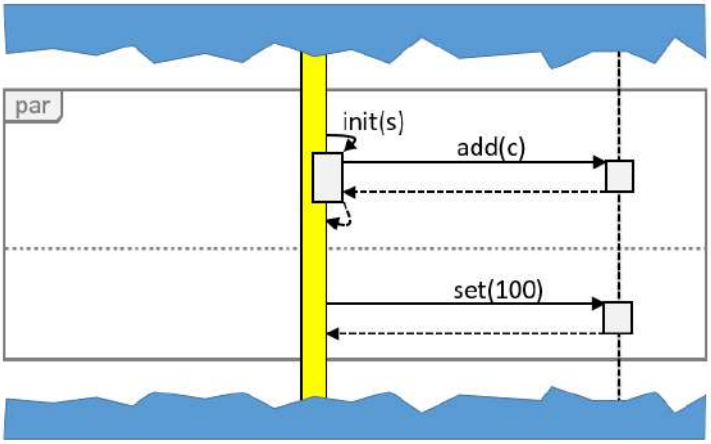
○



○




par
init(s)
add(c)
set(100)


par
init(s)
add(c)
set(100)

○ [p3.10] PM: misc

? Which statement is **incorrect**? ____

Why is it incorrect? ____

A1:

○ *Defensive programming* can result in slower code.

✓ *Path coverage* is easier to achieve than *statement coverage*.

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

○ *Equivalence partitions* cannot give a *Neumann-complete* test suite.

○ More test cases is not necessarily better.

A2: [in NOTES] Neumann-complete is not taught in the module?

Examiner note: This question has a deliberate error, to remind you that you should write down your doubts/queries/assumptions using the 'NOTES' feature of Examplify.

○ [p3.11] testing: test case design: boundary values

? Assuming `5` is used as a test case already, which value is **least** suitable as a test input for the following Java method?

____

```
/**
 * Returns true if the length could be a length of a month (in days)
 */

boolean isValidMonthSize(int length)
```

Why? ____

A1:

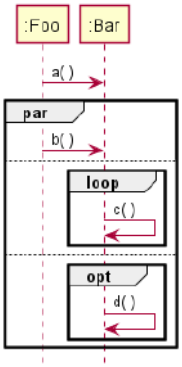
- ○ 27
- ○ 28
- ✓ 26
- ○ 31
- ○ 32

A2: 26 is a non boundary value but the question says 5 (also a non-boundary value from the same partition) is already being used as a test case.

Examiner note: The partitions are [-MAX..27][28..31][32..MAX])

☐ [p3.12] UML: SD: Interpret frames

?



[**Select all that apply**] Which sequence of method calls are compliant with the sequence diagram above?

☑ a b c d

☑ a d b c

☑ a c b c

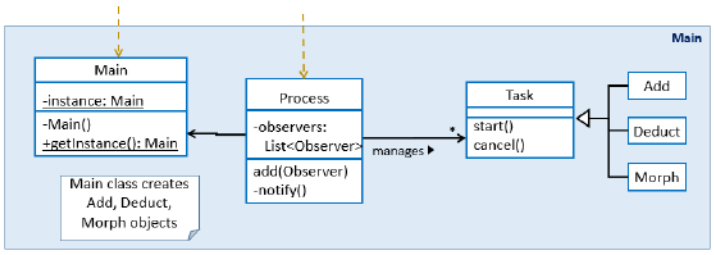
☑ a b

☑ a c c c b

Examiner note: A `loop` can execute 0 times too. Parallel interactions can happen in any order.

☐ [p3.13] Design: Design patterns

? [**Select all that apply**] Which of the following design patterns are likely to be used in the design of the `Main` component given below?



☑ Singleton

☐ Facade

☑ Command

☐ MVC

☑ Observer

Examiner note: Multiple classes are exposed to the outside, which means it is unlikely the Facade pattern is used.

○ [p3.14] test cases with multiple inputs

? Suppose you are testing a method that takes two parameters `height` and `width`. Given below are the test values that must be used in the test cases. Negative values are invalid inputs.

[**height:** -5, 5, 15] [**width:** -10, 10]

Which of the following test cases should we leave out (format: height, width)? ____

Give a test case we can add to improve the effectiveness and efficiency of testing ____

A1:

- ✓ -5 , -10
- ○ 5 , 10
- ○ 15 , 10
- ○ 5 , -10

A2: -5 , 10

○ [p3.15] domain modelling

? Which of these models is the **least** useful when *domain modelling* for a leave application system for employees? ____

Why is it least useful? ____

A1:

- ○ Activity diagram
- ○ Organization chart
- ✓ Class diagram
- ○ Sequence diagram
- ○ Object diagram

A2: For domain modelling, we should use OODMs instead of class diagrams.

○ [p3.16] test coverage

?

```
1  void foo(String s) {
2      if (s == null) {
3          print("Null given");
4          return;
5      }
6      for (int i=0; i < s.length(); i++){
7          print(s);
8      }
9  }
```

What is the smallest number of test cases needed to achieve 100% *path coverage* for the above method? ____

Justify your answer ____

A1:

- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ✓ None of the above

A2: Because there is a loop that can iterate a varying number of times.

Examiner note: Note that the question asks for path coverage, not statement coverage.