

Programming Mobile Applications, Re-examination, 2023

Answers

Question 1

- a) Function, package, class and method are examples of modules.
- b) Class A depends on class B.
- c) We should aim to decrease coupling.
- d) A, B, and D are true.
- e) It implies it has low cohesion.

[2 marks for each correct part]

Question 2

- a) B and C are true. [4 marks, 1 for each correct statement]
- b) i) setTime ii) boolean iii) public iv) no. [4 marks]
- c) The first, sortItems(dir : Direction) : boolean [2 marks]

Question 3

0	0	0	-1	0	0	1	0	0
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[10 marks, subtract 1 from total for each error]

Question 4

- a) Use case diagram, State machine diagram [2 marks]
- b) i) Use case diagram (also accepting behaviour diagram) [1 mark]
ii) BookBorrower or JournalBorrower [1 mark]
iii) System boundary [1 mark]
- c) i) 1 [1 mark]
ii) max 2 [1 mark]
iii) title, author, and a list of Copy objects, Copy[1..*] [3 marks]

Question 5

a)

3	1.5
12	4.0

[4 marks]

- b) Because the result has to be a double. If the denominator is written as an int, without the decimal point, then the result of the expression will be an int which will then be converted to a double. This will give the incorrect result in any case where the ratio of the numerator to the denominator is not an integer. [1 mark]
- c) i in line 30 [1 mark]
- d) i.sum or i.mean in line 31 [1 mark]

- e) sum and mean in lines 6 and 7 [1 mark]
- f) super(x,y) in line 21 [1 mark]
- g) There would be a compile-time error in line 14, as the visibility of a method that implements an abstractly declared method in an interface cannot reduce the visibility of the declaration in the interface, which is public. If the word public is removed, then the visibility would be reduced to package. [1 mark]

Question 6

```
1.0 is a double
1.0 is a double
3.141 is a double
Could not understand boat
30000.0 is a double
```

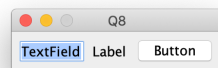
[10 marks]

Question 7

- a) The two possible outputs are:
 x = 2050
 and
 x = 2100
 [4 marks]
- b) If an InterruptedException is thrown in line 18 by the Thread.sleep method. This occurs if the current thread, running this run method is sent an interrupt request from some other thread. [2 marks]
- c) a.join causes the current thread (in this case the main thread) to pause and wait until the a thread has died. b.join causes the current thread to wait until the b thread has died. The two lines ensure that both threads have completed their tasks before moving on to line 55. [2 marks]
- d) 1000 ms [2 marks]

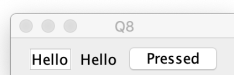
Question 8

a)



[2 marks]

b)



[2 marks]

- c) The Q8 object created in line 42. [2 marks]
- d) No. [2 marks]
- e) Ensures that clicking the close button on the window frame shuts down the program. [2 marks]

Question 9

- a) True
- b) False (it is a multi-user Linux system)
- c) False (the four component types are activities, services, content providers and broadcast receivers)
- d) True
- e) True
- f) False (services run in the background)
- g) True
- h) True
- i) False
- j) False

[1 mark for each correct part]

Question 10

- a) onPause()
- b) A is true
- c) An intent filter defines the set of implicit intents to which an Activity can respond. Intent filters are defined in the Android manifest file.
- d) onStop
- e) onResume

[2 marks for each correct part]