

# Object-Oriented Analysis, Design and Programming

Re-examination Answers  
Medialogy Semester 4  
Wednesday 12 August 2009  
09:00 – 11:00

## Question 1

C

## Question 2

B

## Question 3

A, B and C

## Question 4

- a. computeSum
- b. x and y
- c. int
- d. public

## Question 5

-10

a-5-5

a-10

## Question 6

5

4

3

2

1

## Question 7

- a. The building blocks of the language. For example, the different types of arrow and box that are used in UML.
- b. The rules governing how the model elements can be put together to make legal models. For example, in UML a syntactic rule might say that two class boxes may be joined together with an arrow that has an open triangular head.
- c. The rules governing how a legal diagram should be interpreted. For example, in UML, two square boxes joined by an arrow with an open

triangular head in a class diagram means two classes related by inheritance.

#### Question 8

Sketch mode is the most common mode of using UML. Using UML in sketch mode involves drawing sketch diagrams that focus on the important features and leave out the details. These diagrams can then be used to help with writing new code or, in a reverse-engineering context, one can sketch UML diagrams as part of trying to understand existing code.

When using UML in blueprint mode, the emphasis is on completeness. In this mode, one aims to produce diagrams that specify a system in as much detail as possible – at least enough for a competent programmer to be able to “mechanically” implement the system.

#### Question 9

1

#### Question 10

4

#### Question 11

```
public Point() {  
    x = 1;  
    y = 2;  
}
```

#### Question 12

- a. Class diagram
- b. title : String, author : String
- c. isBorrowable() : Boolean  
copyBorrowed(c : Copy)  
copyReturned(c : Copy)
- d. 0 or more
- e. No. The person who drew the diagram has simply decided to omit any information about the attributes of the Copy class.

1 mark for each answer.

#### Question 13

- a. Diagram 2
- b. 1 or more
- c. s is deleted
- d. Nothing that we know of – but not necessarily deleted.
- e. Aggregation. A football player may play for more than one team and does not cease to exist when he ceases to play for a particular team.

1 mark for each answer.

#### Question 14

The true statements are: b, e, f, g and j.

#### Question 15

The true statements are: a, c, d, e, i, j.

#### Question 16

- a. State machine diagrams.
- b. (1) and (3) are equivalent. In (2), if the copy is on the shelf and it receives a borrowed() message, then its state changes to on loan but no action takes place. In (1), if the copy is on the shelf and it receives a borrowed() message, then the book.copyBorrowed(self) action is performed.
- c. The Copy object whose state is represented in the diagram.
- d. Its state changes to "on the shelf" and, on exiting the "on loan" state, the book.copyReturned(self) action is performed.
- e. The event is "entry" and the action is "book.copyReturned(self)".

#### Question 17

- a. Activity diagrams
- b. "At end of month"
- c. "Request payment"
- d. When a cancel request has been received by the accept signal labelled "Receive cancel request".
- e. Once a "Request payment" signal has been sent by the "Request payment" send signal.
- f. Monthly (at the end of each month).

#### Question 18

$x = 3$ ,  $y = 2$ ,  $z = 3$

#### Question 19

- 1
- 2
- 3
- 4
- 5
- 6

Question 20

5

4

3

2

1

JumpException thrown!

5

4

3

2

1

JumpException thrown!