

Object-Oriented Programming

A

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Test – April 15, 2016

Last name:	
Name:	

1b	
2b	

The test lasts 30 minutes.

Write the answers into the table. Only answers in the table will be considered. The questions are multiple-choice with only one choice being correct.

1	
2	
3	
4	
5	
6	
7	
8	
9	

In case of making corrections, mark clearly which answer is valid. Each correct answer has the value as indicated in the question. An answer that is incorrect, ambiguous, or incomplete will be marked with 0 points. The work out is not considered.

A damaged paper will not be accepted.

1. (1 b) Aggregation in object-oriented programming

- (a) sets the criteria for using abstract classes
- (b) means connecting objects into bigger wholes
- (c) enables for an object to be applied instead of an object of its supertype
- (d) means hiding the object implementation
- (e) represents a criterion for the use of inheritance

2. (1 b) Throwing an exception in Java

- (a) corrects the error that has occurred
- (b) signals an exceptional situation to the main method of the program
- (c) frees out the memory from the unnecessary objects
- (d) sends a message to the programmer
- (e) signals an exceptional situation to the client code

3. (1 b) For which design pattern is this code specific (each class and interface in its own file)?

```
public interface P {  
    void m(N d);  
}
```

```
public interface N {  
    void op(A e);  
    void op(B e);  
}
```

```
public class A implements P {  
    ...  
    public void m(N d) {  
        d.op(this);  
    }  
}
```

```
public class B implements P {  
    ...
```

```
public void m(N d) {  
    d.op(this);  
}
```

```
public class X implements N {  
    public void op(A e) { ... }  
    public void op(B e) { ... }  
}
```

```
public class Y implements N {  
    public void op(A e) { ... }  
    public void op(B e) { ... }  
}
```

- (a) Visitor
- (b) Observer
- (c) Composite
- (d) MVC
- (e) Strategy

4. (1 b) The following code in Java is given:

```
while (getObject(o)) {  
    if (o instanceof A)  
        ((A)o).opa();  
    else if (o instanceof B)  
        ((B)o).opb();  
    else  
        ;  
}
```

To remove the main problem that prevents this code to correspond with the object-oriented principles, it would be necessary to use

- (a) access modifiers
- (b) static methods
- (c) method overriding
- (d) method overloading
- (e) attributes

5. (2 b) What is the output of the following program in Java?

```
interface I {
    void m();
}
abstract class C implements I {
    public void m() {
        System.out.print("c");
    }
}
class D extends C {
    public void m() {
        super.m();
        System.out.print("d");
    }
}
class E extends D {
    public void m() {
        super.m();
        System.out.print("e");
    }
}
class M {
    public static void exe(I... a) {
        for (I e : a)
            e.m();
    }
    public static void main(String[] args) {
        E o1 = new E();
        I o2 = new D();
        C o3 = new D();
        I o4 = (I) new E();

        exe(o1, (I)o2, o3, o4);
    }
}
```

6. (1 b) A thread in Java is created

- (a) automatically out of each method
- (b) by a direct call to the corresponding Java API mechanism
- (c) automatically for each class
- (d) by the process opposite to serialization
- (e) for each method marked with the **synchronized** keyword

7. (1 b) In an object-oriented program, the main functionality is typically

- (a) contained in constructors
- (b) created by inheritance
- (c) provided by static methods
- (d) contained in the `main()` method
- (e) created by object interaction

8. (1 b) Among the other things a program provides a calculation according to a particular formula. A user starts this calculation by clicking a button in the user interface realized in the Swing framework. From the perspective of an object-oriented design, the calculation itself would be best realized

- (a) in the `main()` method
- (b) as the method of the window that contains the button
- (c) in the implementation of the button listener
- (d) as the button method
- (e) in the corresponding method of the application logic

9. (1 b) A class is given:

```
class C implements Serializable {
    String[] s = new String[9999];
}
```

The C class instances are given:

```
C a = new C();
C b = new C();
C c = new C();
```

To serialize these instances at once (by one record into one file)

- (a) won't be possible because the C class isn't final
- (b) won't be possible because the C class contains the `s` attribute, which is too big
- (c) won't be possible because the C class is not marked as **public**
- (d) won't be possible because they aren't interconnected
- (e) will be possible

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10 b

1 b

2 e

3 a

4 c

5 cdecdecde

6 b

7 e

8 e

9 d