Object-Oriented Programming
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Test – May 10, 2017

Last name:	
Name:	

1b	
2b	

The test lasts 30 minutes.

1	
2	
3	
4	
5	
6	
7	
8	
9	

Write the answers into the table. Only the answers in the table will be taken into account. In the multiple-choice questions only one choice is correct.

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) In graphical user interface frameworks such as JavaFX and Swing executing a particular action after a button click is enabled by

(a) following whether the button is clicked in an endless loop in its own thread with a consecutive performing of the action
(b) event synchronization in the main method of the program
(c) following whether the button is clicked in an endless loop in the event dispatching thread with a consecutive performing of the action
(d) adding this action as a click event listener/handler registered for the given button
(e) a particular language construct for capturing a click event and a consecutive performing of the action if the captured event is related to the corresponding button

2. (1 b) Anonymous classes in Java are typically used for

(a) data protection
(b) including application functionality in frameworks
(c) to prevent creating of an unnecessary big number of *class* files
(d) to prevent object creation
(e) to keep the class names hidden

3. (1 b) Synchronized methods in Java

(a) represent critical regions of a program
(b) prevents a deadlock
(c) alternate uniformly
(d) start and end simultaneously
(e) represent the threads of a program

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

```
class MyException extends Exception {}

class A {
   void a(int i) throws MyException {
      if (i > 0) {
         ...
      } else
         throw new MyException();
   }
}

class B {
   void b(int i) {
      new A().a(i);
   }
}
```

To be correct from the position of exceptions, the `b()` method of the `B` class has to

(a) throw an exception of the `MyException` type in a **try** block
(b) throw an exception of the `MyException` type in a **finally** block
(c) contain the **throws** `MyException` clause along with a handler for exceptions of the `MyException` type
(d) contain the **throws** `MyException` clause or with a handler for exceptions of the `MyException` type
(e) throw an exception of the `MyException` type in a **catch** block

5. (1 b) In object-oriented programming, encapsulation

(a) enables to decrease the dependency of the client code
(b) enables to connect objects
(c) represents a way of making hierarchy
(d) enables to apply an object instead of the object of its supertype
(e) represents a criterion for using aggregation

6. (1 b) If `Order` represents a class in a Java program, the `Order.class` expression represents a reference to

(a) the file súbor that represents the `Order` class
(b) the name of the `Order` class of the `String` type
(c) an instance of the `Order` class
(d) the object that represents the `Order` class
(e) an attribute of the `Order` class

7. (1 b) Which design pattern is implemented by this Java code (each class and interface in its own file)?

```
public interface I {
   void m();
}

public class M implements I {
   List<I> p;
   public m() {
      ...
      for (I e : p)
         e.m();
   }
}

public class S implements I {
   public m() { ... }
   ...
}
```

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

8. (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);
   }
}
```

9. (1 b) The following class in Java is given:

```
public class C implements Serializable {
   public String id;
   private List<C> l = new ArrayList<>();

   public C(String id) {
       this.id = id;
   }
   public void m(C... c) {
       for (C e : c)
           l.add(e);
   }
}
```

The following instances of the `C` class are given:

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

a.m(b);
b.m(c, d);
c.m(b);
d.m(b, c, d);
```

For the serialization of these instances it holds that

(a) the biggest number of the instances will be correctly serialized if the `d` object is selected as the start of the serialization
(b) the biggest number of the instances will be correctly serialized if the `b` object is selected as the start of the serialization
(c) the biggest number of the instances will be correctly serialized if the `a` object is selected as the start of the serialization
(d) it makes no difference which object is selected as the start of the serialization because **private** will prevent the serialization of the `l` attribute
(e) the biggest number of the instances will be correctly serialized if the `c` object is selected as the start of the serialization

Objektovo-orientované programovanie
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10 b

1 d

2 b

3 a

4 d

5 a

6 d

7 e

8 cdecdcdcde

9 c