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Identify the letter of the choice that best completes the statement or answers the question.

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(6) Consider the following code segment:

```
List<String> list = new ArrayList<String>();  
list.add("["); list.add("A"); list.add("]");  
System.out.println(list);  
ListIterator it = list.listIterator();  
while(it.hasNext())  
{  
    if ("[".equals(it.next()) || "}".equals(it.next()))  
        it.remove();  
    else  
        it.add("*");  
}  
System.out.println(list);
```

The first output line is

[[, A,]]

What is the second output line?

- A. [A]
- B. [A, B]
- C. [B, A]
- D. ClassCastException

(7) Which of the following best describes the set of all pairs of values for boolean variables a and b , such that

$$(!a \ \&\& \ b) == !(a \ || \ b)$$

evaluates to true?

- A. Empty set
- B. Only one pair: $a == \text{true}$, $b == \text{false}$
- C. Two pairs in which $a == \text{true}$
- D. Two pairs in which $a != b$
- E. All four possible combinations of values

(8) Which of these cannot be used as a case label in a switch statement :

- A. case 'x':
- B. case x: // assume x is a final int variable
- C. case 5:
- D. case 2.3:

(9) The _____ loads Java bytecode to the memory.

- A. java
- B. bytecode verifier
- C. JVM's class loader
- D. java compiler

(10) The statement `System.out.printf("%.2f", 1234.567)` outputs _____

- A. 1234.567
- B. 1234.5
- C. 1234.57
- D. 1234

2、 Multiple choice(10 points)

Identify the letters of the choices that best complete the statement or answer the question.

(1) Which three are methods of the Object class?

- A. `notify()`
- B. `notifyAll()`
- C. `wait(long msecs)`
- D. `sleep(long msecs)`

(2) `public interface Foo`

```
{
    int k = 4; /* Line 3 */
}
```

Which three piece of codes are equivalent(等价地) to line 3?

- A. `final int k = 4;`
- B. `public int k = 4;`
- C. `static int k = 4;`
- D. `abstract int k = 4;`
- E. `volatile int k = 4;`
- F. `protected int k = 4;`

(3) Which are not valid declarations of a boolean?

- A. `boolean b1 = 0;` B. `boolean b2 = 'false';`
- C. `boolean b3 = false;` D. `boolean b5 = no;`

(4) Which of the following expression cannot yield an integer between 0 and 100, inclusive?

- A. `(int)(Math.random() * 100)`
- B. `(int)(Math.random() * 100) + 1`
- C. `(int)(Math.random() * 100 + 1)`
- D. `(int)(Math.random() * 101)`

(5) For any object `obj`, a call `obj.getClass().getName()` returns the name of the `obj`'s class.

Suppose

```
System.out.println(new X() + "+" + new Y());
```

displays

X+Y

Which of the following implementations would produce that result?

- A. Class X has a method `public String toString() { return "X"; }`
and class Y has a method `public String toString() { return "Y"; }`
- B. Both class X and class Y extend class M that has a method `public String toString() { return getClass().getname(); }`
- C. Both class X and class Y extend an abstract class M that has methods `public abstract String getName();`
`public String toString() { return getname(); }`

3、 True/False(10 points)

Indicate whether the sentence or statement is true or false.

- (1) `java.util` packages is automatically loaded, so you don't need to import it.
- (2) The JVM performs automatic garbage collection to reclaim the memory occupied (占有) by objects that are no longer used.
- (3) The `finally` method is called by the garbage collector to perform termination housekeeping on an object just before the garbage collector reclaims (回收再利用) the object's memory.
- (4) Every class must have at least one constructor. If you do not provide any in a class's

declaration, the compiler will not create any constructor for you.

- (5) Operator **instanceof** determines if an object has the *has-a* relationship with a specific type.
- (6) Polymorphism enables us to write programs that process objects that share the same superclass as if they're all objects of the superclass; this can simplify programming
- (7) A new class of objects can be created quickly and conveniently by inheritance—then new class absorbs (吸收) the characteristics of an existing class.
- (8) Swing GUI components are thread safe.
- (9) Java allows synchronized methods and synchronized statements.
- (10) Throws clause specifies the exceptions the method throws.

4、 Short answer(40 points)

- (1) (5 points) Please explain the life cycle of a Thread.
- (2) (6 points) Please explain the characteristics of java interface and abstract class.
- (3) (5 points) What is checked exception? Please explain how to use it.
- (4) (4 points) What is the difference between Set and List.
- (5) (6 points) Illustrate(举例说明) how to make an object as a separate thread running
- (6) (8 points) Illustrate how to communicate between server and client based on Socket.
- (7) (6 points) Please explain how to add menus to a JFrame object.

5、 Completion (30 points)

- (1) (4 points) What is the output of the following code segment?

```
Map m = new TreeMap();  
m.put("La", "La");  
m.put("La-La", "La");  
m.put("La-La-La", "Ye-Ye");  
Iterator it = m.keySet().iterator();  
while (it.hasNext())  
    System.out.println(m.get(it.next()) + " ");
```

(1)

- (2) (2 points) Many of Java's networking classes are contained in package (2)

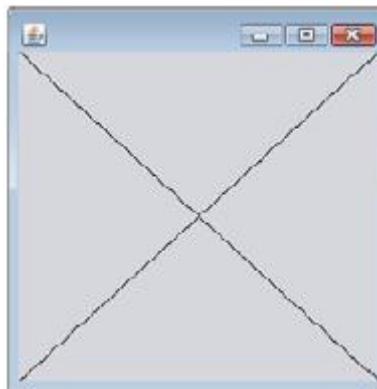
- (3) (2 points) ExecutorService method _____ (3) _____ ends each thread in an ExecutorService as soon as it finishes executing its current Runnable, if any.
- (4) (4 points) _____ (4) _____ and _____ (5) _____ enable you to specify, with a single method declaration, a set of related methods, or with a single class declaration, a set of related types, respectively.
- (5) (6 points) Write a simple generic version of method `isEqualTo` that compares its two arguments with the `equals` method and returns true if they're equal and false otherwise.

_____ (6) _____

- (6) (6 points) Complete the following program section to show a message dialog when user pressed "ok" button.

```
JButton_ button = new JButton("ok");  
button. _____ (7) _____  
_____;
```

- (7) 6 (points) Complete the following program to show a frame like the following fig.



```
import java.awt.Graphics;  
import javax.swing.JPanel;  
public class DrawPanel extends JPanel  
{  
    // draws an X from the corners of the panel  
    public void paintComponent( Graphics g )  
    { _____ (8) _____  
        _____  
    } // end method paintComponent
```

```

} // end class DrawPanel

import javax.swing.JFrame;

public class DrawPanelTest
{
    public static void main( String[] args )
    {
        // create a panel that contains our drawing
        DrawPanel panel = new DrawPanel();
        // create a new frame to hold the panel
        JFrame application = new JFrame();
        // set the frame to exit when it is closed
        application.setDefaultCloseOperation( JFrame.EXIT_ON_CLOSE );
        application.add( panel ); // add the panel to the frame
        application.setSize( 250, 250 ); // set the size of the frame
        application.setVisible( true ); // make the frame visible
    } // end main
} // end class DrawPanelTest

```