

面向对象程序设计[Java 双语]练习试题

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1. Choice Questions: (10 questions, 2 pts each, total 20 pts)

(1) Suppose you define a Java class as follows: _____.

```
public class Test {  
  
}
```

In order to compile this program, the source code should be stored in a file named _____.

- A)Test.txt
- B)Test.class
- C)Test.doc
- D)Test.java

(2) The equal comparison operator in Java is _____.

- A)!=
- B) ==
- C) <>
- D) ^=

(3) Given the declaration `Circle x = new Circle()`, which of the following statement is most accurate?

- A)x contains an object of the Circle type.
- B)You can assign an int value to x.
- C)x contains an int value.
- D)x contains a reference to a Circle object.

(4) Analyze the following code: _____.

```
public class Test {  
    public static void main(String[ ] args) {  
        System.out.println(xMethod(5, 500L));  
    }  
  
    public static int xMethod(int n, long l) {  
        System.out.println("int, long");  
        return n;  
    }  
  
    public static long xMethod(long n, long l) {  
        System.out.println("long, long");  
        return n;  
    }  
}
```

A)The program displays int, long followed by 5.

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- B)The program runs fine but displays things other than 5.
C)The program displays long, long followed by 5.
D)The program does not compile because the compiler cannot distinguish which xmethod to invoke.

(5) Which of these data types requires the most amount of memory?

- A)byte B) long C) short D) int

(6) What is the printout of the following switch statement?

```
char ch = 'a';
switch (ch) {
    case 'a':
    case 'A':
        System.out.print(ch); break;
    case 'b':
    case 'B':
        System.out.print(ch); break;
    case 'c':
    case 'C':
        System.out.print(ch); break;
    case 'd':
    case 'D':
        System.out.print(ch);
}
```

- A) abcd B) a C) abc D) aa E) ab

(7) What is the value of myCount.count displayed?

```
public class Test {
    public static void main(String[] args) {
        Count myCount = new Count();
        int times = 0;

        for (int i=0; i<100; i++)
            increment(myCount, times);

        System.out.println(
            "myCount.count = " + myCount.count);
        System.out.println("times = " + times);
    }
}
```

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```
public static void increment(Count c, int times) {  
    c.count++;  
    times++;  
}  
}
```

```
class Count {  
    int count;  
  
    Count(int c) {  
        count = c;  
    }  
  
    Count() {  
        count = 1;  
    }  
}
```

A)100 B) 101 C) 99 D) 98

(8) Each time a method is invoked, the system stores parameters and local variables in an area of memory, known as __ __, which stores elements in last-in first-out fashion.

A)storage area B) a stack
C)an array D) a heap

(9) Assume `double[][] x = new double[4][5]`, what are `x.length` and `x[2].length`?

A)5 and 5
B) 4 and 4
C) 4 and 5
D) 5 and 4

(10) The extension name of a Java bytecode file is _____

A).java
B) .exe
C) .class
D) .obj

2. Questions: (5 questions, 5 pts each, total 25 pts)

(1) What is displayed on the console when running the following program?

```
class Test {
```

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```
public static void main(String[] args) {
    try {
        method();
        System.out.println("After the method call");
    }
    catch (NumberFormatException ex) {
        System.out.println("NumberFormatException");
    }
    catch (RuntimeException ex) {
        System.out.println("RuntimeException");
    }
}

static void method() {
    String s = "5.6";
    Integer.parseInt(s); // Cause a NumberFormatException

    int i = 0;
    int y = 2 / i;
    System.out.println("Welcome to Java");
}
}
```

(2) After the following program is finished, how many bytes are written to the file t.dat?

```
import java.io.*;

public class Test {
    public static void main(String[] args) throws IOException {
        DataOutputStream output = new DataOutputStream(
            new FileOutputStream("t.dat"));
        output.writeChars("ABCD");
        output.close();
    }
}
```

(3) Show the output of running the class Test in the following code lines:

```
interface A {
}
```

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```
class C {  
}
```

```
class B extends D implements A {  
}
```

```
public class Test extends Thread {  
    public static void main(String[ ] args) {  
        B b = new B();  
        if (b instanceof A)  
            System.out.println("b is an instance of A");  
        if (b instanceof C)  
            System.out.println("b is an instance of C");  
    }  
}
```

```
class D extends C {  
}
```

(4) What is the output of the following code?

```
public class Test {  
    public static void main(String[ ] args) {  
        String s1 = "Welcome to Java!";  
        String s2 = s1;  
  
        if (s1 == s2)  
            System.out.println("s1 and s2 reference to the same String object");  
        else  
            System.out.println("s1 and s2 reference to different String objects");  
    }  
}
```

(5) What is the printout of t of the following code?

```
public class Foo {  
    int i = 1;  
    static int s;
```

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```
public static void main(String[] args) {  
    Foo f1 = new Foo();  
    System.out.println("f1.i is " + f1.i + " f1.s is " + f1.s);  
    Foo f2 = new Foo();  
    System.out.println("f2.i is " + f2.i + " f2.s is " + f2.s);  
    Foo f3 = new Foo();  
    System.out.println("f3.i is " + f3.i + " f3.s is " + f3.s);  
}  
  
public Foo() {  
    i++;  
    s++;  
}  
}
```

3.Programming: (6 questions, First: 5pts, Rest: 10pts, Total: 55pts)

(1) Write a Java program to convert all characters in a given string to uppercase using the String class.

(2) Implement a class named Stopwatch. The class contains:

- Private data fields startTime and endTime with getter methods.
- A no-arg constructor that initializes startTime with the current time.
- A method named start() that resets the startTime to the current time.
- A method named stop() that sets the endTime to the current time.
- A method named getElapsedTime() that returns the elapsed time for the stopwatch in milliseconds.

(3) Create a Java class called Book with the following attributes and methods:

- Attributes: title, author, price
- Methods: Book(String title, String author, double price): Constructor to initialize the title, author, and price of the book.
- displayInfo(): Method to display the title, author, and price of the book.

(4) Some websites impose certain rules for passwords. Write a method that checks whether a string is a valid password. Suppose the password rules are as follows:

- A password must have at least ten characters.
- A password consists of only letters and digits.
- A password must contain at least three digits.

(5) Write a class named Octagon that extends GeometricObject and implements the Comparable and Cloneable interfaces. Assume that all eight sides of the octagon are of equal size. The area can be computed

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using the following formula:

$$area = (2 + 4/\sqrt{2}) * side * side$$

(6) Design and Implement a Student Class Based on a UML Diagram

- Create a Java class named Student that matches the UML diagram.
- Implement all the methods mentioned in the UML diagram.
- Ensure that the class has proper getters and setters for the id, name, and grade attributes.
- Implement the study method to simulate the student studying. This method should print a message indicating that the student is studying.
- Implement the toString method is included for better representation of the Person object.

Please design and draw a UML diagram, then implement a Student class based on the UML Diagram.