



# 如何远离IDE

2022.01

江宇辰

# 故事要从这里开始说起



学期初



噫！好！我中了！

学期中



小小OJ，可笑可笑

学期末



痛苦面具.jpg

# 试题分析



题目类型：判断题，选择题，填空题，简答题，代码题

题目类型：简单题，普通题，难题

题目类型：你会答的题，你不会答的题

题量：10判断，15选择，15选填，5简答，3代码

# 判断题



知识点很多，细节很多。三思而T/F。

基础数据类型，运算符等

1. When we declare an array of integers as a class member variable, if the array is not initialized, the value of each array element will be null.

2. `int[][] arr2d = new int[2][]` and `arr2d = {{0, 1, 2, 4}, {5, 6}}` effectively declare and initialize a two-dimensional array.

3. For `a=1`, `b=5`, the value of the Java expression `5a==b & b>=5` is true.

4. If `a` and `b` are integers with values 8 and 3, the value of `(double)a/b` is 2.0

5. The statements `{ short s1=1; s1 = s1 + 1; }` can excute normally.

6. The `num` has the value 6 after `{ int num = 2; num += 4.7; }`

# 判断题



知识点很多，细节很多。三思而T/F。

## 类与对象

7.If Class C is a subclass of class B and class B is a subclass of class A, then C inherits not only B's members, but also A's members.

8.A class can only extend one parent class, but can implement more than one interface.

9.The instance variables are only visible to the methods in which they are declared.

10.An abstract class may not contain abstract methods.

# 选择题



给定了选项，但这一定是好事吗？

1.Which of the following is not a primitive data type in Java?

A. long      B. float      C. String      D. double

2.When we run the command “java test”, which **main** method will get executed?

```
public class test{  
    public static void main(int[] i){ }  
    public static void main(String[] c){ }  
    public static void main(String[][] args) { }  
}
```

A.The first main method      B.The second main method  
C.The third main method      D.None of above

# 选择题



给定了选项，但这一定是好事吗？

3.What is the result after executing the following code?

```
int x = 10;  
if (x != 10);  
    System.out.println("x="+x+++ " ");  
System.out.println("x+1="+(++x+1));
```

- A.x = 11 x +1=12      B.x=11 x+1=13  
C.x=10 x+1=13      D.x+1=12



4.Which of the following is true about String?

- A.String is mutable   B.String is immutable  
C.String is a primitive data type   D.None of above

5.What is the result of the following code?

```
int a = 0;
while(a < 10){
    switch(a) {
        case 3: a = a + 3;
        case 4: a = a + 4;
        case 1:
        default: a = a + 1;
        case 2: a = a + 2;
    }
}
System.out.print(a);
```

- A.3                                      B.13                                      C.Compile error                                      D.Runtime error





6.What is the result of the following code?

```
int a = 0,b = 0;
do{
    if (a%2 == 0){
        a++;
        continue;
    }
    a++;
    b = b + a;
} while(a < 8);
System.out.println(b);
```

A.16                      B.30                      C.20                      D.21

7.What is the result after executing the following code?

```
boolean x = false;
int a;
if (x = true) a = x? 1: 2;
else a = x? 3: 4;
System.out.println(a);
```

A.1                      B.2                      C.3                      D.4



8. What is the value of the following expression?

`10 / 3 * 2 % 5.0`

- A. 1.0      B. 1      C. 2      D. 1.3

9. Given an array as follows:

`char[][] array = {{'a'}, {'a', 'v', 'a'}, {'e', 'f'}, {'c', 'a', 'r', 'o', 'l'}};`

What is the value of `array[1].length`, `array[2].length`, and `array.length`?

- A. 4,4,4      B. 3,2,4      C. 1,3,4      D. 3,2,3

10. Which of the following is not true?

- A. An interface can extend another interface.
- B. A concrete class implementing an interface must implement all abstract methods of the interface.
- C. An interface can implement another interface.
- D. An interface is a solution for multiple inheritance in java.



11. Assume that we have defined:

```
enum Direction { NORTH, SOUTH, EAST, WEST }
```

which statement is false?

- A. The expression `Direction.NORTH == Direction.NORTH` is guaranteed to be true.
- B. The expression `Direction.NORTH.equals(Direction.NORTH)` is guaranteed to be true.
- C. The expression `Direction.NORTH < Direction.WEST` is guaranteed to be true.
- D. The expression `NORTH.compareTo(WEST)` is guaranteed to have a value less than one.

12. For the following code fragment:

```
Rectangle r1 = new Rectangle();  
r1.setColor(Color.blue);  
Rectangle r2 = r1;  
r2.setColor(Color.red);
```

After the above piece of code is executed, what are the colors of `r1` and `r2` respectively?

- |   |  |
|---|--|
| A. <code>Color.blue</code> , <code>Color.red</code> | B. <code>Color.blue</code> , <code>Color.blue</code> |
| C. <code>Color.red</code> , <code>Color.red</code>  | D. None of above                                     |



13. Which of the following statements is the correct way to initialize an array?

- A. `int[] array;`      B. `array = {1, 2, 3, 4, 5};`  
C. `int[] array = new int[5]{0, 1, 2, 3, 5};`      D. `int[] array = new int[5];`

14. For the following code:

```
int[] a = {0, 1, 2, 3};  
int b = a[0];  
b = 1;  
int[] c = a;  
c[2] = 8;  
for(int value : a) value = 0;  
for(int value : a) System.out.printf("%d ", value);
```

What is the output of the above code?

- A. 0 0 0 0      B. 0 1 2 3      C. 0 1 8 3      D. 1 1 2 3

15. Given

```
public abstract class Account{  
    abstract void deposit(double amt);  
    public abstract Boolean withdraw(double amt);  
}  
public class DebitAccount extends Account{ }
```



which of the following changes will enable the code to compile?

- A. Change the signature of Account to: public class Account
- B. Make Account an interface
- C. Implement public methods for deposit and withdraw in DebitAccount
- D. Change Signature of DebitAccount to: DebitAccount implements Account

# 选填空题



和选择题一样，但不完全一样

Given words:

abstract	for each	packages	default	static
break	for loop	class	private	overloading
continue	constructor	enum	protected	overriding
extends	final	object	public	wrapper
implements	switch	inheritance	super	
new	if-else	encapsulation	this	

Fill in the blanks:

- 1. \_\_\_\_\_ is the technique of making the fields in a class private and providing access to the fields via public methods
- 2. \_\_\_\_\_ is the process of reusing existing definition of classes such that one objcct can acquire the properties of another.
- 3. When a java class has multiple methods with the same name but with different arguments, we call it method \_\_\_\_\_
- 4. \_\_\_\_\_ is a blueprint from which individual objects are created. It can contain fields and methods to describe the behavior of an object.
- 5. The \_\_\_\_\_ is called when an object of a class is created. It can be used to set initial values for object attributes.

# 选填空题



和选择题一样，但不完全一样

Given words:

abstract	for each	packages	default	static
break	for loop	class	private	overloading
continue	constructor	enum	protected	overriding
extends	final	object	public	wrapper
implements	switch	inheritance	super	
new	if-else	encapsulation	this	

6. There are many built-in\_\_\_\_\_such as lang, util, swing, net, io, sql, etc.
7. There are many usages of the\_\_\_\_\_keyword. In Java, it is a reference variable that refers to the  
current object.
8. The\_\_\_\_\_statement selects one of many code blocks to be executed.
9. The\_\_\_\_\_statement is used in the loop control structure when you need to jump to the  
next iteration of  
the loop immediately. It can be used with for loop or while loop.
10. The\_\_\_\_\_ loop provides a way to traverse an array or collection in Java without using  
indexes.

# 选填空题



和选择题一样，但不完全一样

Given words:

abstract	for each	packages	default	static
break	for loop	class	private	overloading
continue	constructor	enum	protected	overriding
extends	final	object	public	wrapper
implements	switch	inheritance	super	
new	if-else	encapsulation	this	

11. The Java\_\_\_\_\_keyword is used to create an instance of the class.
12. The\_\_\_\_\_keyword in Java is a reference variable which is used to refer immediate parent class object.
13. The\_\_\_\_\_keyword is an access modifier used for attributes, methods and constructors, making them accessible in the same package and subclasses.
14. An\_\_\_\_\_is a special "class" that represents a group of constants (unchangeable variables).
15. The\_\_\_\_\_keyword in Java means that the variable or function is shared between all instances of that class as it belongs to the type, not the actual objects.



# 简答题

虽然简答，但不简单



1. What is the result of the following program?

```
public class Test1{  
    public static void main(String[] args) {  
        boolean flag = "true";  
        if (flag)  
            System.out.println("valid");  
        else  
            System.out.println("not valid");  
    }  
}
```

# 简答题

虽然简答，但不简单

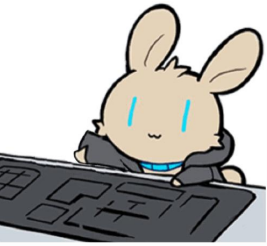


2. What is the result of the following program?

```
public class Test2{  
    public static void main(String[] args) {  
        String S = ""; String T = "";  
        int i = 4;  
        for (i = 1; i <= 3; ++i);  
            S = S + "!";  
        for (i = 1; i < 4; ++i) {  
            T = T + "*";  
        }  
        System.out.print(S);  
        System.out.println(T);  
    }  
}
```

# 简答题

虽然简答，但不简单



3. What is the result of the following program by executing “java Test3 a b c” in command line?

```
public class Test3{  
    public static void main(String[] args) {  
        for (int x = 1; x < args.length; x++) {  
            System.out.print(args[x] + "_");  
        }  
    }  
}
```

# 简答题

虽然简答，但不简单



4. What is the result of the following program?

```
public class Test4{
    static void addElement(ArrayList arr){
        arr.add(2);
        arr = new ArrayList();
        arr.add(3);
        arr.add(4);
    }
    public static void main(String[] args) {
        Test4 test = new Test4();
        ArrayList arr = new ArrayList();
        arr.add(1);
        addElement(arr);
        System.out.println(arr.get(1));
    }
}
```

# 简答题

虽然简答，但不简单



5. What is the result of the following program?

```
class A {
    static int t = 5;
    String f1(){
        return "a1";
    }
    protected static String f2(){
        return "a2";
    }
}

public class B extends A{
    int t = 7;
    String f1(){
        return "b1";
    }

    public static String f2(){
        return "b2";
    }

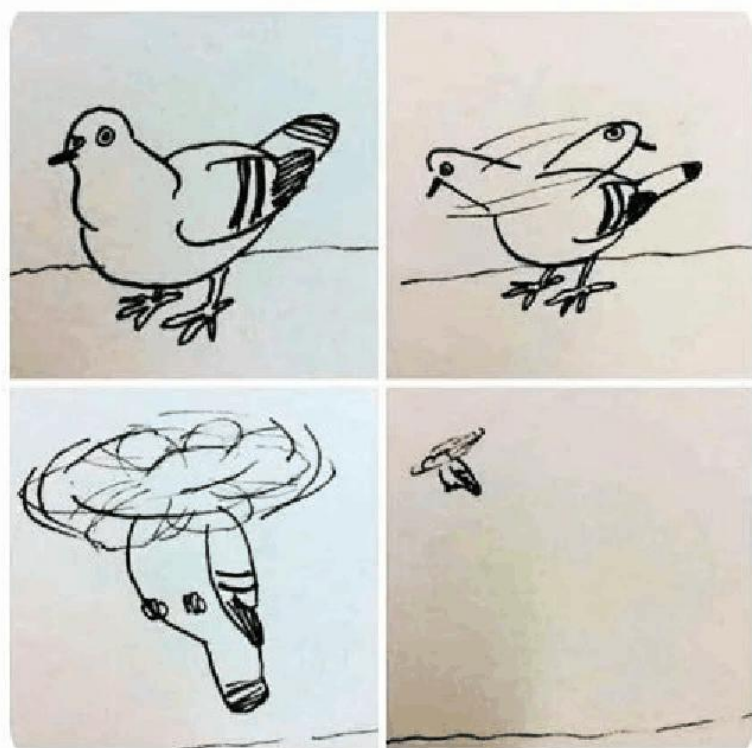
    public static void main(String[] args) {
        A a = new B();
        System.out.println(a.f1() + "_" + a.f2() + "_" + a.t);
    }
}
```



# 代码题

题目里的代码太恶心？我来自己写！

When your program  
is a complete mess,  
but it does its job



<b>代</b> 5 动画 dài	1 撇	2 竖	3 横	4 斜钩	5 点			
<b>码</b> 8 动画 mǎ	1 横	2 撇	3 竖	4 横折	5 横	6 横折	7 竖折折钩	8 横



# 代码题

题目里的代码太恶心？我来自己写！

1.完成十进制到十六进制的转换

```
import java.util.Scanner;

public class Dec2Hex {
    public static void main(String[] args) {
        Scanner in = new Scanner(System.in);
        System.out.print("Enter a decimal number: ");
        int decimal = in.nextInt();
        // Convert decimal to hex
        String hex = "";
        while (decimal != 0){
            int hexValue = _____;
            // Convert a decimal value to the code point of the hex digit
            int codePoint = _____ ?
                _____:_____ ;
            hex = (char) codePoint + hex;
            decimal = _____;
        }
        System.out.println("The hex number is " + hex);
    }
}
```





# 代码题

题目里的代码太恶心？我来自己写！

2.计算最短距离点对（允许使用Math类中sqrt或者pow函数）

```
// This method compute teh distance between two points (x1, y1) and (x2, y2)
public static double computeDistance(double x1, double y1, double x2, double y2){
    _____;
}
```





```
/* This method finds the two closest points among all points and prints them to the console
The parameter points is a two-dimensional array used to store all points. Its rows and columns
represent the
number of points (x, y) coordinates respectively (so the column is 2)
*/
public static void findNearestDistance(double[][] points){
    // initial two points
    int p1 = 0, p2 = 1;
    // initialize shortestDistance
    double shortestDistance = computeDistance(points[p1][0], points[p1][1], points[p2][0], points[p2]
[1]);

    // Compute the distance for every two points to find the shortest distance
    for (int i = 0; i < points.length; i++) {
        for (int j = i + 1; j < points[i].length; j++) {
            double distance = _____; // Find distance
            if (_____) {
                _____; // update p1
                _____; // update p2
                shortestDistance = distance; // update shortestDistance
            }
        }
    }

    System.out.printf("The closest two points are (%.2f, %.2f) and (%.2f, %.2f)", points[p1][0],
points[p1][1],
        points[p2][0], points[p2][1]);
}
```



# 代码题

题目里的代码太恶心？ 我来自己写！

3.设计复数类

规则：

- 1) 基本运算：
$$a + b\mathbf{i} + c + d\mathbf{i} = (a + c) + (b + d)\mathbf{i}$$
$$a + b\mathbf{i} - (c + d\mathbf{i}) = (a - c) + (b - d)\mathbf{i}$$
$$(a + b\mathbf{i}) * (c + d\mathbf{i}) = (ac - bd) + (bc + ad)\mathbf{i}$$
$$(a + b\mathbf{i}) / (c + d\mathbf{i}) = (ac + bd) / (c^2 + d^2) + (bc - ad)\mathbf{i} / (c^2 + d^2)$$
- 2) absolute value:  $|a + b\mathbf{i}| = \sqrt{a^2 + b^2}$
- 3) toString: return “a + bi” as a string. If b is 0, simply return a.
- 4) implement the interface java.lang.Comparable<T>



# 代码题

题目里的代码太恶心？我来自己写！

## 3.设计复数类

```
public class Complex implements Comparable<Complex>
    private double a; // the real part
    private double b; // the imaginary part

    // Create a complex object with specified a and b
    public Complex(double real, double imag){
        a = real;
        b = imag;
    }

    // Return a string description of this complex number
    public String toString(){
        if (b==0){return a+"";}
        else if (b>0) {return a+"+"+b+"i";}
        else {return a+"-"+(-b)+"i"}
    }

    // Returns the absolute number of this complex number
    public double abs(){
        return Math.sqrt(a*a+b*b);
    }
}
```



# 代码题

题目里的代码太恶心？我来自己写！

## 3.设计复数类

```
public Complex add(Complex c){
    return new Complex(a + c.a, b + c.b);
}

public Complex subtract(Complex c){
    return new Complex(a - c.a, b - c.b);
}

public Complex multiply(Complex c){
    return new Complex(a * c.a - b * c.b, b * c.a + a * c.b);
}

public Complex divides(Complex c){
    _____
}
```



# 代码题

题目里的代码太恶心？我来自己写！

3.设计复数类

```
/*
    returns 1 if the absolute value of this complex number is smaller than that of c
    returns 1 if the absolute value of this complex number is larger than that of c
    returns 0, otherwise
*/
@Override
public int compareTo(Complex o) {
    _____
}
}
```



# 代码题

题目里的代码太恶心？

3.设计复数类

最终设计效果

```
import java.util.ArrayList;
import java.util.Collections;

public class TestComplex {
    public static void main(String[] args) {
        Complex a = new Complex(1, 2);
        Complex b = new Complex(3, 2);
        Complex c = new Complex(5.0, 6.0);
        Complex d = new Complex(-3.0, 4.0);
        System.out.println(a.add(b).toString());
        System.out.println(a.multiply(b).toString());
        ArrayList<Complex> list = new ArrayList<>();
        list.add(a);
        list.add(b);
        list.add(c);
        list.add(d);
        Collections.sort(list);
        for (Complex cx : list){
            System.out.println(cx);
        }
    }
}

-----
4.0 + 4.0i
-1.0 + 8.0i
5.0 + 6.0i
-3.0 + 4.0i
3.0 + 2.0i
1.0 + 2.0i
```





# 谢谢大家！

祝大家考出好成绩！过个好年！



```
import java.util.ArrayList;

public class arrayListTest {
    static Person[] people = new Person[]{
        new Person(1, "A"),
        new Person(1, "D"),
        new Person(2, "GG"),
        new Person(2, "S"),
        new Person(3, "A"),
        //      new Person(4, "B+"),
        //      new Person(5, "D"),
        //      new Person(7, "E"),
        //      new Person(7, "C"),
        //      new Person(0, "B+"),
    };

    public static void main(String[] args) {
        System.out.println(getSize());
    }

    static class Person{
        int id;
        String name;

        public Person(int id, String name){
            this.id = id;
            this.name = name;
        }
    }
}
```

```
public static String getSize(){
    ArrayList<Person> list = new ArrayList<>();
    for (Person p : people) {
        // for first added element
        if (list.isEmpty()) {
            list.add(p);
            continue;
        }
        // other elements
        for (int i = 0; i < list.size(); i++){
            // if id exist, append name
            if (list.get(i).id == p.id){
                list.get(i).name += p.name;
                break;
            }
            // if search to end, add new id
            if (i == list.size() - 1){
                list.add(p);
            }
        }
    }
    StringBuilder sb = new StringBuilder();
    for (Person p : list) {
        sb.append(p.id).append(p.name).append("\n");
    }
    return sb.toString();
}
```