

This exam scores code against specific behaviours: the loop bound, the return, the signature. Everything below is a rule the readers apply. 本科按具体行为评分：循环边界、返回值、方法签名。

How the readers score free-response code

✗ Writing an outline of the method in comments.

✓ **Write compilable Java. Structure must clearly convey intent.**

The guidelines award points where the structure conveys intent – a comment describing intent is not code.

要写可编译的代码

SG 8 years

✗ Printing the result where the signature says return.

✓ **Return the value. If the method is void, print; otherwise do not.**

A method that prints instead of returning does not do what the signature promises, whatever the logic inside.

看方法签名决定 return 还是 print

CED 1.7

✗ Changing the method signature to something easier.

✓ **Use the header exactly as given, with the same parameter types and order.**

The header is part of the question, and a different one cannot be called by the tests the readers imagine.

方法签名不能改

CED 3.4

✗ Declaring a new array and copying nothing into it.

✓ **Copy the elements across; do not remove or overwrite the original.**

The guidelines withhold the point from responses that remove or overwrite data instead of copying it.

复制数组不要破坏原数组

SG2023

✗ Adding a semicolon or a separator at the end of a built string.

✓ **Build it so the final element carries no trailing separator.**

The guidelines state responses do not earn the point if they end the constructed output with a separator.

拼接字符串末尾不要多余符号

SG2023

■ A response can still earn later points after an earlier error. Write every method, even when one has defeated you.

每个方法都要写

SG 3 years

2 · Selection and Iteration 选择与迭代

✗ Looping to '`<= length`'.

✓ **Valid indices run from 0 to '`length - 1`', so the condition is '`< length`'.**

The off-by-one throws an out-of-bounds exception, and the guidelines withhold the point for bounds errors.

下标从 0 到 `length-1`

SG 2 years

✗ Stopping the loop before the last element.

✓ **Check that the final element is visited – the guidelines require ALL elements to be accessed.**

Missing the last element is invisible in most test data and fails the criterion outright.

循环要覆盖最后一个元素

SG2023

✗ Reversing the loop bounds when traversing a 2-D array.

✓ **Rows outer, columns inner – and keep the same order in every nested loop.**

The guidelines list reversing the loops among the responses that do not earn the point.

二维数组行外列内

SG2023

✗ Removing from an ArrayList inside a forward loop.

✓ **Loop backwards, or adjust the index after each removal.**

Each removal shifts the remaining elements, so a forward loop skips one every time.

正向遍历删除会跳过元素

CED 4.4

1 · Using Objects and Methods 使用对象与方法

✗ Comparing Strings with ‘==’.

✓ **Use ‘equals()’ – ‘==’ compares references, not contents.**

The comparison silently returns false for equal strings built separately.

字符串比较用 equals

CED 1.5

✗ Writing ‘array.length()’ or ‘string.length’.

✓ **An array has ‘length’; a String has ‘length()’.**

The two differ by a pair of brackets and neither compiles as the other.

数组用 length, 字符串用 length()

CED 1.4

✗ Assuming integer division gives a decimal.

✓ **‘7 / 2’ is 3. Cast to double when you need 3.5.**

The truncation is silent and propagates through every later calculation.

整数相除会截断

CED 1.3

✗ Calling an instance method as though it were static.

✓ **Create the object first, then call the method on it.**

The distinction is course content and the call does not compile.

实例方法要通过对象调用

CED 1.6

3 · Class Creation 类的创建

✗ Assigning constructor parameters to local variables instead of the instance fields.

✓ **Assign to ‘this.field’, so the object keeps the value.**

The object is then constructed with default values and every later method returns the wrong thing.

构造器要赋值给实例变量

CED 3.3

✗ Making every field public to save writing accessors.

✓ **Keep the fields private and provide the accessors the question names.**

Encapsulation is assessed content in this unit.

字段应设为 private

CED 3.6

✗ Calling a superclass method with the wrong name or arguments.

✓ **Use ‘super.method()’ with the signature the parent declares.**

The guidelines allow other points to survive an incorrect ‘super’ call, but that point is lost.

super 调用要与父类签名一致

SG2023

4 · Data Collections 数据集合

✗ Declaring an ArrayList of primitives.

✓ **Use the wrapper type: ‘ArrayList<Integer>’, not ‘ArrayList<int>’.**

A collection holds objects, and the primitive form does not compile.

集合要用包装类型

CED 4.2

✗ Comparing 2-D array dimensions in the wrong order.

✓ **‘arr.length’ is the number of rows; ‘arr[0].length’ is the number of columns.**

Swapping them produces bounds errors on any non-square array.

行数用 arr.length

CED 4.5

■ Trace your method by hand on the example the question gives before writing the next one. Most lost points are logic that was never tested against the sample.

先用题目样例手动验证

CED 2.6

✗ Using ‘get()’ and ‘add()’ on an array.

✓ **Arrays use ‘[i]’; only an ArrayList uses the methods.**

The two collections have different interfaces and neither compiles as the other.

数组用下标,ArrayList 用方法

CED 4.3

✗ Adding to a list while looping forward over it.

✓ **Build a second list, or loop backwards.**

Adding shifts the indices ahead of the cursor, which can loop forever.

遍历时不要向前插入

CED 4.4

✗ Assuming an enhanced for loop can modify the elements.

✓ **It gives a copy for primitives; use an indexed loop to write back.**

The assignment inside the loop is silently discarded.

增强 for 不能修改基本类型元素

CED 2.7

2 · Selection and Iteration 选择与迭代

✗ Writing ‘if (x = 5)’ in a condition.

✓ **‘==’ compares; ‘=’ assigns.**

In Java this does not compile for ints, but it is the habit that produces the wrong condition.

比较用 ==, 赋值用 =

CED 2.2

✗ Chaining ‘else if’ where each condition should be tested.

✓ **Decide whether the cases are exclusive; if not, use separate ‘if’ statements.**

An ‘else if’ chain stops at the first match, which is right only for exclusive cases.

非互斥条件不要用 else if

CED 2.3

✗ Building a ‘while’ loop whose variable never changes.

✓ **Update the loop variable inside the body, before the next test.**

The infinite loop times out and earns nothing for the logic that was otherwise correct.

while 循环变量要更新

CED 2.5

✗ Testing a boolean with ‘if (flag == true)’.

✓ **Write ‘if (flag)’. It is shorter and cannot be mistyped as an assignment.**

Structure that conveys intent is what the guidelines reward.

布尔值直接判断

CED 2.2

3 · Class Creation 类的创建

✗ Overloading a method and expecting it to override.

✓ **Overriding needs the SAME signature; a different parameter list overloads instead.**

The wrong method is then called at runtime, with no compile error.

重写要求签名相同

CED 3.5

✗ Writing a ‘toString’ that prints instead of returning.

✓ **‘toString’ returns a String; the caller decides whether to print it.**

The same return-versus-print rule that catches candidates in every other method.

toString 要返回字符串

CED 3.7

■ Read every method header the question supplies before writing any of them. Later parts usually call earlier ones, and the signatures tell you how.

先读完所有方法签名

CED 3.4