Exercise walk-through

Calling Instance Methods ▪ 1.14

eXercise

You must be able to

- call an **instance method 实例方法** with `objectName.methodName(arguments)`
- understand that it acts on the **state** of that object
- explain why calling a method on a `null` reference causes a **NullPointerException 空指针异常**
- distinguish calling an instance method from a class method

Method — Instance method call

Call it on an object: `objectName.methodName(arguments)`. It acts on the **state** of the object it is called on, and its return value can be used in a larger expression.

Method — The null trap

Calling a method on a reference that is `null` causes a **NullPointerException**.

Method — Instance vs class method

An **instance** method is called on an **object**; a **class** (`static`) method is called on the **class**.

Practice 2.1 ▪ 1 mark

State the syntax to call an instance method.

Solution 2.1

Method: Instance method call

Worked steps

`objectName.methodName(arguments)` B1.

Practice 2.2 ▪ 1 mark

State what happens if you call a method on a `null` reference.

Solution 2.2

Method: The null trap

Worked steps

it throws a NullPointerException B1.

Practice 2.3 ▪ 2 marks

State the difference between an instance method and a class method.

Solution 2.3

Method: Instance vs class method

Worked steps

an instance method is called on an object and uses its state; a class method is called on the class B1 B1.

Exam-style 3.1 ▪ 1 mark

An instance method is called on

A the class

B an object

C a primitive value

D the compiler

Solution 3.1

A the class

B an object ✓

C a primitive value

D the compiler

Worked steps

B.

Exam-style 3.2 ▪ 1 mark

Calling a method on a `null` reference throws a

A syntax error

B NullPointerException

C overflow error

D nothing at all

Solution 3.2

Method: The null trap

A syntax error

B NullPointerException ✓

C overflow error

D nothing at all

Worked steps

B.

Exam-style 3.3 ▪ 1 mark

`String s = "hi";`.

(a) State the value of `s.length()`.

(b) State whether `length` is an instance or a class method.

(c) State what `s = null; s.length();` causes.

Solution 3.3

Worked steps

(a) 2 B1. (b) an instance method B1. (c) a NullPointerException B1.