

Exercise walk-through

Object Creation and Storage (Instantiation) ■ 1.13

eXercise

You must be able to

- create an object by calling a **constructor** 构造方法 with `new`
- understand that a **reference variable** 引用变量 stores the object's location
- describe what it means for a reference to hold `null`
- recognize that two references can form an **alias** 别名

Method — Creating an object

`Dog d = new Dog();` — the `new` keyword allocates memory and calls the **constructor** (instantiation).

Method — Reference variables and null

A **reference variable** stores the object's **location**, not the object itself. A reference of value `null` refers to **no object**.

Method — Alias

`Dog e = d;` makes `e` and `d` refer to the **same** object — an alias.

Practice 2.1 ■ 1 mark

State the keyword used to create an object.

Solution 2.1

Method: Creating an object

Worked steps

new **B1**.

Practice 2.2 ■ 1 mark

State what a reference variable stores.

Solution 2.2

Method: Reference variables and null

Worked steps

the location (memory address) of the object **B1**.

Practice 2.3 ■ 1 mark

State what `null` means.

Solution 2.3

Worked steps

it refers to no object **B1**.

Exam-style 3.1 ■ 1 mark

An object is created with the keyword

A make

B new

C create

D class

Solution 3.1

Method: Creating an object

A make

B new



C create

D class

Worked steps

B.

Exam-style 3.2 ■ 1 mark

A reference variable that refers to no object holds

A 0

B null

C ""

D false

Solution 3.2

Method: Reference variables and null

A 0

B null



C ""

D false

Worked steps

B.

Exam-style 3.3 ■ 1 mark

```
Cat a = new Cat(); Cat b = a;
```

- (a) State how many Cat objects exist.
- (b) State what b refers to.
- (c) Name the situation of two references to one object.

Solution 3.3

Method: Reference variables and null

Worked steps

(a) one **B1**. (b) the same object as a **B1**. (c) an alias **B1**.