

Exercise walk-through

ArrayList Methods ■ 4.8

eXercise

You must be able to

- create an **ArrayList** 动态数组 that can grow and shrink
- use add, get, set, remove, and size
- understand that an ArrayList stores **objects** (primitives as wrappers)

Method — ArrayList

Unlike an array, an **ArrayList** can grow and shrink as elements are added or removed:

```
nArrayListonInteger o = new ArrayList<>();
nlistp.n+naaddp(1+m+mi5p)p;+w          c+c1// [5]
nlistp.n+nagetp(1+m+mi0p)p;+w          c+c1// returns 5
nlistp.n+nasizep(p)p;+w                  c+c1// 1
```

- add, get, set, remove, and size are the core methods.
- An ArrayList stores **objects**, so primitives are stored as wrappers (an int becomes an Integer).

Method — A worked sequence

Start empty, then:

```
nlistp.n+naaddp(l+m+mi5p)p;+w nlistp.n+naaddp(l+m+mi8p)p;+w c+c1// [5, 8]
```

```
nlistp.n+nasetp(l+m+mi0p,+w l+m+mi3p)p;+w c+c1// [3, 8]
```

```
nlistp.n+naremovep(l+m+mi1p)p;+w c+c1// [3]
```

`remove(1)` deletes the element at **index 1** (the 8), leaving [3], so `list.size()` is now 1.

Practice 2.1 ■ 1 mark

State one way an `ArrayList` differs from an array.

Solution 2.1

Method: ArrayList

Worked steps

an ArrayList can grow and shrink, while an array has a fixed size **B1**.

Practice 2.2 ■ 1 mark

Name the method that returns the number of elements.

Solution 2.2

Method: ArrayList

Worked steps

size() **B1**.

Practice 2.3 ■ 1 mark

State what `list.get(0)` returns.

Solution 2.3

Method: ArrayList

Worked steps

the first element of the list **B1**.

Exam-style 3.1 ■ 1 mark

To add an element to an `ArrayList`, you use

A `add`

B `length`

C `new`

D `size`

Solution 3.1

A add



B length

C new

D size

Worked steps

A.

Exam-style 3.2 ■ 1 mark

The number of elements in an `ArrayList` is found with

A `.length`

B `.size()`

C `.count`

D `.get()`

Solution 3.2

Method: ArrayList

A .length

B .size()



C .count

D .get()

Worked steps

B.

Exam-style 3.3 ■ 1 mark

```
ArrayList<String> a = new ArrayList<>(); a.add("hi"); a.add("bye");.
```

- (a) State `a.size()`.
- (b) State `a.get(1)`.
- (c) State whether an `ArrayList` can grow.

Solution 3.3

Method: ArrayList

Worked steps

(a) 2 **B1**. (b) "bye" **B1**. (c) yes **B1**.