

Exercise walk-through

ArrayList Traversals ■ 4.9

eXercise

You must be able to

- **traverse** 遍历 an ArrayList with an indexed for loop from 0 to size - 1
- use an **enhanced for loop** to read each element
- add or remove elements safely while looping

Method — Two ways to traverse

```

kfor+w p(k+ktint+w ni+w o+=w l+m+mi0p;+w ni+w o+w nlistp.n+nasizep(p)p;+w
+w      nSystemp.n+naoutp.n+naprintlnp(nlistp.n+nagetp(nip)p)p;
p
kfor+w p(k+ktint+w nx+w p:+w nlistp)+w p
+w      nSystemp.n+naoutp.n+naprintlnp(nxp)p;
p

```

Method — Modifying while looping

Removing an element during an indexed loop shifts the later elements down, so it is easy to **skip** one — adjust the index carefully or loop backwards.

Practice 2.1 ■ 1 mark

State the index range for an indexed traversal of an ArrayList.

Solution 2.1

Method: Modifying while looping

Worked steps

from 0 to `size() - 1` **B1**.

Practice 2.2 ■ 1 mark

Name the method that gives an `ArrayList`'s number of elements.

Solution 2.2

Worked steps

size() **B1**.

Practice 2.3 ■ 1 mark

State one risk of removing elements while looping forward with an index.

Solution 2.3

Method: Modifying while looping

Worked steps

the later elements shift down, so the next one can be skipped **B1**.

Exam-style 3.1 ■ 1 mark

An indexed for loop over an ArrayList runs from 0 to

A size

B size - 1

C length

D length - 1

Solution 3.1

Method: Modifying while looping

A `size`

B `size - 1`



C `length`

D `length - 1`

Worked steps

B.

Exam-style 3.2 ■ 1 mark

To read each element of an `ArrayList` simply, use

A a for-each loop

B a constructor

C a cast

D a static method

Solution 3.2

A a for-each loop



B a constructor

C a cast

D a static method

Worked steps

A.

Exam-style 3.3 ■ 1 mark

An `ArrayList` has 4 elements.

- (a) State the index of the first element.
- (b) State the index of the last element.
- (c) Name the method giving the number of elements.

Solution 3.3

Method: Modifying while looping

Worked steps

(a) 0 **B1**. (b) 3 **B1**. (c) `size()` **B1**.