

Exercise walk-through

Implementing ArrayList Algorithms ■ 4.10

eXercise

You must be able to

- compute a sum, average, minimum, or maximum over an **ArrayList**
- **count** or **filter** elements that meet a condition
- insert or delete elements

Method — Summarizing an ArrayList

Just like an array, but using `get` and `size`:

```
k+ktint+w nsum+w o+=w l+m+mi0p;
```

```
kfor+w p(k+ktint+w nx+w p:+w nlistp)+w nsum+w o+=w nxp;
```

Method — Counting, inserting, deleting

Use an `if` inside the loop to **count** matching elements. Use `add(index, value)` to **insert** and `remove(index)` to **delete**.

Practice 2.1 ■ 1 mark

Describe how to sum the elements of an `ArrayList`.

Solution 2.1

Worked steps

start a total at 0 and add each element as you loop through the list **B1**.

Practice 2.2 ■ 1 mark

For an ArrayList holding [3, 6, 9], find the sum.

Solution 2.2

Worked steps

$$3 + 6 + 9 = 18 \quad \text{B1}.$$

Practice 2.3 ■ 1 mark

Name the method used to remove an element at a given index.

Solution 2.3

Method: Counting, inserting, deleting

Worked steps

remove **B1**.

Exam-style 3.1 ■ 1 mark

To count elements meeting a condition in an `ArrayList`, you use a loop with

A no condition

B an `if`

C a cast

D a constructor

Solution 3.1

Method: Counting, inserting, deleting

A no condition

B an if 

C a cast

D a constructor

Worked steps

B.

Exam-style 3.2 ■ 1 mark

```
list.remove(0)
```

- A** adds an element
- B** removes the first element
- C** returns the size
- D** sorts the list

Solution 3.2

- A** adds an element
- B** removes the first element 
- C** returns the size
- D** sorts the list

Worked steps

B.

Exam-style 3.3 ■ 1 mark

An `ArrayList` `list` holds `[10, 20, 30]`.

- (a) Find the sum of its elements.
- (b) State `list.size()`.
- (c) Name the method that adds 40 to the end.

Solution 3.3

Method: Summarizing an ArrayList

Worked steps

(a) 60 **B1**. (b) 3 **B1**. (c) add **B1**.