

4.9 ArrayList Traversals

Name: _____ Class: _____ Date: _____

Total: 8 marks

KEY WORDS traverse 遍历 • array 数组 • arraylist 动态数组

Objective

Build the skills to answer exam questions on **ArrayList** traversals.

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

1 Worked examples

Study these first. Each one shows the method for a question type used later.

■ Two ways to traverse

```
for (int i = 0; i < list.size(); i++) {  
    System.out.println(list.get(i));  
}  
for (int x : list) {  
    System.out.println(x);  
}
```

■ 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.

2 Practice

2.1 State the index range for an indexed traversal of an ArrayList. [1]

2.2 Name the method that gives an ArrayList's number of elements. [1]

2.3 State one risk of removing elements while looping forward with an index. [1]

3 Exam-style questions

3.1 An indexed for loop over an `ArrayList` runs from 0 to [1]

- **A** size
 - **B** size - 1
 - **C** length
 - **D** length - 1
-

3.2 To read each element of an `ArrayList` simply, use [1]

- **A** a for-each loop
 - **B** a constructor
 - **C** a cast
 - **D** a static method
-

3.3 An `ArrayList` has 4 elements.

(a) State the index of the first element. [1]

(b) State the index of the last element. [1]

(c) Name the method giving the number of elements. [1]

Solutions

2.1 from 0 to `size() - 1`.

2.2 `size()`.

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

3.1 B.

3.2 A.

3.3 (a) 0. (b) 3. (c) `size()`.