AP COMPUTER SCIENCE A • EXERCISE SHEET

4.9 ArrayList Traversals

Name: _____ Class: _____ Date: _____ **Total: 8 marks**

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]

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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]

4 Go further

- work through the **4.9 ArrayList Traversals** lesson on the **Learn** page;
- read the **ArrayList** section of the AP Computer Science A handout on the **Know** page.

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()`.