

Exercise walk-through

Array Traversals ■ 4.4

eXercise

You must be able to

- **traverse** 遍历 an array with a for loop that visits every index
- use an **enhanced for loop** 增强 for 循环 (for-each) to read each element
- understand that a for-each loop **cannot replace** elements in the array

Method — Standard for traversal

```

kfor+w p(k+ktint+w ni+w o+=w l+m+mi0p;+w ni+w o+w nap.n+nalengthp;+w nio+o
+w      nSystemp.n+naoutp.n+naprintlnp(nao[nio]p)p;+w      c+c1// has the index
p

```

Method — Enhanced for (for-each)

```
kfor+w p(k+ktint+w nx+w p:+w nap)+w p
+w      nSystemp.n+naoutp.n+naprintlnp(nxp)p;+w      c+c1// reads each element
p
```

A for-each loop is simpler for **reading**, but it **cannot replace** the elements in the array — for that you need the index.

Practice 2.1 ■ 1 mark

State the loop range used to visit every index of an array `a`.

Solution 2.1

Method: Enhanced for (for-each)

Worked steps

from 0 to `a.length - 1` **B1**.

Practice 2.2 ■ 1 mark

State what an enhanced for loop **cannot** do.

Solution 2.2

Method: Enhanced for (for-each)

Worked steps

replace (change) the elements of the array **B1**.

Practice 2.3 ■ 1 mark

State how many elements a for-each loop over array `a` visits.

Solution 2.3

Method: Enhanced for (for-each)

Worked steps

all of them (here 3) **B1**.

Exam-style 3.1 ■ 1 mark

An enhanced for loop (for-each) is used to

A replace elements

B read each element

C create the array

D sort the array

Solution 3.1

Method: Enhanced for (for-each)

A replace elements

B read each element 

C create the array

D sort the array

Worked steps

B.

Exam-style 3.2 ■ 1 mark

A standard for loop over array `a` runs from 0 to

A `a.length`

B `a.length - 1`

C 1

D `a.length + 1`

Solution 3.2

Method: Enhanced for (for-each)

A `a.length`

B `a.length - 1`



C `1`

D `a.length + 1`

Worked steps

B.

Exam-style 3.3 ■ 1 mark

```
int[] a = {3, 6, 9};
```

- (a) Write the loop condition for a standard for loop over a (using i).
- (b) State whether a for-each loop can change a's values.
- (c) State how many elements a for-each loop visits.

Solution 3.3

Method: Enhanced for (for-each)

Worked steps

(a) `i < a.length` **B1**. (b) no **B1**. (c) 3 **B1**.