AP COMPUTER SCIENCE A • EXERCISE SHEET

2.10 Implementing String Algorithms

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

Objective

Build the skills to answer exam questions on **implementing String algorithms**.

You must be able to:

- **traverse** 遍历 a String by looping over its indices from 0 to `length - 1`
- use `charAt` and `substring` inside a loop
- count characters or find a pattern one position at a time

1 Worked examples

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

Traversing a String

Loop over the valid indices 0 to `length() - 1` and read each character with `charAt`:

```
for (int i = 0; i < s.length(); i++) {
    char c = s.charAt(i);   // the character at index i
}
```

Counting and searching

By examining one position at a time, you can **count** particular characters or **find** a pattern within the String.

2 Practice

2.1 State the range of indices used to traverse a String `s`. [1]

2.2 State what `s.charAt(0)` returns. [1]

2.3 For `s = "apple"`, state the value of `s.charAt(1)`. [1]

3 Exam-style questions

3.1 To visit every character of a String, loop from `0` to [1]

- **A** `length`
- **B** `length - 1`
- **C** `length + 1`
- **D** `1`

3.2 `s.charAt(i)` returns [1]

- **A** a substring
- **B** the character at index `i`
- **C** the length
- **D** the index `i`

3.3 `String s = "hello";`.

(a) State `s.length()`. [1]

(b) State `s.charAt(4)`. [1]

(c) State the last valid index. [1]

4 Go further

- work through the **2.10 Implementing String Algorithms** lesson on the **Learn** page;
- read the **Iteration** section of the AP Computer Science A handout on the **Know** page.

Solutions

2.1 from 0 to `s.length() - 1`.

2.2 the first character of the String.

2.3 `'p'`.

3.1 B.

3.2 B.

3.3 (a) `5`. (b) `'o'`. (c) `4`.