AP COMPUTER SCIENCE A • EXERCISE SHEET

2.10 Implementing String Algorithms

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

KEY WORDS traverse 遍历

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]