

2.4 Nested if Statements

Name: _____ Class: _____ Date: _____

Total: 8 marks

KEY WORDS if statement 条件语句

Objective

Build the skills to answer exam questions on **nested if statements**.

You must be able to:

- write a **nested if** 嵌套条件 by placing one **if** inside another
- use an **else-if chain** to choose among several mutually exclusive cases
- understand that only one branch of an else-if chain runs for each input

1 Worked examples

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

■ Nested ifs and else-if chains

A **nested if** places one **if** inside another. An **else-if chain** tests conditions in order and runs the **first** one that is true:

```
if (s >= 90)      grade = "A";
else if (s >= 80) grade = "B";
else             grade = "C";
```

For any single input, **exactly one** branch runs.

■ Tracing a value

Trace `s = 85` through the chain: is `s >= 90`? No. Is `s >= 80`? Yes, so `grade = "B"` and the rest is skipped. Order matters – put the **strictest** test first, or a looser test will catch the value early.

2 Practice

2.1 State what a nested if is. [1]

2.2 State how many branches of an else-if chain run for one input. [1]

2.3 For the grade example above, state the result when `s` is 82. [1]

3 Exam-style questions

3.1 An else-if chain lets you choose among [1]

- **A** one case
 - **B** exactly two cases
 - **C** several mutually exclusive cases
 - **D** no cases
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3.2 For one input, the number of branches of an else-if chain that run is [1]

- **A** zero
 - **B** one
 - **C** two
 - **D** all of them
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3.3 `if (m >= 50) { if (m >= 75) r = "distinction"; else r = "pass"; } else r = "fail";`.

(a) State `r` when `m` is 90. [1]

(b) State `r` when `m` is 55. [1]

(c) State `r` when `m` is 30.

[1]

Solutions

2.1 an if statement placed inside another if statement.

2.2 one.

2.3 B.

3.1 C.

3.2 B.

3.3 (a) distinction. (b) pass. (c) fail.