

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

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

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.