

Exercise walk-through

Computing Bias ■ 5.3

eXercise

You must be able to

- explain how **computing bias** 计算偏见 can be built into a program, sometimes unknowingly
- describe how biased **training data** 训练数据 leads to unfair results
- identify how bias can **harm** particular groups
- propose ways developers can **reduce** bias

Method — Computing bias

Bias can be **built into** a program, sometimes **without the developers realising** it.

Method — Biased training data

If the **training data** used to build a program is biased, the program can produce **unfair** results that **harm** particular groups.

Method — Reducing bias

Testing with **diverse** users and data helps reveal hidden bias, and developers can act on it during design and development to **reduce** it.

Practice 2.1 ■ 1 mark

Define computing bias.

Solution 2.1

Method: Computing bias

Worked steps

unfairness built into a program, sometimes without the developers realising it **B1**.

Practice 2.2 ■ 1 mark

State how biased training data causes unfair results.

Solution 2.2

Method: Biased training data

Worked steps

the program learns the bias in the data and repeats it in its results **B1**.

Practice 2.3 ■ 1 mark

State one way developers can reduce bias.

Solution 2.3

Method: Reducing bias

Worked steps

test with diverse users and data (or review the training data) **B1**.

Exam-style 3.1 ■ 1 mark

Computing bias can be built into a program

- A** always on purpose
- B** sometimes without the developers' awareness
- C** only by users
- D** never

Solution 3.1

Method: Computing bias

- A always on purpose
- B sometimes without the developers' awareness 
- C only by users
- D never

Worked steps

B.

Exam-style 3.2 ■ 1 mark

Testing with diverse users helps to

- A** add bias
- B** reveal hidden bias
- C** slow the program
- D** compress data

Solution 3.2

Method: Reducing bias

- A add bias
- B reveal hidden bias 
- C slow the program
- D compress data

Worked steps

B.

Exam-style 3.3 ■ 1 mark

A facial-recognition app works poorly for some groups of people.

- (a) State a likely cause.
- (b) State one harm this could do.
- (c) State one way to reduce the bias.

Solution 3.3

Worked steps

(a) biased or unrepresentative training data **B1**. (b) unfair treatment of the affected groups **B1**. (c) test and train with more diverse data **B1**.