

Solutions

9.1 Algorithmic Bias

Reference example

System accuracy: 90% overall
Group A: 98 correct of 100
Group B: 82 correct of 100
Same decision affects both groups

9.1.1 - Explain

Why can one overall error rate conceal an important distribution problem?

Groups may experience different error rates or consequences, especially when large groups dominate the average. Review relevant breakdowns while protecting privacy.

9.1.2 - Explain

Name a useful evaluation change before broad deployment of this system.

Evaluate representative groups and failure types, define acceptable behavior for the context, and provide human review or correction for harmful errors.

Solutions

9.2 Privacy and Data Collection

Reference example

Goal: count library visits by weekday

Proposed fields: name, exact location history, timestamp

Public output needed: weekday totals

9.2.1 - Explain

What information is sufficient for publishing total visits by weekday?

Aggregate weekday counts can satisfy the output requirement without publishing identifiable individual visit histories.

9.2.2 - Explain

Why should a retention rule be part of design rather than a cleanup task postponed indefinitely?

The amount of stored data affects exposure and maintenance over time. A defined deletion process limits unnecessary accumulation and makes responsibility explicit.

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9.3 Accessibility and Inclusion

Reference example

Chart distinguishes categories only by red and green
Controls require a mouse
Form errors appear without explanatory text

9.3.1 - Explain

Suggest two improvements to the chart and controls in the example.

Add text labels or distinct patterns to categories, and make controls usable through keyboard navigation with visible focus.

9.3.2 - Explain

Why is testing only with the original developers insufficient?

They know the intended workflow and may not represent different abilities, devices, languages, or prior experience. Broader testing reveals assumptions that developers miss.

Solutions

9.4 Responsibility and Trade-offs

Reference example

Proposal: automate student recommendations
Benefit: quicker suggestions
Risks: mistaken records, unequal outcomes
Needed: explanations, review, and correction

9.4.1 - Explain

What should happen when a student challenges a recommendation based on an incorrect record?

Provide an accountable review process, correct the underlying record when appropriate, and reassess the recommendation using the corrected information.

9.4.2 - Explain

Name one trade-off when retaining detailed logs for troubleshooting.

Logs can improve diagnosis and accountability but may expose personal information or secrets. Limit their content, access, and retention to the justified purpose.