University of Toronto, Department of Electrical and Computer Engineering
ECE 1724-F1 — Performant Software Systems with Rust

Quiz 5 — Sample Quiz 1 — Answer Key

Wednesday, November 25, 2026

1. Ⓒ **One input reference permits lifetime elision.**

The output lifetime is inferred from the single input reference. trim borrows the original string rather than modifying or consuming it, so word is ready while line still has nine bytes. (Book 10.3.)

2. Ⓐ **An annotation cannot keep a local value alive.**

text is owned by label and is dropped at the end of the call. The returned slice would refer to freed storage. Naming a lifetime does not extend the lifetime of text. (Book 10.3.)

3. Ⓑ **A closure may borrow its captured value.**

The missing value makes unwrap_or_else call the closure. len needs only a shared borrow of fallback, so it returns 4 and fallback remains available for printing. (Book 13.1.)

4. Ⓓ **map performs work when its iterator is advanced.**

Constructing map does not run its closure. next requests only the first result, so the closure prints visit 2 and returns 4. The second element is never requested. (Book 13.2.)

5. Ⓑ **The box owns a heap value, and dereferencing accesses it.**

The integer read into copied is a separate Copy value of 7. Updating the integer through the box changes that value to 10 without changing copied. (Book 15.1.)

Sources and adaptations: Original teaching variations based on the Rust standard library public documentation and the assigned book sections. No internal implementation details are tested.
Q1 source: Original wrapper around the standard library str::trim borrowing API.
Q2 source: Intentionally invalid teaching wrapper around String::as_str.
Q3 source: Original example using the standard library lazy-fallback API.
Q4 source: Original trace using Iterator::map and Iterator::next.
Q5 source: Variation of the boxed module examples constructing and dereferencing Box values.

Reading: *The Rust Programming Language*, 10.3: Lifetimes, 13.1: Closures, 13.2: Iterators, and 15.1: Box.