Part C: Reflection and Short-Answer

Answer the following in a few sentences:

1. Importance of Constructors:

How do constructors help ensure that an object starts its lifecycle in a valid state?

Constructors automatically initialize attributes, enforce mandatory values, validate input data, allocate necessary resources, and they prevent creation in an invalid state.

2. Role of Destructors:

Explain why destructors are necessary, especially in languages without automatic garbage collection.

Destructors are necessary because they prevent memory leaks, cleanup resources, use automatic cleanup, prevent dangling pointers, and ensure reliable object lifecycles.

3. Lifecycle Management:

What could happen if a class does not properly manage its resources during its lifecycle?

If a class does not properly manage its resources, it could lead to memory leaks, resource exhaustion, dangling pointers, inconsistent object states, degraded performance, and it causes development to be more complex.