CS-320 Project One Verification Brief

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Objective. Deliver six in-memory back-end components - Contact, ContactService, Task, TaskService, Appointment, and AppointmentService - and verify each meets its rubric requirements through a JUnit 5 unit-test suite.

Implementation. Domain objects enforce field constraints at construction and on every update, throwing IllegalArgumentException on any violation. Each service stores records in an in-memory Map keyed by the object's ID, enforcing uniqueness on add and failing explicitly on unknown-ID operations. IDs are declared final and have no setter, guaranteeing the "not updatable" requirement. Appointment uses defensive copying for java.util.Date to prevent external mutation of internal state.

Verification strategy. Tests are derived directly from the rubric. Each required field is tested for null rejection and max-length enforcement, with boundary-value pairs at the exact limit and one character over. Contact phone validation is verified as exactly ten digits, including too-short, too-long, and non-digit cases. Appointment date validation rejects past dates using future and past offsets large enough to remain deterministic regardless of test execution time.

Test isolation. Every test method runs against a fresh service instance via @BeforeEach, eliminating shared-state side effects across tests.

Result. Test coverage exceeds the 80% threshold and demonstrates that both success paths and failure paths are exercised across all six components.