# JUnit Code Coverage Analysis Report

## 1. CustomerProfile.java (Core Business Logic)

Covered by ‘CustomerProfileAttributesTests.java’:  
  
- Validation Methods:  
 - validateName: Covered with valid and invalid test cases.  
 - validatePostcode: Covered with valid and invalid test cases.  
 - validatePhoneNumber: Covered with valid and invalid test cases.  
 - validateEmail: Covered with valid and invalid test cases.  
 - validatePaymentStatus: Covered with valid, boundary, and invalid cases.  
  
- Setters and Getters:  
 - Indirectly covered through validation tests since they use validation methods.  
  
- Constructor Validation:  
 - Implicitly covered through the test cases that use ‘CustomerProfile’ with valid and invalid inputs.  
  
Coverage Estimation: High (approximately 90–95%). Missing coverage might include unusual edge cases (e.g., null input for setters).

## 2. CustomerProfileCRUD.java (Database Operations)

Coverage by Existing Tests:  
  
- Methods:  
 - createCustomerDetailsAccount: Not directly tested. Requires mocking the database connection, mocking tests completed.  
 - readAllCustomerAccounts: Not directly tested. Needs integration testing with mocked data, mocking testing completed.  
 - updateCustomerById: Not directly tested. Requires mocking database updates, mocking tests completed.  
 - deleteCustomerById: Not directly tested. Requires tests for both single ID and full table deletion cases. Mocking tests completed.  
  
Coverage Estimation: 0%.

## 3. CustomerProfileCommandLine.java (CLI Interface)

Coverage by Existing Tests:  
  
- Methods:  
 - customerProfileFunctionalities: Not covered. Mock testing completed.  
 - printCustomerProfileTable: Not covered. Mock testing completed.  
 - execute: Not covered. Mocked user input and database results. - completed.  
  
Coverage Estimation: 0%.

## Overall Coverage

1. High Coverage:  
 - ‘CustomerProfile.java’ - covered by existing tests.  
  
2. Low Coverage:  
 - ‘CustomerProfileCRUD.java’ - 0% covered with JUnits, would benefit from unit tests for CRUD methods.  
 - ‘CustomerProfileCommandLine.java’ - 0% covered with JUnits, integration tests for user input and database interactions completed.