

School/College Student CRM

Phase 1: Problem Understanding & Industry Analysis

Requirement Gathering

- Manage student details including personal information and parent/guardian contacts.
- Support admission workflows: application submission, status tracking, and confirmation.
- Manage courses, classes, and faculty assignments.
- Enable student enrollment in multiple courses.
- Record grades, exams, and calculate GPA.
- Manage fees with details on types, due dates, and payment status.
- Generate dynamic reports and dashboards on admissions, enrollments, fees, and academic performance.
- Provide a secure Parent Portal for progress and fee visibility.
- Automate key communications: fee reminders, admission confirmations, GPA updates.

Stakeholder Analysis

- Students, Parents, Teachers, Administration, Finance Department, and School Management.

Business Process Mapping

- Transition from manual legacy processes to digitized Salesforce CRM.
- Automated admission record creation and confirmation emails.
- Parent Portal access and automated fee reminders.
- Real-time dashboards for management insight.

Industry-Specific Use Cases

- Digital transformation in education.
- Parental engagement with updated student info.
- Financial automation reducing late payments.
- Performance tracking for intervention.
- Compliance with data protection and security needs.

AppExchange Solutions Reference

- Evaluated Salesforce Education Cloud and other solutions as benchmarks.

Phase 2: Org Setup & Configuration

Objectives

- Configure Salesforce Developer Org with proper user roles and profiles.
- Design role hierarchy for School Admin, Faculty, Finance, Parents.
- Set Org-Wide Defaults and sharing rules for secure and restricted access.
- Create Student CRM Lightning App with custom tabs for ease of navigation.
- Test access scenarios to verify security controls.

Key Configuration Steps

- Setup company info, business hours, and holidays.
- Create sample users with profiles: Admin, Teacher, Parent, Finance Officer.
- Define role hierarchy ensuring proper data visibility.
- Apply Sharing Rules for student, parent, fee, and faculty data.
- Setup Lightning App including tabs for Students, Courses, Enrollments, Grades, Fees, Reports.

Phase 3: Data Modeling & Relationships

Objects and Fields

- Custom objects: Student, Course, Enrollment (junction), Grade, Fee.
- Standard object Contact used for parent info if needed.
- Lookup relationships link students to courses, grades, fees, parents, and assigned teachers.

Record and Page Layouts

- Record Types for fees (Tuition, Exam, Hostel) and grades (Internal, Final).
- Page layouts show related lists such as enrolled courses, grades, fees depending on profile (Teacher vs Parent).
- Lightning record pages with compact layouts for usability.

Security and Testing

- Field-level visibility configured by profile.
- Sample data populated to validate role-based access:
 - Teacher views assigned students.
 - Parents view only their child's data.
 - Finance controls fee management.
 - Admin has full access.

Phase 4: Process Automation and User Actions

Automations

- Validation Rules to ensure data integrity (e.g., enrollment dates not in past, fees positive).
- Email Templates for automated notifications like admission confirmations and fee reminders.

- Record-triggered Flows:
 - On student record creation send Admission Confirmation email.
 - Scheduled flows to send fee reminders before due dates.
- Quick Actions to simplify common tasks (mark enrollment complete, mark fee paid).

Testing

- Sample records used to verify automation functionality, email delivery, and quick actions.

Phase 5: Apex Programming and Advanced Automation

Apex Development

- Developed utility classes encapsulating enrollment validation and fee tracking logic.
- Apex triggers enforce complex business rules (e.g., prevent duplicate enrollments).
- Batch Apex classes for handling large data operations like automated fee reminders.

Code Highlights

- EnrollmentService class prevents student from enrolling multiple times in same course.
- Trigger handlers invoke service methods to separate logic from triggers.
- Batch Apex sends scheduled reminder emails.

Testing

- Robust test classes ensure high code coverage and validate error conditions.
- Bulk tests simulate production data scenarios.

Phase 6: User Interface Development

Lightning App Builder Setup

- Record pages tailored by profile:
 - Teacher view with assigned students, grades, GPA summary.
 - Parent view with child's grades and fee status (read-only).
 - Admin view managing Courses, Fees, Enrollments, and Grades.
- Key objects exposed as tabs: Students, Courses, Enrollments, Grades, Fees, Reports.
- Custom home page with dashboards for pending fees, GPA stats, admissions, and exams.
- Utility Bar with quick actions (create student, fee payment).

Lightning Web Components (LWC)

- Upcoming Exams and Fee Due components to display vital info interactively.
- Apex controller and wire adapters provide real-time data fetching for LWCs.

Phase 7: Integration and External Access

Connectivity Setup

- Remote Site Settings (whitelist external API endpoints).
- Named Credentials store secure API authentication.
- External Services allow declarative API integration via Swagger/OpenAPI.

Apex and Web Services

- REST and SOAP APIs exposed from Salesforce for external portal data access.
- Apex HTTP callouts to external systems for data fetch/update.

- Platform Events and Change Data Capture for event-driven and real-time sync.

OAuth Authentication

- Connected Apps with OAuth enable secure API access for mobile and external apps.

Phase 8: Data Management and Deployment

Data Loading

- Data Import Wizard for small datasets, Data Loader for bulk operations.
- Mapping CSV fields to Salesforce objects for Students, Clubs, Memberships.

Data Quality

- Configure Duplicate Rules and Matching Rules to prevent duplicates.
- Scheduled Data Exports for backups.

Deployment Strategies

- Change Sets, ANT Migration Tool, and Salesforce DX with VS Code for metadata deployment.
- Testing post-deployment to verify access and functionality.

Phase 9: Reporting, Dashboards, and Security Review

Reporting

- Custom report types link objects (e.g., Clubs with Members, Students with Clubs).
- Variety of report formats: Tabular, Summary, Matrix, Joined.

Dashboards

- Visual components: charts, gauges, and tables displaying key metrics.
- Dynamic dashboards show data based on user role.

Security Controls

- Record sharing via Org-Wide Defaults, Role Hierarchies, Sharing Rules.
- Field Level Security restricts sensitive field visibility/editability.
- Session and login security settings: Timeout, IP restrictions.
- Audit Trails enabled for tracking administrative changes.

Summary

This comprehensive document covers all critical phases from requirement gathering, system setup, data modeling, automation, coding, UI development, integration, data management, deployment, reporting, and security for the Student CRM system. Each phase builds upon the previous to deliver a scalable, secure, and user-friendly CRM tailored to educational institutions.