

College Attendance Management System

Introduction

This document outlines the requirements and implementation steps for developing a College Attendance Management System in Salesforce. It covers the initial setup, data model configuration, user interface customization, automation, security, and advanced features including validation rules, screen flows, record-triggered flows, and scheduled flows.

Phase 1: Initial Setup and Configuration

1. Salesforce Org Setup

- **Create Salesforce Developer Org:** Sign up for a free Salesforce Developer Org for development and testing.

2. User Management

- **User Roles:**
 - Administrator
 - Teacher
 - Student
- **Profiles:**
 - Admin Profile (Full access)
 - Teacher Profile (Restricted access)
 - Student Profile (Limited access)
- **Permission Sets:**
 - Admin Permission Set (Full permissions)
 - Teacher Permission Set (Access to mark attendance, view classes, and generate reports)
 - Student Permission Set (Access to view attendance records)

Phase 2: Data Model Setup

1. Custom Objects

- **Student:**
 - Fields: Name, Roll Number, Course (Lookup to Course), Year, Contact Information, Parent Contact, Email.
- **Course:**
 - Fields: Name, Course Code, Description, Department.
- **Class:**
 - Fields: Name, Teacher (Lookup to User), Course (Lookup to Course), Schedule, Room Number.
- **Attendance:**
 - Fields: Date, Student (Lookup to Student), Class (Lookup to Class), Status (Picklist: Present, Absent, Late), Remarks.

- **Conference Object:**
 - **Fields:** Name, Budget, Date, Venue, Organizer, Status Picklist (Planned, Ongoing, Completed), Amount, Approval Status (Pending, Rejected, Approved)
- **Fees:**
 - **Fields:** Student Name (Lookup from Student), Fee Type (Tuition, Hostel, Transportation, Miscellaneous), Fee Amount, Payment Status Picklist (Pending, Paid, Overdue), Due Date
- **Salary:**
 - **Fields:** Teacher Name (Lookup from Teacher), Salary Amount, Payment Date, Payment Status (Pending, Paid)

2. Define Relationships

- Lookup relationship from `Student` to `Course`.
- Lookup relationship from `Class` to `Course` and `User`.
- Lookup relationship from `Attendance` to `Student` and `Class`.

3. Validation Rules

1. Student Validation Rules

- 1.1 Ensure Roll Number is Unique
- 1.2 Ensure Email is in Correct Format
- 1.3 Ensure Contact Number is Valid

2. Course Validation Rules

- 2.1 Ensure Course Code is Unique
- 2.2 Ensure Course Name is Not Duplicate

3. Class Validation Rules

- 3.1 Ensure Schedule is Not Blank
- 3.2 Ensure Room Number is Valid

4. Attendance Validation Rules

- 4.1 Ensure Attendance Date is Not a Future Date
- 4.2 Ensure Attendance Status is Selected

5. Fees Validation Rules

- 5.1 Ensure Valid Fee Amount
- 5.2 Ensure Due Date is in the Future

6. Salary Validation Rules

- 6.1 Ensure Valid Salary Amount
- 6.2 Ensure Payment Date is Not in the Future

7. Salary Validation Rules

7.1 Ensure Valid Expense Amount

7.2 Ensure Expense Date is Not in the Future

Phase 3: User Interface Customization

1. Create Lightning Pages

- **Student Management Page:** For viewing and managing student records.
- **Course Management Page:** For viewing and managing courses.
- **Class Management Page:** For viewing and managing classes.
- **Attendance Management Page:** For marking and viewing attendance.

2. Create Custom Tabs

- Students
- Courses
- Classes
- Attendance
- Conference
- Fees
- Salary

3. Design Layouts

- Customize page layouts for `Student`, `Course`, `Class`, and `Attendance` objects.
- Ensure fields are displayed in an intuitive and user-friendly manner.

Record Types

1. Student Record Types

1.1 Undergraduate Student

- **Page Layout:** Custom layout for undergraduate students.
- **Fields:** Name, Roll Number, Course, Year, Contact Information, Parent Contact, Email.

1.2 Postgraduate Student

- **Page Layout:** Custom layout for postgraduate students.
- **Fields:** Name, Roll Number, Course, Year, Contact Information, Parent Contact, Email, Research Topic.

1.3 International Student

- **Page Layout:** Custom layout for international students.

- **Fields:** Passport Number, Visa Status, Country of Origin, Additional Contact Information.

2. Course Record Types

2.1 Mandatory Course

- **Page Layout:** Custom layout for mandatory courses.
- **Fields:** Name, Course Code, Description, Department.

2.2 Elective Course

- **Page Layout:** Custom layout for elective courses.
- **Fields:** Name, Course Code, Description, Department, Elective Criteria.

2.3 Online Course

- **Page Layout:** Custom layout for online courses.
- **Fields:** Course Platform, Access Link, Online Instructor.

3. Class Record Types

3.1 Lecture

- **Page Layout:** Custom layout for lecture classes.
- **Fields:** Name, Teacher, Course, Schedule, Room Number.

3.2 Lab

- **Page Layout:** Custom layout for lab classes.
- **Fields:** Name, Teacher, Course, Schedule, Room Number, Lab Equipment.

3.3 Seminar

- **Page Layout:** Custom layout for seminar classes.
- **Fields:** Seminar Topic, Speaker, Schedule, Location.

4. Attendance Record Types

4.1 Regular Attendance

- **Page Layout:** Custom layout for regular attendance.
- **Fields:** Date, Student, Class, Status, Remarks.

4.2 Extra Credit Attendance

- **Page Layout:** Custom layout for extra credit attendance.
- **Fields:** Date, Student, Class, Status, Remarks, Extra Credit Points.

4.3 Excused Absence

- **Page Layout:** Custom layout for excused absences.
- **Fields:** Date, Student, Class, Reason, Status (Excused).

5. Conference Record Types

5.1 Academic Conference

- **Page Layout:** Custom layout for academic conferences.
- **Fields:** Name, Date, Budget, Venue, Speaker List, Agenda.

5.2 Administrative Conference

- **Page Layout:** Custom layout for administrative conferences.
- **Fields:** Name, Date, Budget, Venue, Organizer, Department.

Phase 4: Automation

Approval Processes

1. Student Leave Approval Process

1.1 Description

This process ensures that student leave requests are reviewed and approved by the appropriate authorities.

1.2 Steps

1. **Student Submits Leave Request**
 - Student fills out and submits the leave request form with details such as leave dates, reason for leave, and any supporting documents.
2. **Initial Approval by Class Teacher**
 - The leave request is first sent to the class teacher for initial review and approval.
 - The class teacher can approve, reject, or request additional information from the student.
3. **Final Approval by Head of Department (HoD)**
 - If approved by the class teacher, the leave request is forwarded to the Head of Department for final approval.
 - The HoD can approve, reject, or request additional information.
4. **Notification to Student**
 - Once the leave request is approved or rejected by the HoD, the student is notified of the decision via email.

1.3 Criteria

- **Entry Criteria:** A new leave request record is created.
- **Exit Criteria:** The leave request is approved or rejected by the HoD.

1.4 Actions

- **Approval Actions:** Notify the student and update the leave status to "Approved".
- **Rejection Actions:** Notify the student and update the leave status to "Rejected".
- **Recall Actions:** Return the leave request to the previous approver or the student for additional information.

1.5 Users

- **Submitter:** Student
- **Approvers:** Class Teacher, Head of Department

2. New Course Proposal Approval Process

2.1 Description

This process ensures that new course proposals are reviewed and approved by the appropriate academic committee.

2.2 Steps

1. **Instructor Submits Course Proposal**
 - Instructor fills out and submits the new course proposal form with details such as course name, description, syllabus, and prerequisites.
2. **Initial Review by Department Committee**
 - The proposal is first sent to the department committee for initial review and feedback.
 - The committee can approve, reject, or request revisions to the proposal.
3. **Final Approval by Academic Council**
 - If approved by the department committee, the proposal is forwarded to the academic council for final approval.
 - The council can approve, reject, or request further revisions.
4. **Notification to Instructor**
 - Once the proposal is approved or rejected by the academic council, the instructor is notified of the decision via email.

2.3 Criteria

- **Entry Criteria:** A new course proposal record is created.
- **Exit Criteria:** The course proposal is approved or rejected by the academic council.

2.4 Actions

- **Approval Actions:** Notify the instructor and update the course status to "Approved".
- **Rejection Actions:** Notify the instructor and update the course status to "Rejected".
- **Recall Actions:** Return the course proposal to the previous approver or the instructor for revisions.

2.5 Users

- **Submitter:** Instructor
- **Approvers:** Department Committee, Academic Council

3. Grade Change Request Approval Process

3.1 Description

This process ensures that grade change requests are reviewed and approved by the appropriate academic authorities.

3.2 Steps

1. **Instructor Submits Grade Change Request**
 - Instructor fills out and submits the grade change request form with details such as student name, original grade, new grade, and reason for the change.
2. **Initial Review by Class Teacher**
 - The request is first sent to the class teacher for initial review and approval.
 - The class teacher can approve, reject, or request additional information from the instructor.
3. **Final Approval by Head of Department (HOD)**
 - If approved by the class teacher, the request is forwarded to the Head of Department for final approval.
 - The HOD can approve, reject, or request further information.
4. **Notification to Student and Instructor**
 - Once the grade change request is approved or rejected by the HOD, the student and instructor are notified of the decision via email.

3.3 Criteria

- **Entry Criteria:** A new grade change request record is created.
- **Exit Criteria:** The grade change request is approved or rejected by the HOD.

3.4 Actions

- **Approval Actions:** Notify the student and instructor and update the grade in the student's record.
- **Rejection Actions:** Notify the student and instructor and update the grade change request status to "Rejected".
- **Recall Actions:** Return the grade change request to the previous approver or the instructor for additional information.

4. Conference Approval Processes

4.1 Conference Budget Approval

- **Trigger:** When a conference budget is submitted.
- **Approvers:** Department Head -> Accounts Department -> Principal -> College Director.

Actions: Approve, Reject, or Pending.

1. Create Screen Flows

User Management

User Creation Flow

- **Screens:**
 - **Enter User Details:** First Name, Last Name, Email, Username, User License (Picklist from User), User Profile (Picklist from User), Role (Picklist from User).
 - **Assign Permission Sets:** Select appropriate permission sets.
- **Actions:** Create user and assign selected permission sets.

Student Enrolment Flow

- **Screens:**
 - **Student Details:** Collect Name, Roll Number, Email, Contact Information, Parent Contact.
 - **Course Details:** Select Course (Lookup to Course), Year.
- **Actions:**
 - Create a student record with the collected information.
 - Assign the Student to the selected Course.

Mark Attendance Flow

- **Screens:**
 - **Class Selection:** Select Class (Lookup to Class).
 - **Date Selection:** Select Attendance Date.
 - **Attendance Marking:** List of students in the selected class with options to mark Present, Absent, or Late.
- **Actions:**
 - Create Attendance records for each student in the selected class for the specified date with the marked status.

Conference Registration Flow

- **Screens:**
 - **Select Conference:** Lookup to select the conference.
 - **Enter Participant Details:** Name, Email, Contact Number.
- **Actions:** Register participant and send confirmation email.

Teacher Salary Payment

- **Screens:**
 - **Select Teacher:** Lookup (Teacher)
 - **Enter Payment Details:** Salary Amount, Payment Date, Payment Status
- **Actions:** Create salary payment record and update payment status.

Record Student Fee Payment

- **Screens:**
 - **Select Student:** Lookup (Student)
 - **Enter Payment Details:** Fee Type, Fee Amount, Payment Status, Due Date
- **Actions:** Create fee payment record and update payment status.

2. Record-Triggered Flows

Send Notification for Absent

- **Trigger:** After an Attendance record is created or updated.
- **Criteria:** If the Attendance Status is "Absent".
- **Actions:**
 - Send an email notification to the student and parent/guardian using an email template.
 - Update a custom field "Absence Count" on the student record.

Update Class Attendance Percentage

- **Trigger:** After an Attendance record is created or updated.
- **Criteria:** None.
- **Actions:**
 - Calculate the attendance percentage for the student in the class.
 - Update the Attendance Percentage field on the Class record.

Notify Student of Overdue Payment

- **Trigger:** After a fee payment record is created or updated.
- **Criteria:** Payment Status is "Overdue".
- **Actions:** Send an email notification to the student.

Notify Teacher of Payment

- **Trigger:** After a salary payment record is created or updated.
- **Criteria:** Payment Status is "Paid".
- **Actions:** Send an email notification to the teacher.

Notify Accounts Manager of New Expense

- **Trigger:** After a conference expense record is created.
- **Criteria:** Approval Status is "Pending".
- **Actions:** Send an email notification to the Accounts Manager.

Update Conference Budget

- **Trigger:** After a conference expense is approved.
- **Criteria:** Approval Status is "Approved".
- **Actions:** Update the remaining budget for the related conference.

3. Scheduled-Triggered Flows

Daily Attendance Reminder

- **Trigger:** Scheduled to run daily.
- **Actions:**
 - Fetch classes scheduled for the day.
 - Send a reminder email to the respective teachers to mark attendance.

Weekly Attendance Summary Email

- **Trigger:** Scheduled to run every week.
- **Actions:**
 - Fetch attendance records for the past week.
 - Generate a summary of attendance for each student.
 - Send a summary email to each student and their parent/guardian.

Monthly Attendance Report

- **Trigger:** Scheduled to run on the first day of each month.
- **Actions:**
 - Fetch attendance records for the past month.
 - Generate a detailed attendance report for each class.
 - Email the report to the respective teachers and administrators.

Conference Reminders

- **Trigger:** Scheduled to run daily.
- **Actions:** Send reminder emails to participants and organizers about upcoming conferences.

Phase 5: Security and Access Management

Role Hierarchy and Sharing Settings

Role Hierarchy

1. **System Administrator:** Full access to all data and reports/dashboards.
2. **College Director:** Access to all reports and dashboards.
3. **Principal:** Access to student, attendance, course, class, and conference reports and dashboards.
4. **Department Head:** Access to relevant department-specific data.
5. **Teachers:** Access to class and attendance data.
6. **Accounts Department:** Access to fees and salary reports and dashboards.
7. **Admin Team:** Limited access to manage user permissions and basic data.

Sharing Rules

1. **Public Read Only** for high-level summary reports/dashboards.
2. **Private** for detailed reports/dashboards containing sensitive data (e.g., financial information, personal student information).

3. **Manual Sharing** for specific reports/dashboards with certain users or roles.

Security Settings for Reports

1. Students Reports

1.1 Student Enrollment Report

- **Access:**
 - Role: Principal, Department Head
 - Sharing Setting: Private
 - Manual Sharing: Enabled for specific roles (e.g., Teachers)

1.2 Contact Information Report

- **Access:**
 - Role: Principal, Department Head
 - Sharing Setting: Private
 - Manual Sharing: Enabled for specific roles (e.g., Teachers)

2. Courses Reports

2.1 Course Details Report

- **Access:**
 - Role: Principal, Department Head
 - Sharing Setting: Public Read Only

2.2 Courses by Department Report

- **Access:**
 - Role: Principal, Department Head
 - Sharing Setting: Public Read Only

3. Classes Reports

3.1 Class Schedule Report

- **Access:**
 - Role: Principal, Teachers
 - Sharing Setting: Private
 - Manual Sharing: Enabled for specific roles (e.g., Department Head)

3.2 Teacher Class Assignment Report

- **Access:**
 - Role: Principal, Department Head
 - Sharing Setting: Private

4. Attendance Reports

4.1 Daily Attendance Report

- **Access:**
 - Role: Principal, Teachers
 - Sharing Setting: Private
 - Manual Sharing: Enabled for specific roles (e.g., Department Head)

4.2 Attendance Summary Report

- **Access:**
 - Role: Principal, Teachers
 - Sharing Setting: Private
 - Manual Sharing: Enabled for specific roles (e.g., Department Head)

5. Conference Reports

5.1 Conference Budget Report

- **Access:**
 - Role: College Director, Principal
 - Sharing Setting: Private
 - Manual Sharing: Enabled for specific roles (e.g., Department Head)

5.2 Conference Expense Report

- **Access:**
 - Role: College Director, Principal, Accounts Department
 - Sharing Setting: Private

6. Fees Reports

6.1 Fee Collection Report

- **Access:**
 - Role: Accounts Department
 - Sharing Setting: Private

6.2 Overdue Fees Report

- **Access:**
 - Role: Accounts Department
 - Sharing Setting: Private

7. Salary Reports

7.1 Salary Disbursement Report

- **Access:**
 - Role: Accounts Department
 - Sharing Setting: Private

7.2 Monthly Salary Payment Report

- **Access:**
 - Role: Accounts Department
 - Sharing Setting: Private

Security Settings for Dashboards

1. Student Dashboard

Access:

- Role: Principal, Department Head
- Sharing Setting: Private
- Manual Sharing: Enabled for specific roles (e.g., Teachers)

2. Courses Dashboard

Access:

- Role: Principal, Department Head
- Sharing Setting: Public Read Only

3. Classes Dashboard

Access:

- Role: Principal, Teachers
- Sharing Setting: Private
- Manual Sharing: Enabled for specific roles (e.g., Department Head)

4. Attendance Dashboard

Access:

- Role: Principal, Teachers
- Sharing Setting: Private
- Manual Sharing: Enabled for specific roles (e.g., Department Head)

5. Conference Dashboard

Access:

- Role: College Director, Principal
- Sharing Setting: Private

- Manual Sharing: Enabled for specific roles (e.g., Department Head, Accounts Department)

6. Fees Dashboard

Access:

- Role: Accounts Department
- Sharing Setting: Private

7. Salary Dashboard

Access:

- Role: Accounts Department
- Sharing Setting: Private

Reports Requirements

1. Students Reports

1.1 Student Enrollment Report

- **Purpose:** To provide a summary of student enrollments categorized by course and year.
- **Filters:**
 - Enrollment Date (Date Range)
 - Course (Picklist)
 - Year (Picklist)
- **Columns:**
 - Student Name
 - Roll Number
 - Course
 - Year
 - Contact Information
 - Parent Contact
- **Grouping:**
 - Group by Course
 - Subgroup by Year

1.2 Contact Information Report

- **Purpose:** To provide a list of student contact information.
- **Filters:**
 - Course (Picklist)
 - Year (Picklist)
- **Columns:**
 - Student Name
 - Roll Number
 - Contact Information

- Parent Contact
- Email

2. Courses Reports

2.1 Course Details Report

- **Purpose:** To provide detailed information on all courses.
- **Filters:**
 - Department (Picklist)
- **Columns:**
 - Course Name
 - Course Code
 - Description
 - Department

2.2 Courses by Department Report

- **Purpose:** To provide a summary of courses categorized by department.
- **Filters:**
 - Department (Picklist)
- **Columns:**
 - Course Name
 - Course Code
 - Description
 - Department
- **Grouping:**
 - Group by Department

3. Classes Reports

3.1 Class Schedule Report

- **Purpose:** To provide a detailed schedule of classes.
- **Filters:**
 - Course (Picklist)
 - Teacher (Lookup)
 - Schedule (Date Range)
- **Columns:**
 - Class Name
 - Teacher
 - Course
 - Schedule
 - Room Number

3.2 Teacher Class Assignment Report

- **Purpose:** To provide a summary of class assignments for each teacher.
- **Filters:**
 - Teacher (Lookup)

- **Columns:**
 - Teacher
 - Class Name
 - Course
 - Schedule
 - Room Number
- **Grouping:**
 - Group by Teacher

4. Attendance Reports

4.1 Daily Attendance Report

- **Purpose:** To provide a detailed report of student attendance on a daily basis.
- **Filters:**
 - Date (Date Range)
 - Class (Lookup)
 - Status (Picklist)
- **Columns:**
 - Date
 - Student Name
 - Class
 - Status
 - Remarks
- **Grouping:**
 - Group by Date

4.2 Attendance Summary Report

- **Purpose:** To provide a summary of attendance records categorized by class and status.
- **Filters:**
 - Class (Lookup)
 - Status (Picklist)
- **Columns:**
 - Class
 - Student Name
 - Status
 - Count of Attendance Records
- **Grouping:**
 - Group by Class
 - Subgroup by Status

5. Conference Reports

5.1 Conference Budget Report

- **Purpose:** To provide a detailed report of conference budgets and expenses.
- **Filters:**
 - Conference Date (Date Range)
 - Status (Picklist)

- Approval Status (Picklist)
- **Columns:**
 - Conference Name
 - Budget
 - Date
 - Venue
 - Organizer
 - Status
 - Amount
 - Approval Status
- **Grouping:**
 - Group by Status
 - Subgroup by Approval Status

5.2 Conference Expense Report

- **Purpose:** To provide a detailed report of conference expenses.
- **Filters:**
 - Conference Date (Date Range)
 - Status (Picklist)
 - Approval Status (Picklist)
- **Columns:**
 - Conference Name
 - Budget
 - Date
 - Venue
 - Organizer
 - Status
 - Amount
 - Approval Status

6. Fees Reports

6.1 Fee Collection Report

- **Purpose:** To provide a summary of all fee collections categorized by fee type and payment status.
- **Filters:**
 - Fee Collection Date (Date Range)
 - Fee Type (Picklist)
 - Payment Status (Picklist)
- **Columns:**
 - Student Name
 - Fee Type
 - Fee Amount
 - Payment Status
 - Collection Date
- **Grouping:**
 - Group by Fee Type
 - Subgroup by Payment Status

6.2 Overdue Fees Report

- **Purpose:** To identify all students with overdue fee payments.
- **Filters:**
 - Due Date (Before Today)
 - Payment Status (Pending, Overdue)
- **Columns:**
 - Student Name
 - Fee Type
 - Fee Amount
 - Due Date
 - Payment Status
- **Grouping:**
 - Group by Student Name

7. Salary Reports

7.1 Salary Disbursement Report

- **Purpose:** To provide a summary of all salary disbursements categorized by payment date and status.
- **Filters:**
 - Payment Date (Date Range)
 - Payment Status (Picklist)
- **Columns:**
 - Teacher Name
 - Salary Amount
 - Payment Date
 - Payment Status
- **Grouping:**
 - Group by Payment Status

7.2 Monthly Salary Payment Report

- **Purpose:** To provide a detailed report of all salary payments for the past month.
- **Filters:**
 - Payment Date (Last Month)
- **Columns:**
 - Teacher Name
 - Salary Amount
 - Payment Date
 - Payment Status

Dashboard Requirements

1. Student Dashboard

1.1 Key Metrics

- Total Number of Students Enrolled
- Number of Students by Course
- Number of Students by Year
- Contact Information Summary

1.2 Visual Components

- **Pie Chart:** Distribution of Students by Course
- **Bar Chart:** Number of Students by Year
- **Table:** Student Contact Information

2. Courses Dashboard

2.1 Key Metrics

- Total Number of Courses
- Number of Courses by Department

2.2 Visual Components

- **Pie Chart:** Distribution of Courses by Department
- **Bar Chart:** Number of Courses

3. Classes Dashboard

3.1 Key Metrics

- Total Number of Classes
- Number of Classes by Course
- Number of Classes by Teacher

3.2 Visual Components

- **Pie Chart:** Distribution of Classes by Course
- **Bar Chart:** Number of Classes by Teacher

4. Attendance Dashboard

4.1 Key Metrics

- Total Attendance Records
- Attendance by Class
- Attendance by Status (Present, Absent, Late)

4.2 Visual Components

- **Pie Chart:** Distribution of Attendance by Status
- **Bar Chart:** Attendance Records by Class
- **Line Chart:** Attendance Trend Over Time

5. Conference Dashboard

5.1 Key Metrics

- Total Conferences Planned
- Total Conference Budget
- Total Conference Expenses
- Number of Conferences by Status

5.2 Visual Components

- **Pie Chart:** Distribution of Conferences by Status
- **Bar Chart:** Conference Expenses by Month
- **Line Chart:** Conference Budget vs Expenses Over Time

6. Fees Dashboard

6.1 Key Metrics

- Total Fees Collected (This Month)
- Total Overdue Fees
- Number of Pending Fee Payments
- Total Fees Collected (Year-to-Date)

6.2 Visual Components

- **Pie Chart:** Distribution of Fees by Fee Type
- **Bar Chart:** Fees Collected by Month
- **Line Chart:** Overdue Fees Trend Over Time
- **Table:** Top 10 Students with Highest Fees Collected

7. Salary Dashboard

7.1 Key Metrics

- Total Salaries Disbursed (This Month)
- Number of Pending Salary Payments
- Total Salaries Disbursed (Year-to-Date)

7.2 Visual Components

- **Pie Chart:** Salaries Disbursed by Payment Status
- **Bar Chart:** Salaries Disbursed by Month
- **Line Chart:** Pending Salary Payments Trend Over Time
- **Table:** Salaries Disbursed to Top 10 Teachers