

Individual Project Final Submission Report

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Problem Statement

Business Problem Statement	Employee Leave Request The business problem addressed is the need to efficiently manage employee leave requests and balances in an organization. The manual tracking of leave requests is prone to errors, delays, and a lack of transparency. Managers and HR personnel require a system to view, approve, reject, and maintain records of leave requests while ensuring that employee leave balances are updated accurately..
Description of the problem addressed	Currently, leave requests are tracked through paper forms or multiple disconnected systems, leading to issues such as lost requests, delayed approvals, and inaccurate leave balances. This ABAP-based solution automates the leave request process, allowing employees to submit leave requests through a SAP screen. Managers can approve or reject requests directly, and the system updates the leave balance in real time. Additionally, approved or rejected requests are stored in a history table for auditing purposes.
Agreed upon complexity	<p>This project is classified as high complexity because it satisfies all the criteria for a high-priority ABAP development task. The following points demonstrate the complexity achieved in the project:</p> <ol style="list-style-type: none"> Custom Tables: <ul style="list-style-type: none"> Z130_EMP_MASTER: Stores employee master data. Z130_LEAVE_REQ: Stores leave request details submitted by employees. Z130_LEAVE_BALE: Maintains leave balance information for each employee. Programs Developed: <ul style="list-style-type: none"> Z130_Leave_Req: A module for employees to submit leave requests, including validation. Z130_Leave_APP: A module-pool program with multiple screens that allows the employer to view leave balances, approve or reject leave requests, send email notifications, and display leave history. Supporting Reports/Forms: Smartforms and email triggers for approved/rejected leave notifications. Module-Pool Program: <ul style="list-style-type: none"> Implemented with at least three screens: <ul style="list-style-type: none"> Screen for viewing pending leave requests (ALV Grid) Screen for leave balance display (ALV Grid)

	<ul style="list-style-type: none"> ▪ Screen for leave history (ALV Grid) <ul style="list-style-type: none"> ○ Includes CRUD operations for custom tables (Create leave requests, Read leave data, Update status and balances on approval/rejection, Delete or remove temporary data from ALV if required).
Scope	<ul style="list-style-type: none"> • The project covers the end-to-end leave management process, from leave request submission by employees to approval/rejection by employers. • Includes automated leave balance updates, email notifications, historical tracking of leave requests. • ALV grids for data display and user interactions.

Design Documentation

Functional Description	<p>Management System is designed to automate and manage employee leave requests within the organization, providing a seamless workflow for both employees and employers. The solution consists of two main applications: Z130_Leave_Req for employees and Z130_Leave_APP for employers.</p> <p>Z130_Leave_Req:</p> <ul style="list-style-type: none"> • Employees can submit leave requests by entering their employee number, leave type, start date, end date, and reason for leave. • F4 help is provided for the employee number field, ensuring users can select valid employees from the master data. • The leave request is stored in the custom table Z130_LEAVE_REQ, and initial validation ensures data integrity. <p>Z130_Leave_APP:</p> <ul style="list-style-type: none"> • The employer can view all leave requests submitted by employees, displayed in an ALV grid for easy reading and interaction. • The employer can check leave balances from the table Z130_LEAVE_BALE before taking action. • For each leave request, the employer can either approve or reject the request: <ul style="list-style-type: none"> ○ Approval: Updates the leave request status to “Approved” and adjusts the employee’s leave balance. ○ Rejection: Updates the leave request status to “Rejected” without affecting leave balances. • Upon approval or rejection, the employer can send automated email notifications to employees, informing them of the decision. • The system maintains a leave history displayed in an ALV grid, showing all approved and rejected requests for tracking and reporting purposes. <p>Features:</p>
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	<ul style="list-style-type: none"> • ALV Grids: Used across all screens for user-friendly data display and selection. • CRUD Operations: Supports Create, Read, Update, and Delete operations for leave requests and balances. • Email Notifications: Ensures employees are promptly informed of decisions. • Screen Navigation: Provides a seamless workflow between employee submission, employer action, and leave history review. • This system streamlines the leave management process, reduces manual errors, improves tracking and reporting, and ensures timely communication between employees and management. It is a comprehensive solution designed to simplify leave administration while maintaining data integrity and transparency.
New or Updated Items Included in the Project Development – Internal to SAP	<p>Custom Tables:</p> <ul style="list-style-type: none"> • Z130_LEAVE_REQ – Stores employee leave requests (primary table for leave applications). • Z130_LEAVE_BALE – Stores leave balances for employees. • Z130_EMP_MASTER – Stores employee master data for F4 help and validations. <p>Primary Programs:</p> <ul style="list-style-type: none"> • Z130_LEAVE_REQ – Module pool program executed by employees to submit leave requests. (PRIMARY Program for employee submission) • Z130_LEAVE_APP – Module pool program executed by employers to approve or reject leave requests and view leave balances. (PRIMARY Program for employer actions) <p>Screens (Module Pool Program Components):</p> <ul style="list-style-type: none"> • Screen 0100 – Employee input screen for leave request submission. • Screen 0200 – ALV display for pending leave requests (employer view). • Screen 0400 – Display of leave balances for employees. • Screen 0500 – ALV display for leave history (approved/rejected requests). <p>ALV Grid Objects (for internal display and interaction):</p> <ul style="list-style-type: none"> • go_alv_req, go_alv_bal, go_alv_history – CL_GUI_ALV_GRID objects used to display leave requests, balances, and history. <p>Email Functionality</p>

	<ul style="list-style-type: none"> Implemented using CL_BCS and CL_DOCUMENT_BCS to send simple text-based email notifications to employees upon leave approval or rejection. The email includes leave request details and remaining balance.
New or Updated Items Included in the Project Development – External to SAP	<ul style="list-style-type: none"> No external files are required for this project. All data is stored and processed within SAP tables (Z130_LEAVE_REQ, Z130_LEAVE_BALE, Z130_EMP_MASTER). Emails are generated directly using SAP classes (CL_BCS and CL_DOCUMENT_BCS) without relying on any external attachments or files.
Other	2 t-codes are being used.

Development Documentation (5 points)

Pseudocode	<p>30 Leave Request and Approval System REQ (Employee Leave Request T-code)</p> <ol style="list-style-type: none"> Employee opens the leave request screen. Employee enters the following details: <ul style="list-style-type: none"> Employee Number Leave Type Start Date End Date Reason for leave Employee submits the request. System saves the request into the Z130_LEAVE_REQ table. Employee can view their submitted leave requests.
	<p>APP (Leave Approval T-code for Employer)</p> <ol style="list-style-type: none"> Employer opens the leave approval screen. Employer enters or selects the Employee Number (F4 help displays all employee numbers from master table). Employer can view: <ul style="list-style-type: none"> Pending leave requests of the employee

	<ul style="list-style-type: none"> ○ Leave balances from Z130_LEAVE_BALE <ol style="list-style-type: none"> 4. Employer selects a leave request from the ALV grid. 5. Employer chooses to Approve or Reject the request.
	<p>Leave Request</p> <ol style="list-style-type: none"> 1. System updates the request status to Approved in Z130_LEAVE_REQ. 2. System updates leave balances in Z130_LEAVE_BALE (subtracts total leave days from remaining balance). 3. A confirmation popup is displayed showing the approved leave and remaining balance. 4. Employer can optionally send an email notification to the employee. 5. Approved request is moved to history internal table for reference.
	<p>Leave Request</p> <ol style="list-style-type: none"> 1. System updates the request status to Rejected in Z130_LEAVE_REQ. 2. A confirmation popup is displayed showing that the leave request was rejected. 3. Employer can optionally send an email notification to the employee. 4. Rejected request is moved to history internal table for reference.
	<p>Screens</p> <ul style="list-style-type: none"> • Screen 0200: Display pending leave requests for approval in an ALV grid. • Screen 0400: Display leave balances for the selected employee in an ALV grid. • Screen 0500: Display leave request history (approved and rejected requests) in an ALV grid.
	<p>Employee Number</p> <ol style="list-style-type: none"> 1. When entering the employee number, the system provides F4 help. 2. All employee numbers are fetched from the Z130_EMP_MASTER table. 3. Employer selects the employee number from the F4 list.

	<p>ation Logic</p> <ol style="list-style-type: none"> 1. When a request is approved or rejected, a popup asks whether to send email. 2. If Yes, system generates an email using CL_BCS and CL_DOCUMENT_BCS. 3. Email is sent directly to the employee with details of approval/rejection.
Design Documentation	<p>The Z130 Leave Request and Approval System was designed and developed using SAP ABAP within the SAP GUI environment. The following resources and references were utilized to guide the development, ensure best practices, and implement all required functionalities:</p> <ol style="list-style-type: none"> 1. Textbook Reference: <ul style="list-style-type: none"> • Wysocki, R. K. (2019). <i>Effective Project Management: Traditional, Agile, Extreme, Hybrid</i> (8th ed.). John Wiley & Sons. <p>This helped in initial creation of module pool and programs.</p> 2. Online Learning Platforms: <ul style="list-style-type: none"> • Gemenai <ul style="list-style-type: none"> ○ Used for ABAP programming tutorials, specifically on module pools, ALV grids, and CRUD operations in custom tables. ○ Assisted in understanding dynamic screen programming, F4 help implementation, and ALV refresh techniques. • YouTube <ul style="list-style-type: none"> ○ Several SAP ABAP tutorial videos were referenced for step-by-step demonstrations of ALV grid creation, handling user commands, popup notifications, and email sending using CL_BCS. ○ Helped visualize the implementation of employee leave request approval logic and F4 help functionality. 3. Tools Used: <ul style="list-style-type: none"> • SAP GUI – Development and testing of ABAP module pool programs and ALV screens. • ABAP Editor (SE38 / SE80) – Creation of all programs, function modules, and supporting logic. • CL_GUI_ALV_GRID / CL_GUI_CUSTOM_CONTAINER – Used for dynamic ALV grid display of leave requests, balances, and history. • CL_BCS / CL_DOCUMENT_BCS – Used for email notifications to employees. • DDIC (Data Dictionary) – Created custom tables: <ul style="list-style-type: none"> ○ Z130_LEAVE_REQ – Stores leave requests.

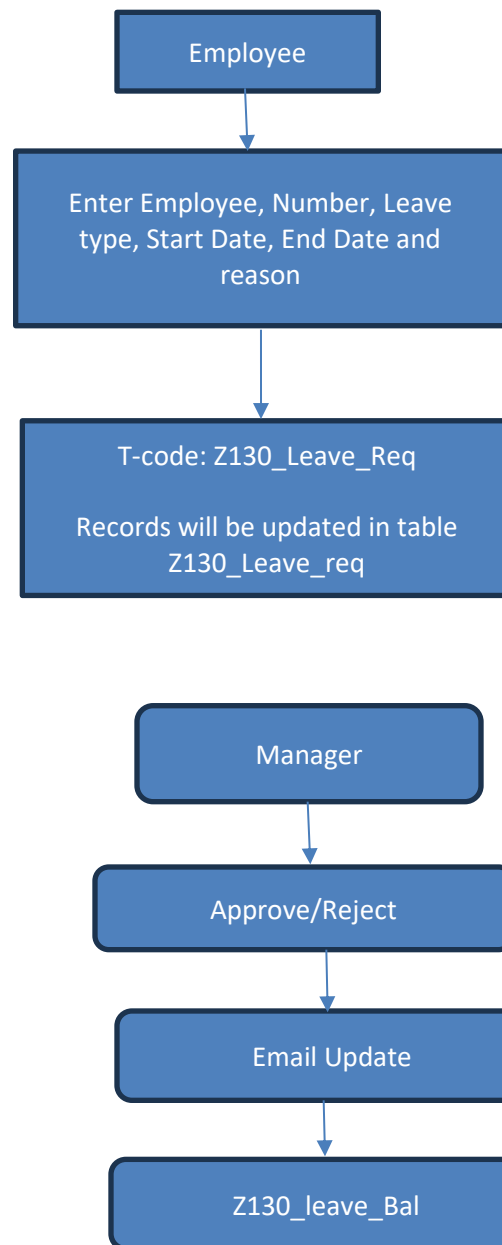
	<ul style="list-style-type: none"> ○ Z130_LEAVE_BALE – Stores employee leave balances. ○ Z130_EMP_MASTER – Stores master employee details. <p>4. Additional References:</p> <ul style="list-style-type: none"> • SAP official documentation for ABAP function modules and class methods. • SAP community forums for troubleshooting ALV refresh, F4 help, and email configuration issues.
Other	Planning on smartforms but unable to fetch the data from the tables.

Open Issues

Open Issues	<i>Use this section to track all open design issues during the creation of this project. Design is not considered complete until all open issues are resolved. You may delete this section once all issues are resolved or keep this section for audit purposes. Open issues of your individual project should be honestly reported here.</i>
Issue Example	<i>Data must be created to properly test the function</i>
1.	Data must contain Balance leaves so that it can be approved if no balance is maintained then it can not be approved.

Functional Design Assumptions

Assumptions	<i>Include assumptions that apply to the overall functional design. Assumptions applicable to a specific detailed process/design will be listed below in the designated section.</i>
1.	<p>Employee Master Data Exists.</p> <ul style="list-style-type: none"> • All employees submitting leave requests already have records in the Z130_EMP_MASTER table with valid employee numbers. <p>Leave Balances are Preloaded.</p> <ul style="list-style-type: none"> • Employee leave balances are maintained in the Z130_LEAVE_BALE table and are updated only through this program when leave is approved or rejected. <p>Single Approver Workflow</p> <ul style="list-style-type: none"> • Each leave request is reviewed and approved or rejected by a single authorized manager using the Z130_Leave_APP T-code. <p>Email Notifications are Functional</p> <ul style="list-style-type: none"> • The system assumes email configuration (CL_BCS / SOST) is correctly set up in SAP so that email notifications to employees can be sent upon approval or rejection.

Functional Flow Chart (15 points)**Additional information (OPTIONAL)**

Other relevant information	Working on the smartform update and if that works would like to present that in the presentation.
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Print Preview of Local Printer Page 00001 of 00001

Request Number 0000000000
 Request Status
 Approver

Employee Details


 Employee Name
 Employee Number 00000000
 Position
 Department
 Employee Email

Leave Request Details

 Leave Type
 Start date
 End date
 Total days 0
 Reason

Leave Balances

 Entitled 0
 Used 0
 Remaining 0



Trying to pull the data into smartform.

List of all the objects used for this project:

Object Type	Name	Description / Purpose
Custom Table	Z130_EMP_MASTER	Stores employee master data (employee number, name, etc.)
Custom Table	Z130_LEAVE_REQ	Stores leave requests submitted by employees
Custom Table	Z130_LEAVE_BALE	Stores leave balances for employees
Module-Pool Program	Z130_Leave_Req	Screen 0100: Employee leave application; fields for employee number, leave type, start/end dates, reason
Module-Pool Program	Z130_Leave_APP	Screen 0200: ALV display of leave requests for approval/rejection; Screen 0400: Leave balances; Screen 0500: Leave history
Methods / Function Modules	POPUP_TO_CONFIRM	Display confirmation popups for approval/rejection