

# **SAP ABAP Dialog Program - Employee Management System Analysis**

## **Overview**

The project implements an employee management system for SmartLogic. The program was developed based on specific business requirements to manage employee data through a custom application. The program follows the standard SAP Dialog programming structure with four main sections: TOP, O01, I01, and F01.

## **Business Requirements**

The project was developed for SmartLogic to create a custom business application for managing their employee data. The key requirements included:

1. A database table (Z021EMPLOYEE) for storing employee information with specific technical settings:
  - Delivery Class: Application Table
  - Data Class: Master Data
  - Buffering: Not allowed
  - Enhancement Category: Can be Enhanced deep
2. Custom data elements and domains:
  - Data element Z021\_EMPNO with NUMC type of length 10
  - Domain Z021\_GENDER with CHAR type and length 10, allowing only values 'M' (Male) and 'F' (Female)
  - Data element Z021\_GENDER using the Z021\_GENDER domain
3. A comprehensive user interface with multiple screens:
  - Login screen (0100)
  - Registration screen (0200)
  - Employee details screen (0300)
  - Admin control screen (0400) with two tabs:
    - Insert Record tab
    - Delete Record tab

4. Specific functionality for user authentication, data validation, and employee data management

## **Program Structure**

### **TOP Section (Global Variables and Data Declarations)**

The TOP section contains all global variable declarations, data structures, and type definitions used throughout the program.

#### **Key Declarations:**

- System variables like ok\_code to capture function codes from user interactions
- Login screen variables (io\_user, io\_password)
- Registration screen structure (ty\_employreg) and work area (ls\_employreg)
- Department field variable (io\_dept)
- Employee details table (lt\_employdet) and work area (ls\_employdet)
- Control flags for flow logic (lv\_validemail, lv\_validpass, etc.)
- Table control definitions (tc\_employdet, tc\_del\_employ)
- Tabstrip control definition (ts\_admin)
- Structures for employee deletion (ty\_del\_employ)

The TOP section establishes the foundation for the entire program by defining all the data containers needed to support various functionalities.

### **O01 Section (Output Processing Logic)**

The O01 section contains PBO (Process Before Output) modules responsible for preparing the screen before it's displayed to the user.

#### **Key Modules:**

- **STATUS\_0100:** Sets PF-STATUS and TITLEBAR for the login screen
- **STATUS\_0200:** Sets PF-STATUS and TITLEBAR for the registration screen
- **SCR\_MODIFY:** Modifies screen elements based on program state (e.g., hiding/showing login button)
- **FETCH\_DATA:** Retrieves employee data from the database based on department selection
- **TC\_MODIFY:** Controls the visibility of the table control and enables/disables fields

- **TS\_ADMIN\_ACTIVE\_TAB\_SET:** Sets the active tab in the admin screen tabstrip
- **TC\_DEL\_FETCH:** Fetches employee data for deletion screen

The O01 section ensures that each screen is properly initialized with correct data and proper UI element states before presentation to the user.

### **I01 Section (Input Processing Logic)**

The I01 section contains PAI (Process After Input) modules that handle user interactions and inputs.

#### **Key Modules:**

- **USER\_COMMAND\_0100:** Processes commands from the login screen
- **EXIT:** Handles back, exit, and cancel operations across all screens
- **VALIDATE\_LOGIN:** Validates user login credentials
- **USER\_COMMAND\_0200:** Processes commands from registration screen
- **VALIDATE\_EMAIL:** Validates email format on both registration and detail screens
- **VALIDATE\_PASS:** Ensures password and re-entered password match
- **USER\_COMMAND\_0300:** Processes commands from employee details screen
- **USER\_COMMAND\_0301:** Handles database updates from popup screen
- **TS\_ADMIN\_ACTIVE\_TAB\_GET:** Gets the active tab from admin screen
- **USER\_COMMAND\_0402:** Processes delete commands from employee deletion screen

The I01 section contains the core business logic that responds to user actions, validates inputs, and triggers appropriate system responses.

### **F01 Section (Form Subroutines)**

The F01 section contains reusable subroutines (forms) that are called from various parts of the program.

#### **Key Forms:**

- **LOGIN\_VALIDATE:** Validates user login credentials against database records
- **REGISTER\_USER:** Processes user registration by inserting records into the database
- **F4HELP\_DEPT:** Provides a value help for department selection
- **USER\_OK\_TC:** Handles table control operations (a reusable component)

- Other table control helper forms: FCODE\_INSERT\_ROW, FCODE\_DELETE\_ROW, COMPUTE\_SCROLLING\_IN\_TC, etc.

The F01 section encapsulates reusable functionality to improve code organization and maintenance.

## **Program Functionality**

### **1. Login System (Screen 0100 - SmartLogic Login)**

- Users can enter employee number (username) and password
- Password validation is based on a specific algorithm:
  - Username = Emp\_No field from the Z021EMPLOYEE table
  - Password = First name (from the Emp\_Name field) + last 3 digits of the Emp\_No
- Successful login redirects to main screen (0300 - SmartLogic Details)
- Error message displayed for invalid credentials
- Option to register new users via "New User? Register" button

### **2. Registration System (Screen 0200 - SmartLogic Register)**

- Collects new employee information (name, gender, email, password)
- Validates email using specific criteria:
  - Minimum 8 characters in length
  - Must contain at least one digit
- Ensures password and re-entered password match
- Generates employee number automatically (SL + sequential number)
- Assigns default department "OTHERS"
- On successful registration:
  - Displays success message "Registration Successful"
  - Disables all input fields
  - Shows "Go to Login Page" button
- Field-specific error messages with only error fields remaining editable

### **3. Employee Details Screen (Screen 0300 - SmartLogic Details)**

- Department selection field with F4 help providing values:
  - HR
  - Tools
  - IT Support
  - Development
  - Others
- Displays employee data in a table control filtered by selected department
- Only Email ID column is editable
- Email validation via Check button (with ICON\_CHECK):
  - If valid: displays "Validated" message, enables Save button, disables all fields
  - If invalid: displays error message, keeps fields in current state
- Save functionality with confirmation popup:
  - "Yes": updates database records, shows success/error message
  - "No": returns to previous screen with editable Email ID column and disabled Save button
- Admin Control button for accessing admin functionality

#### 4. Administrator Functions (Screen 0400 - SmartLogic Admin)

- Title displays "SmartLogic Admin <Employee\_Name>"
- Tabstrip interface with two tabs:
  - **Insert Record Tab:**
    - Form for entering new employee details
    - Validation on Submit button
    - Success/error messages based on insertion result
  - **Delete Record Tab:**
    - Displays all employee records in a table control (read-only)
    - Support for multiple record selection
    - Delete button removes selected records and refreshes the display

- Users can freely switch between tabs without restrictions

## **5. Common Features**

- Standard GUI functionality across all screens:
  - Back button for navigation to previous screen
  - Exit button to exit the program
  - Cancel button to clear input fields and remain on the same screen
- Consistent screen flow and navigation design

## **Technical Implementation Details**

### **Database Structure**

- **Z021EMPLOYEE Table:**
  - EMP\_NO (CHAR 10) - Primary Key
  - EMP\_NAME (CHAR 40)
  - GENDER (CHAR 1) - Domain-restricted to 'M' or 'F'
  - EMAIL\_ID (CHAR 40)
  - DEPT (CHAR 30)

### **UI Components and Screen Flow**

1. **Screen 0100 (SmartLogic Login):**
  - Title bar: "TITLE\_0100"
  - GUI Status: "GUI\_0100"
  - Navigation:
    - To Screen 0200 via "New User? Register" button
    - To Screen 0300 on successful login
2. **Screen 0200 (SmartLogic Register):**
  - Title bar: "TITLE\_0200"
  - GUI Status: "GUI\_0200"
  - Dynamic screen behavior based on registration status
  - Navigation to Screen 0100 after successful registration

### 3. Screen 0300 (SmartLogic Details):

- Title bar: "TITLE\_0300"
- GUI Status: "GUI\_0300" (conditionally excluding "FC\_SAVE")
- Table control "TC\_EMPDET" for employee data display
- Popup Screen 0301 for save confirmation
- Navigation to Screen 0400 via "Admin Control" button

### 4. Screen 0400 (SmartLogic Admin):

- Title bar: "TITLE\_0400" with dynamic employee name
- GUI Status: "GUI\_0400"
- Tabstrip "TS\_ADMIN" with two subscreen areas:
  - Subscreen 0401 (Insert Record)
  - Subscreen 0402 (Delete Record) with table control "TC\_DEL\_EMP"

## Key Technical Components

### 1. Table Controls:

- TC\_EMPDET: Displays and allows editing of employee data filtered by department
- TC\_DEL\_EMP: Displays all employees for deletion with selection markers

### 2. Data Validation:

- Email validation modules with specific business rules
- Password validation logic
- Input field validation for new employee records

### 3. Dynamic Screen Modification:

- Field-level enablement/disablement based on program state
- Button visibility control
- Table control column properties management

### 4. Navigation Control:

- OK\_CODE processing for function code handling

- Screen flow control based on user actions and validation results

## **Conclusion**

This ABAP Dialog program demonstrates a well-structured approach to building an employee management system according to SmartLogic's specific business requirements. By organizing code into the standard SAP sections (TOP, O01, I01, F01), the program maintains clear separation between data declarations, output processing, input handling, and reusable subroutines.

The implementation showcases important ABAP Dialog programming techniques including:

- Proper screen flow control with intuitive user navigation
- Table controls for efficient data display and manipulation
- Tabstrip controls for organizing related functionality
- Field-level data validation with business-specific rules
- Dynamic screen modification based on program state
- F4 help implementation for user-friendly input assistance
- Database operations with proper error handling and user feedback

The application successfully delivers a complete employee management solution with login authentication, registration, employee data management, and administrative functions, all built on SAP's standard dialog programming framework. The modular design and consistent implementation patterns make the system maintainable and extendable for future enhancements.