

# **Vacation Management System**

## **Software Requirements Specification**

Version 2.1

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# 1 Introduction

## 1.1 Purpose

This Software Requirements Specification (SRS) document describes the functional and non-functional requirements for the Vacation Management System. The document serves as a comprehensive contract between the development team and stakeholders, providing a detailed understanding of what the system must accomplish based on the complete project scope and use cases.

## 1.2 Scope

The Vacation Management System is designed to automate the vacation request, approval, and cancellation processes while providing robust reporting capabilities for efficient vacation management. The system addresses inefficiencies in the current paper-based system, such as processing delays and inaccurate balance tracking due to manual errors and duplicate records.

The system scope includes:

- Employee vacation request submission and management
- Vacation cancellation request processing
- Multi-level approval workflow (Employee → Manager → HR → General Manager)
- Vacation inquiry and search functionality
- Report generation (Single Transaction and Comparative Annual Reports)
- Automated vacation balance management
- Notification system for all stakeholders

## 1.3 Definitions, Acronyms, and Abbreviations

- **HR:** Human Resources
- **SRS:** Software Requirements Specification
- **UI:** User Interface
- **PDF:** Portable Document Format
- **API:** Application Programming Interface
- **DB:** Database
- **UC:** Use Case
- **GM:** General Manager
- **ERD:** Entity Relationship Diagram

## 1.4 References

- Project Scope Document

- All-UseCases.json - Complete Use Case Specifications
- Wireframe Specifications (see Appendix C)
- Data Dictionary Documentation (see Appendix B.2)
- System Diagrams (Context, State, Workflow)

## 1.5 Overview

The remainder of this document is organized as follows:

- Section 2: Overall Description
- Section 3: System Architecture and Context
- Section 4: Business Rules and Logic
- Section 5: User Requirements / Use Cases
- Section 6: User Stories
- Section 7: Functional Requirements
- Section 8: Non-Functional Requirements
- Section 9: User Interface Overview
- Section 10: Data Requirements Overview
- Section 11: System Messages
- Section 12: Appendices
- Section 13: Document Approval

## 2 Overall Description

### 2.1 Current State

Currently, the vacation request process is handled manually with limited visibility and no workflow automation.

#### Current Workflow

- The process is fully manual.
- Employees submit paper-based vacation requests to their manager.
- The manager reviews and either forwards the request to HR or rejects it.
- HR processes approved requests for final confirmation.
- Employees lack visibility into the request status after submission (no tracking).
- There is no tracking or audit trail for the end-to-end process.

#### Existing Systems

- A production authentication and user management system exists (login, roles, permissions).
- No dedicated vacation management module currently exists.
- Security rules are implemented generally across systems but are not linked to the vacation flow.

## Permissions and Roles

- The current organizational platform already supports roles and permissions.
- Role capabilities (who can approve, who can review) are defined at a standard level but are not applied inside the vacation workflow.
- The VMS must bind RBAC explicitly to vacation operations (submission, review, approval, cancellation).

## Limitations

- Manual handling causes delays and errors; there is no automated workflow.
- No reporting or performance indicators for the process.
- No audit trail for compliance and traceability.
- Employees cannot see the live status of their requests.

*Note:* The organization already has a standardized authentication and authorization system in place (login, roles, permissions). However, these are not currently applied to the vacation request process.

## 2.2 Product Perspective

The Vacation Management System is a web-based application with mobile support that integrates with existing HR systems. It operates as a standalone module that can be deployed independently or integrated with larger enterprise systems.

## 2.3 Product Functions

The system provides the following core functionalities:

### 1. Vacation Request Management

- Create vacation requests (Annual and Sick leave types)
- File attachment capabilities (mandatory for sick leave)
- Real-time validation and balance checking
- No modification capability after submission

### 2. Vacation Cancellation Management

- Cancel pending or approved requests before start date
- Cancellation reason tracking
- Approval workflow for cancellations

### 3. Approval Workflow

- Multi-level approval process (Employee → Manager → HR → GM)
- Automatic escalation after 2 days of delay
- Manager and HR review capabilities

### 4. Reporting and Analytics

- Single transaction reports (PDF)
- Comparative annual reports by department
- Department-wise vacation analytics

### 5. Inquiry and Search

- Advanced search capabilities with multiple filters
- Export functionality to Excel
- Pagination and result management

### 6. Automated Balance Management

- Automatic vacation balance calculation
- Entitlement rules (21/30 days based on service/age)
- No manual overrides permitted

### 7. Notification System

- Real-time notifications for all stakeholders
- Context-aware notification types
- Quick navigation to related screens

## 2.4 User Classes and Characteristics

User Class	Characteristics	Access Rights
Employees	Full-time Muslim Saudi employees, non-trainees	Submit requests, view own requests, cancel requests
Direct Managers	Supervisors, approve subordinate requests	Review, approve/reject requests, view team reports
HR Personnel	Administrative users, manage policies	Full access, policy management, all reports
General Managers	Senior management, final approval	Final approval, all reports access, system oversight
System Administrators	Technical users, system maintenance	Full system access, configuration management

Table 1: User Classes and Access Rights

## 2.5 Operating Environment

- **Platform:** Web-based application with mobile responsive design
- **Browsers:** Chrome, Firefox, Safari, Edge (latest versions)
- **Mobile:** iOS 12+, Android 8+
- **Identity / SSO:** Organization-wide authentication, roles, and permissions already exist and will be leveraged (no standalone auth duplication)
- **Database:** SQL Server/MySQL/PostgreSQL
- **Server:** Windows/Linux server environment

## 2.6 Design and Implementation Constraints

- Compliance with Saudi vacation regulations
- Integration with existing HR systems
- Integration with the existing identity and access management (IAM) solution; VMS must enforce RBAC for vacation operations using existing roles (Employee, Manager, HR, GM, Admin)
- Support for Arabic and English languages
- Mobile-first responsive design
- PDF generation capabilities
- Real-time notifications
- No modification of submitted requests

## 2.7 Assumptions and Dependencies

- Existing employee database is available
- Network infrastructure supports web access
- Users have basic computer literacy
- HR policies are well-defined and documented
- Integration APIs are available for external systems
- All employees are full-time Muslim Saudi employees

## 3 System Architecture & Diagrams

### 3.1 System Context Diagram

The Vacation Management System operates within a broader organizational context, interacting with various stakeholders and external systems. The following diagram shows how the system integrates with the broader organizational ecosystem:

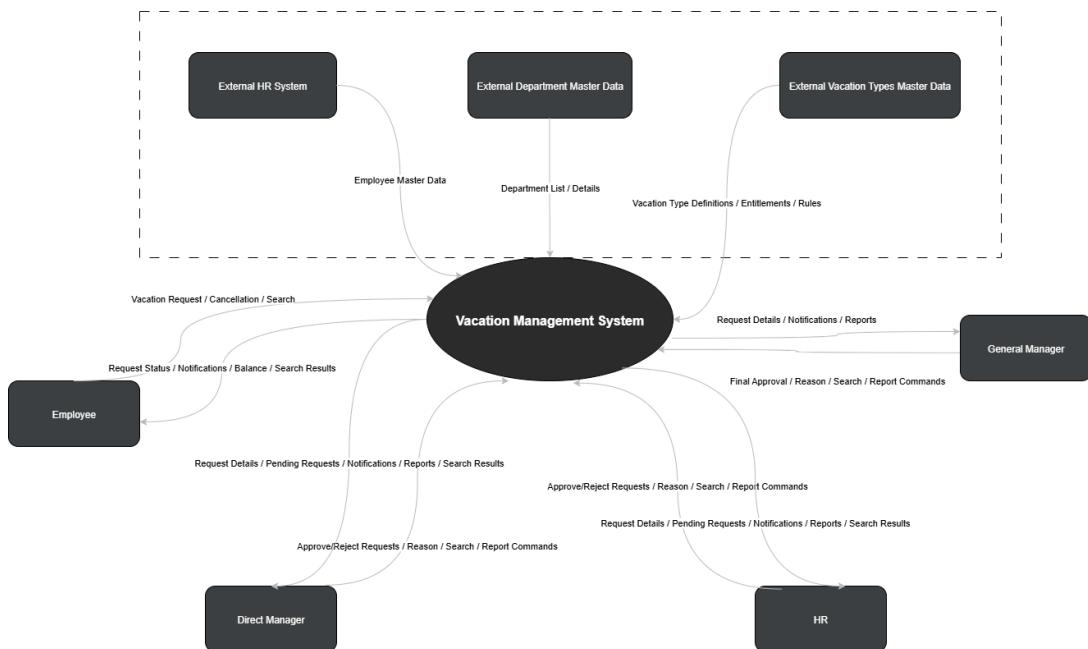


Figure 1: System Context Diagram - Vacation Management System Integration

### 3.2 System Architecture Overview

The system follows a three-tier architecture designed for scalability and maintainability:

- **Presentation Tier**: Web and mobile interfaces with responsive design
- **Business Logic Tier**: Application services, workflows, and business rules engine
- **Data Tier**: Database, file storage, and integration services

### 3.3 Core System Components

The system is built around these key components:

- **User Management Module:** Authentication, authorization, and role-based access control
- **Vacation Management Module:** Core business logic for request processing
- **Workflow Engine:** Multi-level approval process management with escalation
- **Reporting Module:** PDF generation and data export capabilities
- **Notification Module:** Real-time communication and alert system
- **Balance Management Module:** Automated vacation balance calculations

### 3.4 Integration Interfaces

The Vacation Management System (VMS) integrates internal modules and external organizational services through well-defined touchpoints. This section summarizes integration flows and responsibilities without detailing internal implementation steps.

#### Internal Integration

- **Centralized Data Access:** All modules (Employee, Manager, HR, Admin) access a centralized database to ensure consistency.
- **Immediate Propagation:** Employee-submitted requests appear instantly in the Manager interface for action.
- **Synchronized Actions:** Manager/HR decisions (approve, reject, cancel) are reflected in the employee portal in real time.
- **Notification Hub:** The Notification Center integrates modules by emitting status updates for submission, approval, rejection, and cancellation across web and mobile.

#### External Integration

- **HR System (Master Data & Auth):** Provides employee master data and supports user validation and role-based access.
- **Identity/SSO:** Enables single sign-on and secure session handling.
- **Notification Services:** Email/SMS may be used for reminders or approval alerts outside the portal.
- **Service Portal:** Employees and managers act on requests via the organization portal; notifications deep-link to portal screens.
- **Optional: Payroll/Attendance:** Reflect approved vacations in salary and attendance records.

#### Data Flow and Communication

- Front-end (portal/mobile) communicates with back-end via secure RESTful APIs over HTTPS.

- External exchanges comply with organizational security and privacy standards.
- Error handling and logging ensure reliable request/response tracking across integrations.

### Constraints and Assumptions

- External integrations depend on available APIs and supported formats (JSON, XML, CSV).
- VMS operates in standalone mode if HR/Portal/Payroll integrations are temporarily unavailable; reconciliation occurs when restored.

### Integration Summary Table

System / Module	Purpose	Data Exchanged	Direction	Mechanism
HR System	Employee master data, role validation	Employee ID, Name, Dept, Title, Status	Inbound	REST API (JSON), SSO
Identity / SSO	Authentication / SSO	Tokens, claims	Two-way	OAuth2/OIDC over HTTPS
Notification Service	Alerts and reminders	Request status (submitted/approved/rejected)	Outbound	Email/SMS API
Service Portal	User interaction layer	Tasks, deep links, request context	Two-way	Web/Mobile UI to/from Backend APIs
Payroll (optional)	Reflect approved leave	Approved vacation records	Outbound	Batch export / API
Attendance (optional)	Reflect absences	Approved vacation dates	Outbound	API

### 3.5 State Diagrams

The following state diagram illustrates the complete lifecycle of a vacation request:

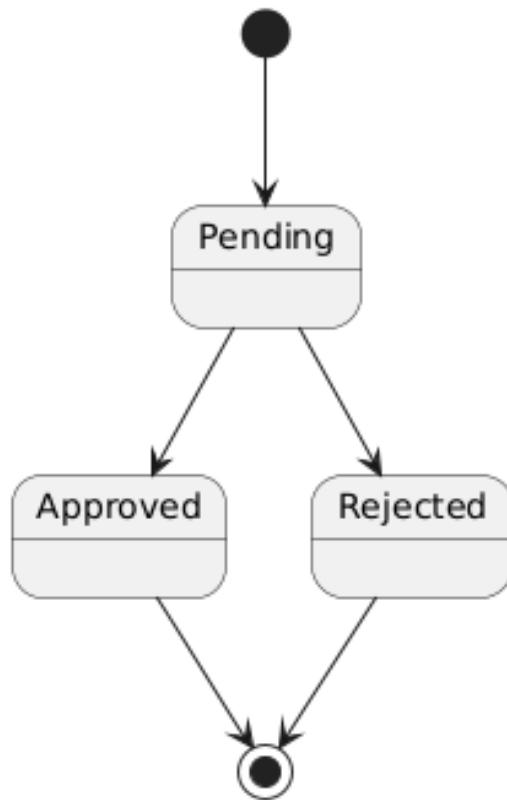
**Vacation Request - State Diagram**

Figure 2: Vacation Request State Diagram - Complete Request Lifecycle

### 3.6 Workflow Diagrams

The following workflow diagrams define approval and processing logic:

### 3.6.1 Basic Vacation Request Flow

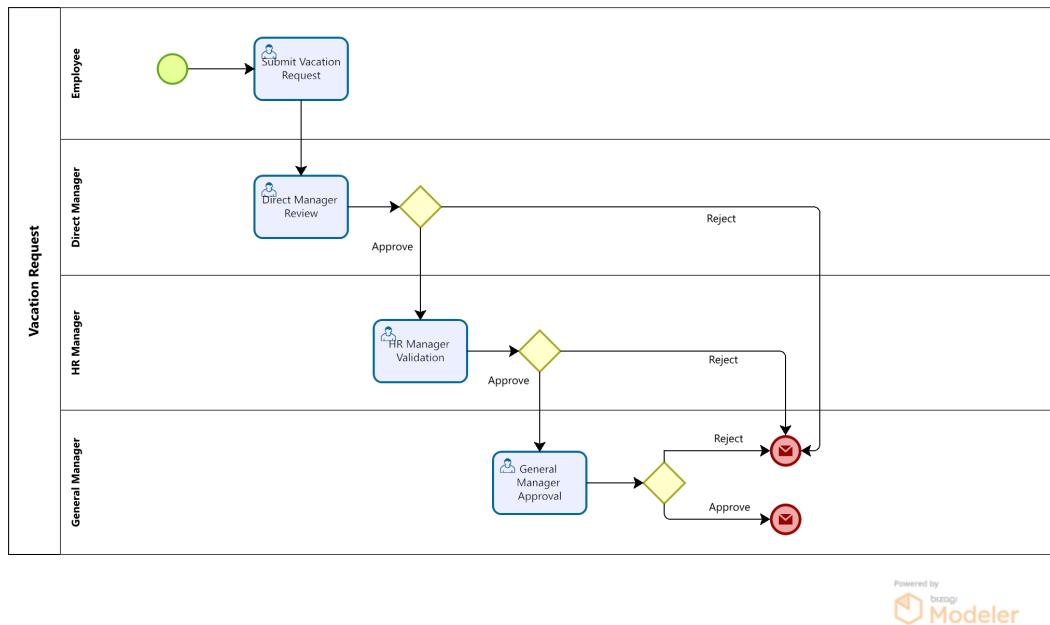
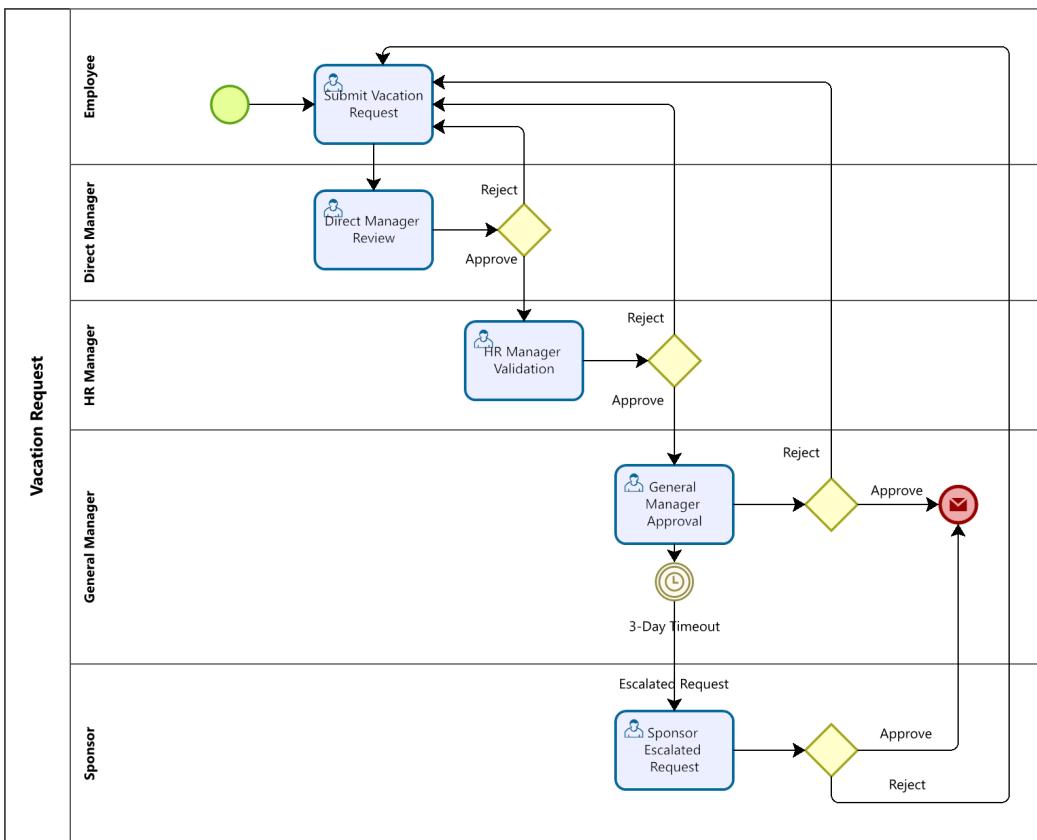


Figure 3: Basic Vacation Request Workflow - Standard Approval Process

### 3.6.2 Escalation to Sponsor Flow

When approvals are delayed, the system automatically escalates requests:



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**bizagi** Modeler

Figure 4: Vacation Request Escalation to Sponsor Workflow - Automatic Escalation

### 3.6.3 Resubmission After Rejection Flow

Rejected requests can be resubmitted following this process:

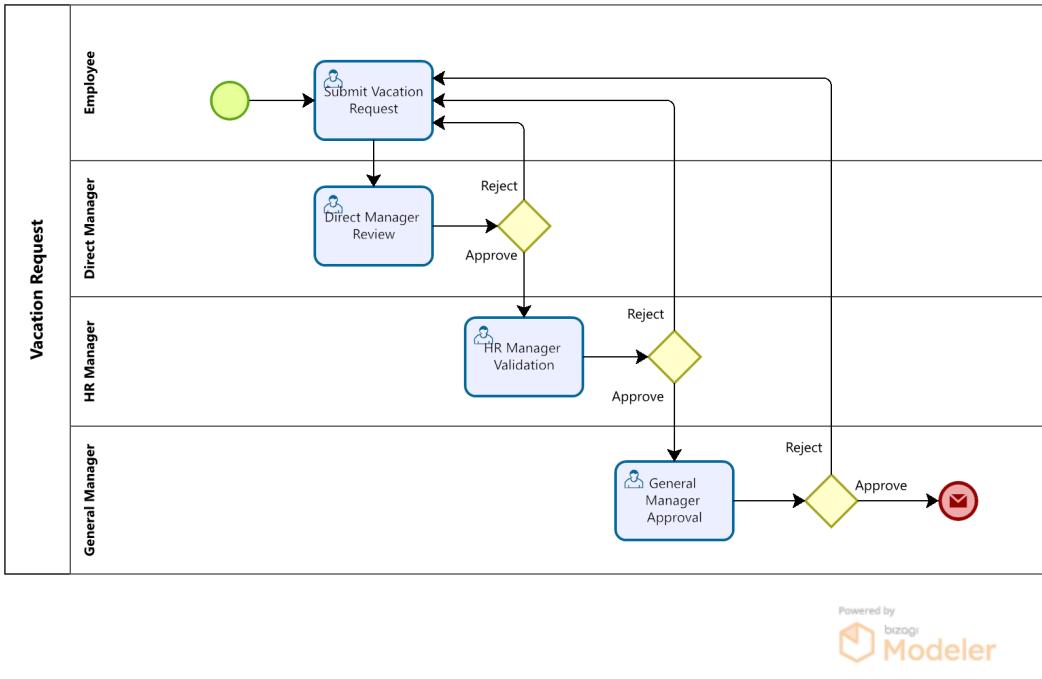


Figure 5: Vacation Request Resubmission After Rejection Workflow

## 4 Business Rules and Logic

This section is the single source of truth for all business rules that govern system behavior. Use cases and functional requirements must reference rules here by ID (e.g., BR-011). If any use case introduces a new rule, it must be added here and assigned a unique identifier.

### 4.1 Vacation Policy Rules

#### 4.1.1 BR-001: Annual Entitlement

**Rule:** Standard annual vacation entitlement is 21 days per year. **Applicable Use Cases:** UC-1, UC-12 **Implementation:** System automatically allocates 21 days at the start of each calendar year.

#### 4.1.2 BR-002: Extended Entitlement

**Rule:** Employees with 10+ years of service OR age  $\geq 50$  receive 30 days annual entitlement. **Applicable Use Cases:** UC-1, UC-12 **Implementation:** System evaluates hire date and birth date from Employee Master Data to determine eligibility.

#### 4.1.3 BR-003: Leave Types

**Rule:** System supports only Annual and Sick leave types. **Applicable Use Cases:** UC-1, UC-4, UC-5 **Implementation:** Vacation Types Master Data defines these two types exclusively.

#### 4.1.4 BR-004: Unused Days Policy

**Rule:** Unused vacation days are forfeited annually with no carryover or compensation. **Applicable Use Cases:** UC-12 **Implementation:** System resets balance to annual entitlement at year-end without preserving unused days.

#### 4.1.5 BR-005: Trainee Restrictions

**Rule:** Trainees cannot submit vacation requests. **Applicable Use Cases:** UC-1 **Implementation:** System checks employee status from Employee Master Data and blocks request submission for trainees.

### 4.2 Approval Workflow Rules

#### 4.2.1 BR-006: Approval Hierarchy

**Rule:** Vacation requests follow the sequence: Employee → Direct Manager → HR → General Manager. **Applicable Use Cases:** UC-1, UC-4, UC-6 **Implementation:** System routes requests through predefined approval levels with role-based access control.

#### 4.2.2 BR-007: Escalation Policy

**Rule:** Requests automatically escalate to the next level after 2 days of inaction. **Applicable Use Cases:** UC-4, UC-6 **Implementation:** System timer tracks approval delays and automatically forwards requests.

#### 4.2.3 BR-008: Balance Update Timing

**Rule:** Employee vacation balance updates only after General Manager approval. **Applicable Use Cases:** UC-4, UC-12 **Implementation:** System triggers balance recalculation upon GM approval, not at earlier stages.

#### 4.2.4 BR-009: Rejection Documentation

**Rule:** All rejections must include a mandatory reason. **Applicable Use Cases:** UC-4, UC-5 **Implementation:** System validates that reason field is populated before allowing rejection submission.

#### 4.2.5 BR-010: No Modification Policy

**Rule:** Submitted vacation requests cannot be modified. **Applicable Use Cases:** UC-1 **Implementation:** System locks all request fields after submission, allowing only cancellation.

## 5 User Requirements / Use Cases

This section provides high-level descriptions of the system's use cases. For detailed specifications, including triggers, basic/alternate flows, business validation rules, non-functional constraints, and exceptions, please refer to the All-UseCases.json document.

## 5.1 Use Case Summary

The system implements 12 core use cases that cover all aspects of vacation management:

ID	Use Case Name	Primary Actor	Business Rules
UC-1	Employee Submits Vacation Request	Employee	BR-001, BR-002, BR-003, BR-011, BR-012, BR-013, BR-014
UC-2	Employee Submits Vacation Cancellation Request	Employee	BR-015, BR-016
UC-3	My Vacation Requests	Employee	BR-015, BR-016
UC-4	Review Vacation Request (Approval/Rejection)	Manager/HR/GM	BR-006, BR-007, BR-008, BR-009, BR-014
UC-5	Review Vacation Cancellation Request	Manager/HR	BR-015, BR-016, BR-009
UC-6	Pending Vacation Requests	Manager/HR	BR-006, BR-007
UC-7	Vacation Inquiry (Search Parameters)	HR/Managers/Employees	BR-008
UC-8	Vacation Inquiry (Search Results)	HR/Managers/Employees	BR-008
UC-9	Print Single Vacation Transaction Report (PDF)	HR/Managers/Employees	BR-008
UC-10	Print Comparative Annual Report (PDF)	HR/Managers/GM	BR-018
UC-11	Notifications Center	All Users	BR-017
UC-12	Automated Update of Employee Annual Vacation Balance	System	BR-001, BR-002, BR-008, BR-019

Table 3: Use Case Summary with Business Rule References

## 5.2 Use Case Details

The following use cases are implemented in the system:

### 5.2.1 UC-1: Employee Submits Vacation Request

SUMMARY			
ID	UC-1		
Name	Employee Submits Vacation Request		
Goal	Allow an employee to submit a vacation request and route it to the manager for approval.		
Actors	Employee		
TRIGGERS			
Trigger	Employee initiates a new vacation request in the portal.		
PRE-CONDITIONS			
1	Employee is authenticated in the HR system.		
2	Employee has a non-zero leave balance.		
BASIC FLOW (MAIN SUCCESS SCENARIO)			
#	User Action	System Response	
1	Employee navigates to "Request Vacation".	System displays the vacation request form.	
2	Employee enters start date, end date, and reason.	System auto-populates employee details, validates dates in real-time, and shows current leave balance.	
3	Employee clicks "Submit".	System saves request and assigns a Request ID.	
BUSINESS VALIDATION RULES			
Rule ID	Description	Condition	Message ID
BV-001	End date must be strictly after start date.	endDate > startDate	MSG-101
BV-002	Requested days must not exceed available leave balance.	daysRequested ≤ leaveBalance	MSG-102
BV-003	Sick leave requires a medical certificate attachment.	type == "Sick"	MSG-103
NON-FUNCTIONAL CONSTRAINTS			
Constraint ID	Description	Condition	
NFR-001	Submission should complete quickly for good UX.	submissionTime < 120s	
EXCEPTIONS (ERROR CONDITIONS)			
ID	At Step	Issue	Resolution
EX-1	Step 2	Insufficient leave balance.	System blocks submission and displays an error.
EX-2	Step 3	HR database unavailable.	System shows error and asks to retry later.
ALTERNATE FLOWS (OPTIONAL VARIATIONS)			
ID	At/From Step	Description	Outcome / Resolution
AF-1	Step 2	Employee selects dates overlapping an existing request.	System warns and allows confirm-or-adjust.
AF-2	Step 3	Employee cancels before submission.	System discards input and returns to dashboard.
POST-CONDITIONS			
1	Request stored with status "Pending Approval".		
2	Manager notified; can approve or reject.		
3	Employee can track status from dashboard.		
NOTES			
Note	Medical certificate required for sick leave; quick submission ensures good user experience.		

Figure 6: UC-1: Employee Vacation Request Use Case

### 5.2.2 UC-2: Employee Submits Vacation Cancellation Request

SUMMARY			
ID	UC-2		
Name	Employee Submits Vacation Cancellation Request		
Goal	Allow an employee to cancel a submitted vacation request before its start date.		
Actors	Employee		
TRIGGERS			
Trigger	Employee decides they no longer need a previously requested vacation.		
PRE-CONDITIONS			
1	Employee has an existing vacation request in pending or approved status.		
2	Vacation request has not yet started.		
3	Employee is a full-time Muslim Saudi employee (system scope).		
4	Employee is not a trainee (system scope).		
5	System is accessible via web or mobile app.		
BASIC FLOW (MAIN SUCCESS SCENARIO)			
#	User Action	System Response	
1	Employee opens the Vacation Cancellation Request screen.	System displays the cancellation request form.	
2	—	System auto-populates employee details (Name, ID) as read-only.	
3	—	System displays original request details (Type, Dates, Period, Notes, Attachments) in read-only mode.	
4	Employee optionally enters a cancellation reason.	System accepts input.	
5	Employee reviews all details.	System waits for confirmation.	
6	Employee clicks Submit Cancellation.	System validates request and submits for approval with status 'Pending'.	
7	Employee clicks Cancel instead.	System discards input and returns to dashboard.	
APPROVAL FLOW (MANAGER / HR / GENERAL MANAGER)			
#	Reviewer Action	System Response	
1	Reviewer opens the Vacation Cancellation Request screen.	System shows original request and cancellation details.	
2	Reviewer optionally enters notes.	System accepts input.	
3	Reviewer clicks Approve or Reject.	System updates status and records decision.	
BUSINESS VALIDATION RULES			
Rule ID	Description	Condition	Message ID
BV-201	Cancellation must occur before vacation start date.	currentDate < vacationStartDate	MSG-201
BV-202	Only requests in Pending or Approved status can be cancelled.	status ∈ {Pending, Approved}	MSG-202
BV-203	Cancellation request data must match original request.	cancellationData == originalData	MSG-203
EXCEPTIONS (ERROR CONDITIONS)			
ID	At Step	Issue	Resolution
EX-1	Step 6	Cancellation attempted after start date.	System blocks submission and shows error message MSG-204.
EX-2	Step 6	Request not in Pending or Approved status.	System prevents cancellation and shows error message MSG-205.
EX-3	Step 6	Data inconsistency detected.	System rejects cancellation and notifies HR.
POST-CONDITIONS			
1	Cancellation request stored with status Pending until reviewed.		
2	If approved: HR and Manager notified, vacation officially cancelled.		
3	If rejected: Employee notified, original vacation request remains active.		
NOTES			
Note	Maintain link between original vacation requests and their cancellations for data integrity.		

Figure 7: UC-2: Employee Vacation Cancellation Request Use Case

### 5.2.3 UC-3: My Vacation Requests

SUMMARY			
ID	UC-3		
Name	My Vacation Requests		
Goal	Provide employees with a centralized screen to view, track, and manage their vacation requests.		
Actors	Employee		
TRIGGERS			
Trigger	Employee navigates to the 'My Vacation Requests' screen.		
PRE-CONDITIONS			
1	Employee has access to the vacation management system (web or mobile).		
2	Employee is a full-time Muslim Saudi employee (system scope).		
3	Employee is not a trainee (system scope).		
BASIC FLOW (MAIN SUCCESS SCENARIO)			
#	User Action	System Response	
1	Employee selects 'My Vacation Requests' from the dashboard.	System displays a summary table of vacation requests.	
2	Employee views columns: Vacation Type, Start Date, End Date, Status, and Expand/Collapse control.	System shows summarized requests in tabular format.	
3	Employee clicks the expand icon for a specific request.	System expands and displays detailed request information.	
4	—	System displays Vacation Request Details (Vacation Type, Dates, Period, Notes) as read-only.	
5	—	System displays Review History table with Reviewer, Notes, Status, and Date.	
6	—	System displays Attachments table with file numbers and file names.	
7	Employee views the Actions section with the Cancel button.	System enables or disables the Cancel button depending on rules.	
BUSINESS VALIDATION RULES			
Rule ID	Description	Condition	Message ID
BV-301	Cancel button disabled for approved requests.	status == Approved	MSG-301
BV-302	Cancel button disabled for already cancelled requests.	status == Cancelled	MSG-302
BV-303	Cancel button disabled for requests with passed start dates.	currentDate >= startDate	MSG-303
BV-304	All request details displayed in detailed view are read-only.	fieldEditable == false	MSG-304
EXCEPTIONS (ERROR CONDITIONS)			
ID	At Step	Issue	Resolution
EX-1	Step 3	Employee attempts to expand request but data is unavailable.	System shows error message MSG-304.
EX-2	Step 7	Employee clicks Cancel on a disabled button.	System ignores action and provides tooltip explaining why.
EX-3	Step 7	System fails to load attachments.	System shows warning 'Attachments unavailable' but continues displaying other details.
POST-CONDITIONS			
1	Employee has visibility into all their vacation requests in summary and detailed view.		
2	Employee can only cancel requests when rules allow.		
3	System maintains audit trail of all actions and reviews.		
NOTES			
Note	Interactive features include expandable/collapsible details and conditional cancel button enablement.		
Note	Maintain strict data integrity by keeping all detailed fields read-only.		

Figure 8: UC-3: My Vacation Requests Use Case

### 5.2.4 UC-4: Review Vacation Request (Approval/Rejection)

SUMMARY			
ID	UC-4		
Name	Review Vacation Request (Approval / Rejection)		
Goal	Enable managers, HR, and the General Manager to review, approve, or reject employee vacation requests.		
Actors	Direct Manager, HR, General Manager		
TRIGGERS			
Trigger	A vacation request is submitted by an employee and routed for review.		
PRE-CONDITIONS			
1	Employee has submitted a valid vacation request.		
2	System has routed the request to the current reviewer (Manager, HR, or General Manager).		
3	Reviewer has access to the vacation management system (web or mobile).		
BASIC FLOW (MAIN SUCCESS SCENARIO)			
#	Reviewer Action	System Response	
1	Reviewer opens the vacation request from their dashboard or notification link.	System displays request details in read-only mode.	
2	—	System shows Employee Name, Employee ID, Department, Vacation Type, Start Date, End Date, Period, Notes, and Attachments (if any).	
3	Reviewer enters a mandatory reason in the 'Reason for Accept/Reject' textarea.	System validates that input is provided.	
4	Reviewer clicks 'Approve'.	System records approval, updates status, and routes to the next level (HR or General Manager).	
5	Reviewer clicks 'Reject'.	System records rejection, updates status to 'Rejected', and notifies the employee immediately.	
6	General Manager approves final request.	System finalizes approval and updates the employee's vacation balance.	
BUSINESS VALIDATION RULES			
Rule ID	Description	Condition	Message ID
BV-401	Reason for decision is mandatory for all reviewers.	reason != null && reason.trim() != "	MSG-401
BV-402	Attachments are mandatory for sick leave requests.	vacationType == 'Sick' → attachments.length > 0	MSG-402
BV-403	Vacation balance is updated only after General Manager approval.	approver == GeneralManager && decision == 'Approve'	MSG-403
BV-404	System auto-escalates pending requests after 2 days.	approvalPending > 2 days	MSG-404
EXCEPTIONS (ERROR CONDITIONS)			
ID	At Step	Issue	Resolution
EX-1	Step 3	Reviewer tries to approve/reject without entering a reason.	System blocks action and displays error message MSG-401.
EX-2	Step 2	Sick leave request submitted without attachments.	System blocks progression and prompts employee to upload mandatory attachments.
EX-3	Step 4	Approval delayed more than 2 days.	System auto-escalates to the next reviewer and sends notification.
POST-CONDITIONS			
1	Request status updated (Approved, Rejected, or Escalated).		
2	Employee notified of decision outcome.		
3	Vacation balance updated upon final approval by the General Manager.		
4	System logs reviewer decision, reason, and timestamp for audit purposes.		
NOTES			
Note	System supports review and decision on both web and mobile platforms.		
Note	Notifications contain only the header with a link to the system for full details.		
Note	All request details are displayed in read-only mode to reviewers.		
Note	Maintain audit trail of all review actions including reasons and timestamps.		

Figure 9: UC-4: Review Vacation Request Use Case

### 5.2.5 UC-5: Review Vacation Cancellation Request

SUMMARY			
ID	UC-5		
Name	Review Vacation Cancellation Request		
Goal	Enable HR and Managers to review and take action (approve or reject) on submitted vacation cancellation requests.		
Actors	Manager, HR		
TRIGGERS			
Trigger	An employee submits a vacation cancellation request, which is routed to HR/Manager for review.		
PRE-CONDITIONS			
1	A valid vacation cancellation request has been submitted by an employee.		
2	The original vacation request must be in Pending or Approved status.		
3	Vacation must not have started (current date < start date).		
4	Reviewer (HR/Manager) has access to the system on web or mobile.		
BASIC FLOW (MAIN SUCCESS SCENARIO)			
#	Reviewer Action	System Response	
1	Reviewer opens the vacation cancellation request from dashboard or notification.	System displays both original vacation request details and cancellation request details in read-only mode.	
2	—	System shows Employee Name, Employee ID, Department, Vacation Type, Start Date, End Date, Period, Notes, Attachments.	
3	—	System shows Cancellation Request ID, Original Request ID, Cancellation Submitted Date/Time, and Cancellation Reason.	
4	Reviewer enters a mandatory reason in 'Reason for Accept/Reject' textarea.	System validates that input is provided.	
5	Reviewer clicks 'Approve Cancellation'.	System records approval, updates status, notifies HR and Manager, and links cancellation with the original request.	
6	Reviewer clicks 'Reject Cancellation'.	System records rejection, updates status to 'Rejected', and notifies the employee immediately.	
BUSINESS VALIDATION RULES			
Rule ID	Description	Condition	Message ID
BV-501	Cancellation must occur before vacation start date.	currentDate < vacationStartDate	MSG-501
BV-502	Only Pending or Approved requests are eligible for cancellation.	status ∈ {Pending, Approved}	MSG-502
BV-503	Reviewer must provide a decision reason.	reason != null && reason.trim() != "	MSG-503
EXCEPTIONS (ERROR CONDITIONS)			
ID	At Step	Issue	Resolution
EX-1	Step 1	Reviewer attempts to review cancellation for a vacation already started.	System blocks review and shows error MSG-501.
EX-2	Step 1	Original request status is not Pending or Approved.	System blocks cancellation review and shows error MSG-502.
EX-3	Step 4	Reviewer attempts to approve/reject without providing a reason.	System prevents action and displays error MSG-503.
POST-CONDITIONS			
1	Cancellation request status is updated to Approved or Rejected.		
2	If Approved: Vacation request is officially cancelled, HR and Manager are notified.		
3	If Rejected: Employee notified, original vacation request remains active.		
4	System maintains audit trail linking original and cancellation requests.		
NOTES			
Note	All original and cancellation request details are read-only for reviewers.		
Note	Cancellation review is accessible from both web and mobile platforms.		
Note	System maintains data integrity by linking original requests with their cancellations.		

Figure 10: UC-5: Review Vacation Cancellation Request Use Case

### 5.2.6 UC-6: Pending Vacation Requests

SUMMARY			
ID	UC-6		
Name	Pending Vacation Requests		
Goal	To view and manage all vacation requests currently awaiting review and approval.		
Actors	Manager, HR		
TRIGGERS			
Trigger	A manager or HR user selects the 'Pending Vacation Requests' option from the system menu/dashboard.		
PRE-CONDITIONS			
1	There are vacation requests in Pending status.		
2	Reviewer has valid access rights (Manager or HR).		
3	System is available and responsive.		
BASIC FLOW (MAIN SUCCESS SCENARIO)			
#	Actor Action	System Response	
1	Reviewer opens the Pending Vacation Requests screen.	System displays the header 'Pending Vacation Requests (Tasks)' and a grid layout of all pending requests requiring action.	
2	—	System shows grid columns: Employee ID, Name, Department, Vacation Type, Start Date, End Date, Action.	
3	Reviewer locates a specific request in the list.	System highlights the request row and shows a [View Request] button for action.	
4	Reviewer clicks [View Request].	System opens the 'Review Leave Request Screen' with full request details.	
5	On the Review screen, reviewer decides: Accept or Reject.	System validates input, records decision, updates status, and notifies the employee and stakeholders.	
BUSINESS VALIDATION RULES			
Rule ID	Description	Condition	Message ID
BV-601	Only pending requests appear on this screen.	status == 'Pending'	MSG-601
BV-602	Action column always provides [View Request] button.	row ∈ PendingRequests	MSG-602
EXCEPTIONS (ERROR CONDITIONS)			
ID	At Step	Issue	Resolution
EX-1	Step 1	No pending requests exist.	System displays message MSG-601 and disables grid.
EX-2	Step 4	Request no longer pending when opened.	System blocks action and shows error MSG-601.
POST-CONDITIONS			
1	Reviewer can navigate to detailed review for any pending request.		
2	Decisions made in Review screen trigger notifications and workflow updates.		
3	Vacation balance updates after GM final approval.		
NOTES			
Note	This screen is for query and navigation only; decisions are made in the Review screen.		
Note	Auto-escalation applies: requests not acted upon within 2 days escalate to the next level.		
Note	Vacation Reporting Dashboard aggregates pending requests per department for analysis.		

Figure 11: UC-6: Pending Vacation Requests Use Case

### 5.2.7 UC-7: Vacation Inquiry (Search Parameters)

SUMMARY			
ID	UC-7		
Name	Vacation Inquiry (Search Parameters)		
Goal	To allow users to input search criteria for vacation inquiries.		
Actors	HR, Managers, Authorized Employees		
TRIGGERS			
Trigger	A user navigates to 'Employee Vacation Inquiry - Search Parameters' screen.		
PRE-CONDITIONS			
1	User has valid system access.		
2	Department Master, Employee Master, and Vacation Type data are available.		
3	System is available and responsive.		
BASIC FLOW (MAIN SUCCESS SCENARIO)			
#	Actor Action	System Response	
1	User opens the 'Employee Vacation Inquiry - Search Parameters' screen.	System displays screen header and all search filters in default (empty) state.	
2	User optionally selects From Date and To Date.	System accepts input and validates proper date formatting.	
3	User optionally selects one or more Departments from dropdown.	System loads Department options from Department Master and accepts multi-selection.	
4	User optionally enters Employee Name or ID in text field.	System cross-references Employee Master data for validation.	
5	User optionally selects one or more Vacation Types.	System loads options (Annual, Sick, All) from Vacation Type master data.	
6	User optionally selects one or more Vacation Statuses.	System loads options (Pending, Approved, Rejected, Cancelled, All) from system status list.	
7	User clicks [Generate Report].	System validates entered filters and navigates to the 'Search Results' screen showing matching vacation requests.	
8	User clicks [Reset].	System clears all filters and reloads the screen in default state.	
BUSINESS VALIDATION RULES			
Rule ID	Description	Condition	Message ID
BV-701	From Date and To Date must be valid dates.	Invalid date format or impossible date entered	MSG-701
BV-702	From Date must not be after To Date.	fromDate > toDate	MSG-702
BV-703	Department dropdown options must come from Department Master.	Invalid department selected	MSG-703
EXCEPTIONS (ERROR CONDITIONS)			
ID	At Step	Issue	Resolution
EX-1	Step 2	Invalid date format entered.	System rejects input and shows error MSG-701.
EX-2	Step 2	From Date is after To Date.	System blocks report generation and shows error MSG-702.
EX-3	Step 3	Department not found in master data.	System shows error MSG-703 and prevents submission.
POST-CONDITIONS			
1	System either displays vacation search results based on valid filters or shows appropriate validation errors.		
2	User may reset and re-enter search filters.		
NOTES			
Note	All search parameters are optional — user can generate a report with no filters applied.		
Note	The 'Search Results' screen is a separate use case (UC-8).		
Note	Consistent styling with other inquiry/approval screens must be maintained.		

Figure 12: UC-7: Vacation Inquiry Search Parameters Use Case

### 5.2.8 UC-8: Vacation Inquiry (Search Results)

SUMMARY			
ID	UC-8		
Name	Vacation Inquiry (Search Results)		
Goal	To display inquiry results in a grid format and allow printing/export actions.		
Actors	HR, Managers, Authorized Employees		
TRIGGERS			
Trigger	User executes a search from the 'Employee Vacation Inquiry - Search Parameters' screen (UC-7).		
PRE-CONDITIONS			
1	User has valid system access.		
2	Valid search criteria executed from UC-7.		
3	System has matching vacation request data.		
BASIC FLOW (MAIN SUCCESS SCENARIO)			
#	Actor Action	System Response	
1	User completes a search in UC-7.	System displays the 'Vacation Inquiry - Search Results' grid with matching requests.	
2	User reviews grid with columns (Employee ID, Employee Name, Vacation Type, Start Date, End Date, Duration, Status, Actions).	System ensures all values are loaded from Employee Master, Department Master, Vacation Type master, and request data.	
3	User clicks [Print] button on an approved request row.	System generates a PDF of the 'Single Transaction Report' including Request Date, Employee details, Vacation details, Reviewer details, Approval Date/Time, and footer (Print Time, Page Number, Printed By).	
4	User clicks [Export to Excel] button.	System exports the current search result set to Excel file format.	
5	User navigates through pagination controls ([Previous], page numbers, [Next], Records per page).	System loads appropriate page of results.	
6	User clicks [New Search] button.	System returns user to UC-7 (Search Parameters) screen.	
BUSINESS VALIDATION RULES			
Rule ID	Description	Condition	Message ID
BV-801	Print option allowed only for Approved requests.	Status != Approved	MSG-801
BV-802	Pagination controls must be consistent and not exceed total record count.	Invalid page number or out of range	MSG-802
EXCEPTIONS (ERROR CONDITIONS)			
ID	At Step	Issue	Resolution
EX-1	Step 3	User clicks [Print] on a non-approved request.	System blocks action and shows MSG-801.
EX-2	Step 5	User attempts to navigate to an invalid page.	System displays MSG-802 and retains current page view.
POST-CONDITIONS			
1	System displays inquiry results in a structured grid.		
2	User may print single transaction reports for approved requests.		
3	User may export results to Excel.		
4	User may navigate pages or initiate a new search.		
NOTES			
Note	The grid layout follows consistent styling with UC-6 Pending Requests screen.		
Note	The Single Transaction Report layout (Screen 7) includes all mandatory footer elements.		
Note	Export to Excel is intended for bulk reporting, while Print is for individual approved transactions.		

Figure 13: UC-8: Vacation Inquiry Search Results Use Case

### 5.2.9 UC-9: Print Single Vacation Transaction Report (PDF)

SUMMARY			
ID	UC-9		
Name	Print Single Vacation Transaction Report (PDF)		
Goal	To generate a PDF with complete details of an approved vacation request.		
Actors	HR, Managers, Authorized Employees		
TRIGGERS			
Trigger	User clicks the [Print] button from UC-8 (Vacation Inquiry – Search Results) on an Approved request.		
PRE-CONDITIONS			
1	User has valid system access.		
2	Vacation request status must be Approved.		
3	All request data and approval logs are available in the system.		
BASIC FLOW (MAIN SUCCESS SCENARIO)			
#	Actor Action	System Response	
1	User clicks the [Print] button in UC-8 for an approved request.	System validates request status (must be Approved).	
2	User waits while PDF is generated.	System fetches request, employee, vacation, and approval details.	
3	System generates PDF including Request Information, Employee Information, Vacation Details, Approval Information, and Standard Footer.	System ensures all mandatory fields are populated.	
4	PDF is displayed or downloaded.	System ensures correct footer elements (Print Time, Page Number, Printed By) are included on each page.	
BUSINESS VALIDATION RULES			
Rule ID	Description	Condition	Message ID
BV-901	Report can only be generated for Approved vacation requests.	If status != Approved	MSG-801
BV-902	All footer elements must be included in every page of the PDF.	Missing footer info	MSG-902
EXCEPTIONS (ERROR CONDITIONS)			
ID	At Step	Issue	Resolution
EX-1	Step 1	User clicks Print on non-approved request.	System blocks action and shows MSG-801.
EX-2	Step 3	PDF generation error due to missing mandatory data.	System shows MSG-902.
POST-CONDITIONS			
1	System generates a single vacation transaction PDF.		
2	PDF includes Request Info, Employee Info, Vacation Details, Approval Info, and Footer.		
3	PDF is available for download or direct print.		
NOTES			
Note	The PDF layout corresponds to 'Print Layout - Single Transaction Report' as referenced in UC-8.		
Note	Attachments are included as file links when available; mandatory for Sick leave requests.		
Note	Approval section must display all approvers with job titles and approval timestamps.		

Figure 14: UC-9: Print Single Vacation Transaction Report Use Case

### 5.2.10 UC-10: Print Comparative Annual Report (PDF)

SUMMARY			
ID	UC-10		
Name	Print Comparative Annual Report (PDF)		
Goal	To generate an annual comparative vacation report by department, optionally including employee details.		
Actors	HR, Managers, General Management		
TRIGGERS			
Trigger	User defines filters (Department, Start Date, End Date, Details flag) and clicks [Print Comparative Report] button.		
PRE-CONDITIONS			
1	User has valid access rights to reporting functionality.		
2	Department and employee vacation data must exist in the system.		
BASIC FLOW (MAIN SUCCESS SCENARIO)			
#	Actor Action	System Response	
1	User opens the Comparative Annual Report screen (print layout).	System displays report filters: Department(s), Date Range, Details flag.	
2	User selects Department(s) and optional filters (Start Date, End Date, Details flag).	System accepts entered filter inputs (no validation required for Start vs End date).	
3	User clicks [Print Comparative Report].	System retrieves aggregated data grouped by Department.	
4	System generates a PDF including Department Name, Total Annual Vacation Days, Remaining Balance.	If Details flag = true, employee names are listed under each Department.	
5	System appends standard footer info on each page (Print Time, Page Number, Printed By).	System outputs PDF for user to download/print.	
BUSINESS VALIDATION RULES			
Rule ID	Description	Condition	Message ID
BV-1002	At least one Department must be selected or 'All Departments' chosen.	If Department field is empty	MSG-1002
BV-1003	Footer elements must appear on every page of the PDF.	If footer missing	MSG-902
EXCEPTIONS (ERROR CONDITIONS)			
ID	At Step	Issue	Resolution
EX-1	Step 2	No Department selected.	System blocks action and shows MSG-1002.
EX-2	Step 4	Report generation fails due to missing/invalid data.	System shows MSG-902.
POST-CONDITIONS			
1	System generates the Comparative Annual Report PDF.		
2	Report contains department totals and balances, with optional employee details.		
3	Standard footer is included on all pages.		
NOTES			
Note	The report period is derived from the entered Start Date and End Date: typically the calendar year.		
Note	If Start Date is after End Date, the system does not raise a validation error; it simply returns an empty result set.		
Note	Employee details appear only when the 'Details flag' is checked by the user.		
Note	The data dictionary for this report defines fields Department, Total Days, Balance, Employee Name (optional), Period, and Footer Info.		

Figure 15: UC-10: Print Comparative Annual Report Use Case

### 5.2.11 UC-11: Notifications Center

SUMMARY			
ID	UC-11		
Name	Notifications Center		
Goal	To inform users of vacation-related events and provide quick access to related details or actions.		
Actors	Employees, Managers, HR, General Management		
TRIGGERS			
Trigger	Vacation-related events occur in the system (e.g., request submission, approval, rejection, pending review, comments, attachment requirements).		
PRE-CONDITIONS			
1	User has valid system access.		
2	Relevant vacation transactions or actions exist in the system.		
BASIC FLOW (MAIN SUCCESS SCENARIO)			
#	Actor Action	System Response	
1	User navigates to the Notifications Center screen.	System displays a chronological list of notifications, newest first.	
2	User reviews Notification Text (Action Type, Vacation Details, Employee Name, Context).	System shows card-style notifications with clear hierarchy.	
3	User clicks [View] button on a notification.	System opens the detailed view of the related vacation request.	
4	User clicks the [Context Button] on a notification.	System navigates the user to the relevant section (e.g., 'My Requests' or 'Pending Tasks').	
5	User takes no action.	System continues to display notifications until they are marked as read or expire based on rules.	
NOTIFICATION TYPES			
Type	Example Text		
Approval	Annual Leave (20–25 Aug, 6 days) for Omar Abdelrahman was approved.		
Rejection	Sick Leave (12–14 Sep, 3 days) for Omar Abdelrahman was rejected. Reason: No medical note.		
Pending Approval	Annual Leave (18–20 Sep, 3 days) for Omar Abdelrahman is pending manager approval.		
Review Notes	Reviewer Ahmed Mostafa left a note on Casual Leave (02–03 Oct): 'Please adjust dates.'		
Attachment Review	Sick Leave (05–06 Oct, 2 days) for Omar Abdelrahman needs attachment review.		
General Updates	General notification to stakeholders when requests are submitted, approved, rejected, or cancelled.		
BUSINESS RULES			
Rule ID	Description		
BR-1101	System displays notifications relevant to the logged-in user's role (Employee, Manager, HR, etc.).		
BR-1102	Notifications appear in reverse chronological order, newest first.		
BR-1103	Employees must receive notifications upon request acceptance or rejection.		
BR-1104	Approved vacation cancellations trigger notifications for both HR and the Manager.		
BR-1105	When HR and Managers are notified, only the header with a link is shown; full request details are visible after clicking the link.		
BR-1106	Each notification must contain text and at least one actionable button ([View] or Context).		
EXCEPTIONS (ERROR CONDITIONS)			
ID	At Step	Issue	Resolution
EX-1	Step 1	No notifications available.	System displays an empty state message: MSG-1101.
EX-2	Step 3	User clicks [View] but underlying request has been deleted or is inaccessible.	System shows message: MSG-1102.
POST-CONDITIONS			
1	User is informed about vacation-related actions through notifications.		
2	User can access related screens (detailed request or task list) directly from notifications.		
3	Notifications remain available until acknowledged, expired, or cleared by system rules.		
NOTES			
Note	Notification cards follow a clean layout with clear text hierarchy and action buttons.		
Note	System ensures contextual navigation via [View] or [Context] buttons.		

Figure 16: UC-11: Notifications Center Use Case

### 5.2.12 UC-12: Automated Update of Employee Annual Vacation Balance

SUMMARY			
ID	UC-12		
Name	Automated Update of Employee Annual Vacation Balance		
Goal	To ensure employee vacation balances are automatically calculated, updated, and compliant with policies, without manual overrides.		
Actors	System (primary), Employee (view-only), General Manager (approval trigger)		
TRIGGERS			
Trigger-1	General Manager approves a vacation request.		
Trigger-2	Annual allocation is applied (21 or 30 days entitlement based on policy).		
Trigger-3	Employee eligibility changes (10+ years of service or age ≥ 50).		
PRE-CONDITIONS			
1	Employee is an eligible full-time Muslim Saudi employee (trainees are excluded).		
2	Vacation Types Master Data defines annual entitlement (21 or 30 days).		
3	Employee Master Data includes Hire Date and Birth Date (for entitlement eligibility).		
4	Vacation request has passed the multi-level approval workflow up to General Manager.		
BASIC FLOW (MAIN SUCCESS SCENARIO)			
#	Actor Action	System Response	
1	General Manager approves an employee's vacation request.	System immediately recalculates the employee's vacation balance (Total – Taken – Pending = Balance).	
2	System applies entitlement rules (21 or 30 days depending on service/age).	Balance is updated accordingly in Employee Master Data.	
3	Employee views their vacation balance and history in view-only mode.	System displays updated balance and vacation access history report.	
4	At the start of a new calendar year.	System assigns annual entitlement (21 or 30 days), without carrying forward unused days.	
BUSINESS RULES			
Rule ID	Description		
BR-1201	Leave Balance = Total – Taken – Pending.		
BR-1202	Vacation balance updates immediately after General Manager approval.		
BR-1203	Annual entitlement is 21 days; increased to 30 days if service ≥ 10 years or age ≥ 50.		
BR-1204	Unused days are forfeited at year-end (no carryover or compensation).		
BR-1205	Vacation Types supported: Annual and Sick only.		
BR-1206	No overlapping requests are allowed for the same employee.		
BR-1207	Trainees are not eligible to submit vacation requests.		
BR-1208	Manual overrides of balance are not allowed (system-only updates).		
BR-1209	Vacation policies must be configurable for maintainability.		
BR-1210	System complies with Saudi vacation regulations only (Muslim Saudi, full-time employees).		
EXCEPTIONS (ERROR CONDITIONS)			
ID	At Step	Issue	Resolution
EX-1	Step 1	Balance calculation fails due to missing Employee Master Data fields.	System logs error and displays message: MSG-1201.
EX-2	Step 2	Employee is ineligible (trainee or outside Saudi regulation scope).	System blocks request and shows message: MSG-1202.
EX-3	Step 3	User attempts to manually override balance.	System prevents override and enforces automation rule.
POST-CONDITIONS			
1	Vacation balances are always up-to-date and auto-calculated.		
2	Employees can view, but not edit, their vacation balances and history.		
3	System enforces organizational vacation policies automatically.		
NOTES			
Note	System recalculates vacation balances immediately after GM approval.		

Figure 17: UC-12: Automated Update of Employee Annual Vacation Balance Use Case

### 5.3 System Component Mapping and Traceability

The following table provides a comprehensive mapping between use cases, business rules, functional requirements, user interfaces, and data entities to ensure complete traceability:

Use Case	Business Rules	Functional Requirements	User Interfaces	Data Entities
UC-1	BR-001, BR-002, BR-003, BR-011, BR-012, BR-013, BR-014	FR-001	Vacation Request Screen	Employee Master, Vacation Request, Vacation Types
UC-2	BR-015, BR-016	FR-002	Vacation Cancellation Screen	Vacation Cancellation, Vacation Request
UC-3	BR-015, BR-016	FR-002	My Vacation Requests Screen	Vacation Request, Vacation Cancellation
UC-4	BR-006, BR-007, BR-008, BR-009, BR-014	FR-003	Review Vacation Request Screen	Vacation Request, Approval History
UC-5	BR-015, BR-016, BR-009	FR-003	Review Cancellation Screen	Vacation Cancellation, Approval History
UC-6	BR-006, BR-007	FR-003	Pending Requests Screen	Vacation Request, Approval History
UC-7	BR-018	FR-004	Inquiry Search Parameters	Employee Master, Departments, Vacation Types
UC-8	BR-018	FR-004	Inquiry Search Results	Vacation Request, Employee Master
UC-9	BR-018	FR-005	Single Transaction Report	Vacation Request, Employee Master, Approval History
UC-10	BR-018	FR-005	Comparative Report	Employee Master, Departments, Vacation Request
UC-11	BR-017	FR-007	Notifications Center	Notification Data
UC-12	BR-001, BR-002, BR-008, BR-019	FR-006	System Process	Employee Master, Vacation Request

This mapping ensures that:

- Each use case is supported by appropriate business rules
- Functional requirements are derived from use cases
- User interfaces are designed for specific use cases
- Data entities support all system operations
- Complete traceability is maintained throughout the system

## 6 User Stories

This section provides user stories that complement the use cases by describing system functionality from the user's perspective. User stories follow the format "As a [role], I want [feature] so that [benefit]."

### 6.1 User Story Summary

The system implements 12 user stories that correspond to the core use cases:

ID	User Story Name	Primary Actor	Business Rules
US-1	Employee Submits Vacation Request	Employee	BR-001, BR-002, BR-003, BR-011, BR-012, BR-013, BR-014
US-2	Employee Submits Vacation Cancellation Request	Employee	BR-015, BR-016
US-3	Employee Views My Vacation Requests	Employee	BR-015, BR-016
US-4	Manager Reviews Vacation Request	Manager/HR/GM	BR-006, BR-007, BR-008, BR-009, BR-014
US-5	Manager Reviews Vacation Cancellation Request	Manager/HR	BR-015, BR-016, BR-009
US-6	Manager Views Pending Vacation Requests	Manager/HR	BR-006, BR-007
US-7	Employee Searches Vacation Inquiry	HR/Managers/Employee	BR-018
US-8	Employee Views Vacation Inquiry Search Results	HR/Managers/Employee	BR-018
US-9	Employee Prints Single Vacation Transaction Report	HR/Managers/Employee	BR-018
US-10	Employee Prints Comparative Annual Report	HR/Managers/GM	BR-018
US-11	Employee Accesses Notifications Center	All Users	BR-017
US-12	System Automatically Updates Employee Annual Vacation Balance	System	BR-001, BR-002, BR-008, BR-019

Table 5: User Story Summary with Business Rule References

## 6.2 User Story Details

The following user stories are implemented in the system:

### 6.2.1 US-1: Employee Submits Vacation Request

SUMMARY	
ID	UC-1
Epic	Vacation Request Management
Title	Employee Submits Vacation Request
Priority	High
Status	In Progress
USER STORY	
1	As an Employee, I want to submit a vacation request and route it to my manager for approval, so that I can schedule my time off and receive official acknowledgment.
TRIGGER	
Trigger	Employee initiates a new vacation request in the portal.
ACCEPTANCE CRITERIA	
#	Criteria
1	Given the employee navigates to 'Request Vacation', when the system displays the vacation request form (Screen 1), then it includes <b>auto-filled, read-only fields for Employee Name and Employee ID</b> , <b>mandatory input fields for Vacation Type (with 'Annual'   'Sick' options)</b> , <b>Start Date, and End Date</b> , an auto-calculated, read-only field for Period (Days), an optional text area for Notes, and a File Upload Area for Attachments. The form also displays the <b>current leave balance</b> .
2	Given the employee enters a Start Date and End Date, when the system performs real-time validation, then the <b>Start Date must not be in the past</b> , and the <b>End Date must be strictly after the Start Date</b> .
3	Given 'Sick' leave is selected as the <b>Vacation Type</b> , when the employee attempts to submit the request, then the system <b>requires a medical certificate attachment</b> for successful submission.
4	Given the <b>requested days do not exceed the employee's available leave balance</b> and all other validations pass, when the employee clicks 'Submit', then the system <b>saves the request</b> , assigns a unique Request ID, and sets its initial status to 'Pending Approval'.
5	Given an <b>insufficient leave balance</b> for the requested period, when the employee attempts to submit the request, then the system <b>blocks submission</b> and displays an error message (e.g., MSG-102).
6	Given the employee selects <b>dates that overlap an existing vacation request</b> for the same employee, when they proceed with the request, then the system <b>warns the employee about the overlap</b> and allows them to <b>confirm or adjust the dates</b> .
7	Given the employee is identified as a <b>trainee</b> , when they attempt to submit a vacation request, then the system <b>blocks the request submission</b> .
8	When the employee clicks 'Submit', then the submission operation should complete <b>within 120 seconds</b> .
9	Given the <b>HR database is unavailable</b> during submission, when the employee clicks 'Submit', then the system <b>shows an error</b> and prompts the employee to retry later.
NOTES	
Dependencies	The employee must be <b>authenticated</b> in the HR system and possess a <b>non-zero leave balance</b> for a request to be submitted. The system relies on <b>Employee Master Data</b> and <b>Vacation Types Master Data</b> for accurate information and policy enforcement. The system integrates with existing HR systems.
Remark	This use case is designed for <b>full-time Muslim Saudi employees, excluding trainees</b> . Requests can be <b>modified before submission, but not afterwards</b> . Upon successful submission, the request is stored with a 'Pending Approval' status, the manager is notified, and the employee can track the status from their dashboard. The annual leave entitlement is <b>21 days</b> , increasing to <b>30 days for employees with over 10 years of service or those aged 50 and above</b> . Unused vacation days are <b>forfeited annually</b> without carryover or compensation. Only <b>Annual and Sick leave types</b> are supported.

Figure 18: US-1: Employee Submits Vacation Request User Story

### 6.2.2 US-2: Employee Submits Vacation Cancellation Request

SUMMARY	
ID	US-002
Epic	Vacation Management
Title	Employee Submits Vacation Cancellation Request
Priority	High
Status	Todo
USER STORY	
1	As an employee, I want to submit a vacation cancellation request so that I can cancel my approved vacation when needed.
TRIGGER	
Trigger	Employee needs to cancel an approved vacation request due to changed circumstances.
ACCEPTANCE CRITERIA	
#	Criteria
1	Given I have an approved vacation request, when I submit a cancellation request, then the system should mark it as pending cancellation.
2	Given I submit a cancellation request, when I provide a reason, then the system should store the cancellation reason.
3	Given I submit a cancellation request, when the request is submitted, then my manager should be notified.
4	Given I submit a cancellation request, when the request is approved, then my vacation balance should be restored.
NOTES	
Dependencies	Approved vacation request must exist, manager approval workflow
Remark	Cancellation requests should be tracked separately from regular vacation requests for audit purposes.

Figure 19: US-2: Employee Submits Vacation Cancellation Request User Story

### 6.2.3 US-3: Employee Views My Vacation Requests

SUMMARY	
ID	US-003
Epic	Vacation Management
Title	Employee Views My Vacation Requests
Priority	Medium
Status	Todo
USER STORY	
1	As an employee, I want to view all my vacation requests so that I can track their status and history.
TRIGGER	
Trigger	Employee navigates to 'My Vacation Requests' section to view their requests.
ACCEPTANCE CRITERIA	
#	Criteria
1	Given I am logged in, when I access 'My Vacation Requests', then I should see all my submitted vacation requests.
2	Given I view my requests, when the page loads, then each request should display Request ID, Vacation Type, Start Date, End Date, Status, and Submission Date.
3	Given I have multiple requests, when I view the list, then requests should be sorted by submission date (newest first).
4	Given I want to see request details, when I click on a request, then the system should show the complete request information.
NOTES	
Dependencies	Employee authentication, vacation request database
Remark	The view should be read-only and only show requests belonging to the logged-in employee.

Figure 20: US-3: Employee Views My Vacation Requests User Story

### 6.2.4 US-4: Manager Reviews Vacation Request

SUMMARY	
ID	US-004
Epic	Vacation Management
Title	Manager Reviews Vacation Request
Priority	High
Status	Todo
USER STORY	
1	As a manager, I want to review and approve/reject vacation requests from my team members so that I can manage team availability and ensure proper coverage.
TRIGGER	
Trigger	Manager receives notification of pending vacation request from team member.
ACCEPTANCE CRITERIA	
#	Criteria
1	Given I am a manager, when I access the review screen, then I should see the vacation request details including employee info, dates, and reason.
2	Given I review a request, when I make a decision, then I should be able to approve, reject, or request additional information.
3	Given I approve a request, when I submit my decision, then the employee should be notified and the request status should be updated.
4	Given I reject a request, when I provide a reason, then the rejection reason should be stored and communicated to the employee.
NOTES	
Dependencies	Manager role permissions, vacation request workflow, notification system
Remark	Managers should have access to team member vacation balances and company policies to make informed decisions.

Figure 21: US-4: Manager Reviews Vacation Request User Story

### 6.2.5 US-5: Manager Reviews Vacation Cancellation Request

SUMMARY	
ID	US-005
Epic	Vacation Management
Title	Manager Reviews Vacation Cancellation Request
Priority	High
Status	Todo
USER STORY	
1	As a manager, I want to review and approve/reject vacation cancellation requests from my team members so that I can manage team availability and handle schedule changes.
TRIGGER	
Trigger	Manager receives notification of pending vacation cancellation request from team member.
ACCEPTANCE CRITERIA	
#	Criteria
1	Given I am a manager, when I access the cancellation review screen, then I should see the original vacation request details and cancellation reason.
2	Given I review a cancellation request, when I make a decision, then I should be able to approve or reject the cancellation.
3	Given I approve a cancellation, when I submit my decision, then the employee should be notified and their vacation balance should be restored.
4	Given I reject a cancellation, when I provide a reason, then the rejection reason should be stored and communicated to the employee.
NOTES	
Dependencies	Manager role permissions, vacation cancellation workflow, notification system
Remark	Cancellation approvals should consider business impact and team coverage requirements.

Figure 22: US-5: Manager Reviews Vacation Cancellation Request User Story

### 6.2.6 US-6: Manager Views Pending Vacation Requests

SUMMARY	
ID	US-006
Epic	Vacation Management
Title	Manager Views Pending Vacation Requests
Priority	Medium
Status	Todo
USER STORY	
1	As a manager, I want to view all pending vacation requests from my team members so that I can prioritize and manage approvals efficiently.
TRIGGER	
Trigger	Manager accesses the pending vacation requests dashboard to review team requests.
ACCEPTANCE CRITERIA	
#	Criteria
1	Given I am a manager, when I access the pending requests dashboard, then I should see all vacation requests awaiting my approval.
2	Given I view pending requests, when the page loads, then each request should display Employee Name, Request ID, Vacation Type, Start Date, End Date, and Days Requested.
3	Given I have multiple pending requests, when I view the list, then requests should be sorted by submission date (oldest first).
4	Given I want to take action, when I click on a request, then I should be able to approve, reject, or request more information.
NOTES	
Dependencies	Manager role permissions, vacation request database, team member data
Remark	The dashboard should provide filtering options by date range, employee, and vacation type for better organization.

Figure 23: US-6: Manager Views Pending Vacation Requests User Story

### 6.2.7 US-7: Employee Searches Vacation Inquiry

SUMMARY	
ID	US-007
Epic	Vacation Management
Title	Employee Searches Vacation Inquiry
Priority	Medium
Status	Todo
USER STORY	
1	As an employee, I want to search for specific vacation information so that I can find relevant details quickly and efficiently.
TRIGGER	
Trigger	Employee needs to find specific vacation information and uses search functionality.
ACCEPTANCE CRITERIA	
#	Criteria
1	Given I am logged in, when I access the vacation inquiry search, then I should see search fields for Employee ID, Date Range, and Vacation Type.
2	Given I enter search criteria, when I click search, then the system should return matching vacation records.
3	Given I perform a search, when results are found, then I should see a list of matching vacation requests with basic details.
4	Given no results are found, when I search, then the system should display a 'No results found' message.
NOTES	
Dependencies	Employee authentication, vacation database, search functionality
Remark	Search results should respect privacy and only show information the employee has permission to access.

Figure 24: US-7: Employee Searches Vacation Inquiry User Story

### 6.2.8 US-8: Employee Views Vacation Inquiry Search Results

SUMMARY	
ID	US-008
Epic	Vacation Management
Title	Employee Views Vacation Inquiry Search Results
Priority	Medium
Status	Todo
USER STORY	
1	As an employee, I want to view detailed results from my vacation inquiry search so that I can access comprehensive information about vacation requests.
TRIGGER	
Trigger	Employee performs a vacation inquiry search and wants to view detailed results.
ACCEPTANCE CRITERIA	
#	Criteria
1	Given I perform a search, when results are displayed, then I should see a comprehensive list with Request ID, Employee Name, Vacation Type, Start Date, End Date, Status, and Days.
2	Given I view search results, when I click on a specific result, then I should see detailed information including notes and attachments.
3	Given I have multiple search results, when I view them, then they should be paginated with options to navigate between pages.
4	Given I want to export results, when I choose export, then I should be able to download results in CSV or PDF format.
NOTES	
Depend encies	Search functionality, vacation database, export capabilities
Remark	Results should be displayed in a user-friendly format with clear navigation and export options.

Figure 25: US-8: Employee Views Vacation Inquiry Search Results User Story

### 6.2.9 US-9: Employee Prints Single Vacation Transaction Report

SUMMARY	
ID	US-009
Epic	Vacation Management
Title	Employee Prints Single Vacation Transaction Report
Priority	Low
Status	Todo
USER STORY	
1	As an employee, I want to print a single vacation transaction report so that I can have a physical copy for my records or HR purposes.
TRIGGER	
Trigger	Employee needs a printed copy of a specific vacation transaction for documentation.
ACCEPTANCE CRITERIA	
#	Criteria
1	Given I select a vacation transaction, when I choose to print, then the system should generate a formatted report.
2	Given I print a report, when it's generated, then it should include all relevant transaction details in a professional format.
3	Given I print a report, when it's displayed, then I should have options to print or save as PDF.
4	Given I print a report, when it's printed, then the output should be clear and suitable for official use.
NOTES	
Depend encies	Vacation transaction data, report generation system, printing capabilities
Remark	Reports should be formatted professionally and include all necessary information for official documentation.

Figure 26: US-9: Employee Prints Single Vacation Transaction Report User Story

### 6.2.10 US-10: Employee Prints Comparative Annual Report

SUMMARY	
ID	US-010
Epic	Vacation Management
Title	Employee Prints Comparative Annual Report
Priority	Low
Status	Todo
USER STORY	
1	As an employee, I want to print a comparative annual vacation report so that I can analyze my vacation patterns and usage over multiple years.
TRIGGER	
Trigger	Employee needs to generate and print a comparative annual vacation report for analysis or HR purposes.
ACCEPTANCE CRITERIA	
#	Criteria
1	Given I select annual report parameters, when I choose to generate, then the system should create a comparative report across multiple years.
2	Given I generate a report, when it's created, then it should include vacation usage patterns, balances, and trends over the selected years.
3	Given I view the report, when it's displayed, then I should have options to print or save as PDF.
4	Given I print the report, when it's printed, then the output should be clear and suitable for analysis and documentation.
NOTES	
Dependencies	Multi-year vacation data, report generation system, comparative analysis tools
Remark	Reports should provide meaningful insights and be formatted for easy reading and analysis.

Figure 27: US-10: Employee Prints Comparative Annual Report User Story

### 6.2.11 US-11: Employee Accesses Notifications Center

SUMMARY	
ID	US-011
Epic	Vacation Management
Title	Employee Accesses Notifications Center
Priority	Medium
Status	Todo
USER STORY	
1	As an employee, I want to access the notifications center so that I can stay informed about my vacation request status and important updates.
TRIGGER	
Trigger	Employee wants to check for notifications about vacation requests or system updates.
ACCEPTANCE CRITERIA	
#	Criteria
1	Given I am logged in, when I access the notifications center, then I should see all my relevant notifications.
2	Given I view notifications, when they are displayed, then they should be sorted by date (newest first) and show read/unread status.
3	Given I have unread notifications, when I click on one, then it should be marked as read and show full details.
4	Given I want to manage notifications, when I access the center, then I should have options to mark all as read or clear old notifications.
NOTES	
Dependencies	Notification system, user authentication, notification database
Remark	Notifications should be clear, actionable, and respect user preferences for frequency and types.

Figure 28: US-11: Employee Accesses Notifications Center User Story

### 6.2.12 US-12: System Automatically Updates Employee Annual Vacation Balance

SUMMARY	
ID	US-012
Epic	Vacation Management
Title	System Automatically Updates Employee Annual Vacation Balance
Priority	Medium
Status	Todo
USER STORY	
1	As a system administrator, I want the system to automatically update employee annual vacation balances so that leave entitlements are accurately maintained without manual intervention.
TRIGGER	
Trigger	System scheduled job runs to update vacation balances based on company policies and employee service dates.
ACCEPTANCE CRITERIA	
#	Criteria
1	Given the annual update process runs, when it executes, then all eligible employees should have their vacation balances updated according to company policy.
2	Given an employee's service anniversary, when the update runs, then their vacation entitlement should be recalculated based on years of service.
3	Given the update process completes, when it finishes, then a log should be generated showing all changes made.
4	Given any errors occur during the update, when they happen, then the system should log the errors and notify administrators.
NOTES	
Dependencies	Employee service data, company vacation policies, automated scheduling system
Remark	This process should run automatically and handle edge cases such as employees with special entitlements or policy exceptions.

Figure 29: US-12: System Automatically Updates Employee Annual Vacation Balance User Story

## 7 Functional Requirements

This section lists what the system must do. Each functional requirement references applicable business rules (Section 4) and is traced to use cases (Section 5) and user stories (Section 6), where detailed flows illustrate scenarios. Avoid duplicating scenario steps here; use cases and user stories serve as the canonical behavioral narratives.

### 7.1 FR-001: Vacation Request Management

**Description:** The system must allow employees to create and submit vacation requests. **Inputs:** Start date, end date, vacation type, notes, attachments **Processing:** Validate dates, check balance, calculate period, prevent overlaps **Outputs:** Request ID, confirmation message, workflow initiation **Business Rules:** BR-001, BR-002, BR-003, BR-011, BR-012, BR-013, BR-014 **Use Cases:** UC-1

### 7.2 FR-002: Vacation Cancellation Management

**Description:** The system must allow employees to cancel pending or approved vacation requests. **Inputs:** Cancellation reason, original request reference **Processing:** Validate cancellation eligibility, create cancellation request **Outputs:** Cancellation request ID, approval workflow initiation **Business Rules:** BR-015, BR-016 **Use Cases:** UC-2, UC-3

### 7.3 FR-003: Multi-Level Approval Workflow

**Description:** The system must implement a four-level approval process with automatic escalation. **Inputs:** Manager decisions, reasons, approval levels **Processing:** Route through approval hierarchy, track decisions, escalate delays **Outputs:** Approval status updates, notifications, workflow progression **Business Rules:** BR-006, BR-007, BR-008, BR-009 **Use Cases:** UC-4, UC-6

### 7.4 FR-004: Vacation Inquiry and Search

**Description:** The system must provide comprehensive search and inquiry capabilities. **Inputs:** Search criteria (dates, department, employee, type, status) **Processing:** Apply filters, execute search, paginate results **Outputs:** Filtered results grid, export options, pagination controls **Business Rules:** BR-018 **Use Cases:** UC-7, UC-8

### 7.5 FR-005: Report Generation

**Description:** The system must generate PDF reports for vacation data. **Inputs:** Report parameters, data selection, format preferences **Processing:** Format data, generate PDF, include standard footer **Outputs:** PDF report with complete details and footer information **Business Rules:** BR-018 **Use Cases:** UC-9, UC-10

### 7.6 FR-006: Automated Balance Management

**Description:** The system must automatically calculate and update employee vacation balances. **Inputs:** Approval triggers, entitlement rules, usage data **Processing:** Calculate balance, apply entitlement rules, update records **Outputs:** Updated vacation balances, audit trail **Business Rules:** BR-001, BR-002, BR-008, BR-019 **Use Cases:** UC-12

### 7.7 FR-007: Notification System

**Description:** The system must provide real-time notifications for all stakeholders. **Inputs:** System events, user preferences, notification types **Processing:** Generate notifications, deliver to users, track delivery **Outputs:** User notifications, delivery confirmations **Business Rules:** BR-017 **Use Cases:** UC-11

## 8 Non-Functional Requirements

### 8.1 Performance Requirements

#### 8.1.1 NFR-001: Response Time

**Requirement:** Page load must complete within 3 seconds from user click to interactive display. **Measurement:** Time from HTTP request initiation to page render completion. **Applicable Use Cases:** All user interface interactions.

### 8.1.2 NFR-002: Throughput

**Requirement:** System must support 100+ concurrent users without performance degradation. **Measurement:** Response time remains under 3 seconds with 100 simultaneous users. **Applicable Use Cases:** All system functions.

### 8.1.3 NFR-003: Availability

**Requirement:** System must maintain 99.5% uptime during business hours (8 AM - 6 PM, Sunday-Thursday). **Measurement:** Monthly uptime calculation excluding scheduled maintenance. **Applicable Use Cases:** All system functions.

### 8.1.4 NFR-004: Scalability

**Requirement:** System must support up to 1000 employees without architectural changes. **Measurement:** Performance metrics remain within acceptable ranges at maximum capacity. **Applicable Use Cases:** All system functions.

### 8.1.5 NFR-005: PDF Generation

**Requirement:** PDF report generation must complete within 5 seconds for standard reports. **Measurement:** Time from report request to PDF download availability. **Applicable Use Cases:** UC-9, UC-10.

## 8.2 Security Requirements

### 8.2.1 NFR-006: Authentication

**Requirement:** System must implement secure login with session management. **Implementation:** Multi-factor authentication, session timeout after 30 minutes of inactivity. **Applicable Use Cases:** All system access.

### 8.2.2 NFR-007: Authorization

**Requirement:** System must implement role-based access control. **Implementation:** User permissions based on organizational role and hierarchy. **Applicable Use Cases:** All system functions.

### 8.2.3 NFR-008: Data Protection

**Requirement:** System must encrypt sensitive employee information. **Implementation:** AES-256 encryption for data at rest and in transit. **Applicable Use Cases:** All data handling functions.

### 8.2.4 NFR-009: Audit Trail

**Requirement:** System must log all activities for audit purposes. **Implementation:** Comprehensive logging of user actions, system events, and data changes. **Applicable Use Cases:** All system functions.

### 8.2.5 NFR-010: Input Validation

**Requirement:** System must prevent SQL injection and XSS attacks. **Implementation:** Input sanitization, parameterized queries, output encoding. **Applicable Use Cases:** All user input functions.

## 8.3 Usability Requirements

### 8.3.1 NFR-011: User Interface

**Requirement:** System must provide intuitive, responsive design. **Implementation:** Modern web standards, consistent navigation, clear visual hierarchy. **Measurement:** SUS score  $\geq 80$  from usability tests. **Applicable Use Cases:** All user interface interactions.

### 8.3.2 NFR-012: Accessibility

**Requirement:** System must comply with WCAG 2.1 AA standards. **Implementation:** Screen reader support, keyboard navigation, color contrast compliance. **Applicable Use Cases:** All user interface interactions.

### 8.3.3 NFR-013: Multi-language Support

**Requirement:** System must support Arabic and English languages. **Implementation:** Localized interface, right-to-left text support, cultural adaptations. **Applicable Use Cases:** All user interface interactions.

### 8.3.4 NFR-014: Mobile Support

**Requirement:** System must provide responsive design for all devices. **Implementation:** Mobile-first design, touch-friendly interfaces, adaptive layouts. **Measurement:** Lighthouse mobile performance score  $\geq 80$ . **Applicable Use Cases:** All user interface interactions.

### 8.3.5 NFR-015: Error Handling

**Requirement:** System must provide clear, actionable error messages. **Implementation:** User-friendly error descriptions with specific resolution steps. **Applicable Use Cases:** All system functions.

## 8.4 Reliability Requirements

### 8.4.1 NFR-016: Error Handling

**Requirement:** System must handle errors gracefully without data loss. **Implementation:** Comprehensive error catching, user notification, automatic recovery where possible. **Applicable Use Cases:** All system functions.

#### 8.4.2 NFR-017: Data Integrity

**Requirement:** System must prevent data corruption and maintain consistency. **Implementation:** Transaction management, referential integrity, validation checks. **Applicable Use Cases:** All data operations.

#### 8.4.3 NFR-018: Backup and Recovery

**Requirement:** System must provide daily automated backups with 4-hour maximum recovery time. **Implementation:** Automated backup scheduling, point-in-time recovery capability. **Applicable Use Cases:** All system functions.

#### 8.4.4 NFR-019: Validation

**Requirement:** System must implement comprehensive business rule validation. **Implementation:** Real-time validation, business rule enforcement, error prevention. **Applicable Use Cases:** All data input functions.

## 9 User Interface Overview

This section provides a high-level overview of the user interface structure and references the comprehensive wireframes. Detailed visual specifications are centralized in Appendix C: Wireframe Images.

### 9.1 Core Application Screens

The application includes the following primary screens: Vacation Request, Vacation Cancellation Request, Review Vacation Request, Review Vacation Cancellation, My Vacation Requests, Pending Requests, Notifications Center, and Inquiry (Search Parameters and Results). For full layouts and annotations, see Appendix C.

### 9.2 Report Layout Screens

Single Transaction Report and Annual Comparative Report layouts are provided in Appendix C with full details.

### 9.3 Additional Screens

Requests Center and Annual Comparative Report Search Parameters are provided in Appendix C.

## 10 Data Requirements Overview

This section provides a high-level overview of the system's data entities and references a centralized appendix for complete data dictionaries and field definitions.

## 10.1 Master Data

Employee, Departments, and Vacation Types constitute the core master data used across the system. Complete field definitions, constraints, and validation rules are provided in Appendix B.2.

## 10.2 Operational Data

Vacation Requests, Vacation Cancellations, Approval History, and Notification Data constitute the operational entities. See Appendix B.2 for full data dictionaries.

## 10.3 Notifications Data Table

The notifications data model supports actionable alerts with deep links to relevant screens.

Field	Definition
NotificationID (PK)	Unique identifier for the notification
Type	Category: Workflow, Validation, Error, Success, Info
Severity	Level: Info, Warning, Critical
RecipientUserId/Role	Target user or role (Employee, Manager, HR, GM)
TriggerEvent	System event that generated the notification (e.g., UC-4 approval)
MessageTemplate	i18n-enabled template with placeholders
ContextParams	Key-value parameters (RequestID, EmployeeID, etc.)
ActionButtons	[View], [Context] with routes and parameters
TargetScreen	Destination screen identifier (e.g., Review Vacation Request)
DeliveryChannel	In-app, Email, Push (configurable)
IsRead / ReadAt	Read tracking fields
CreatedAt / ExpiresAt	Timestamps for creation and expiry

## 11 System Messages

This section provides a concise lookup for system messages.

## 11.1 System Messages Table

Message ID	Short Description	Category
MSG-001	Request submitted successfully	Success
MSG-002	Approval required by manager	Workflow
MSG-003	Request rejected: reason provided	Workflow
MSG-004	Balance updated after GM approval	Workflow
MSG-005	Validation error: invalid dates	Validation
MSG-006	Validation error: insufficient balance	Validation
MSG-007	Attachment required for sick leave	Validation

MSG-008

System error: please try again later

Error

### 11.1.1 Full Messages Table (Reference Images)

The following consolidated tables visualize the full list of system messages referenced by Message ID:

Messages							
Centralized catalog of user/system messages with unique IDs for cross-referencing in use cases							
Message ID	Name	Audience	Category	Trigger/Context	Text	Related Use Case IDs	Notes
MSG-101	End Date Validation	User	Error	Date validation	End date must be strictly after start date.	UC-1	Basic date validation rule
MSG-102	Leave Balance Exceeded	User	Error	Balance validation	Requested days exceed available leave balance.	UC-1	Prevents over-booking
MSG-103	Medical Certificate Required	User	Error	Document validation	Medical certificate attachment is required for Sick leave.	UC-1	Mandatory for sick leave type
MSG-201	Cancellation Date Validation	User	Error	Cancellation timing	Cancellation must occur before vacation start date.	UC-2	Prevents late cancellations
MSG-202	Invalid Status for Cancellation	User	Error	Status validation	Only requests in Pending or Approved status can be cancelled.	UC-2	Status-based restriction
MSG-203	Data Inconsistency	System	Error	Data validation	Cancellation request data must match original request.	UC-2	Data integrity check
MSG-204	Cancellation After Start Date	User	Error	Cancellation timing	Cancellation attempted after start date.	UC-2	Prevents cancellation of active vacations
MSG-205	Invalid Status for Cancellation Action	User	Error	Status validation	Request not in Pending or Approved status.	UC-2	Status-based restriction
MSG-301	Invalid Approval Action	User	Error	Approval workflow	Only pending requests can be approved or rejected.	UC-3	Prevents action on finalized requests
MSG-302	Missing Approver Comment	User	Error	Approval justification	Rejection requires a mandatory comment.	UC-3	Ensures rejection reason is documented
MSG-303	Duplicate Approval Action	System	Error	Workflow validation	This request has already been processed.	UC-3	Prevents double approvals/rejections
MSG-304	Request Details Not Found	User	Error	Data retrieval	Request details not found.	UC-3	Data availability error
MSG-401	HR Access Only	User	Error	Permission validation	Only HR staff can modify approved vacation records.	UC-4	Restricts unauthorized modifications
MSG-402	Mandatory Justification	User	Error	Modification validation	Modification requires a justification comment.	UC-4	Ensures changes are logged with reasons
MSG-403	Invalid Record State	System	Error	Data state validation	Only approved requests can be modified by HR.	UC-4	Prevents changes to pending or cancelled requests
MSG-501	Vacation Already Started	User	Error	Cancellation review	Reviewer attempts to review cancellation for a vacation already started.	UC-5	Prevents review of active vacations
MSG-502	Invalid Request Status for Cancellation Review	User	Error	Status validation	Original request status is not Pending or Approved.	UC-5	Status-based restriction for cancellation review
MSG-503	Accrual Limit Reached	System	Error	Vacation accrual	Employee has reached the maximum allowable vacation balance.	UC-5	Enforces balance caps
MSG-504	Negative Balance Prevention	System	Error	Balance update	Vacation balance cannot become negative.	UC-5	Prevents invalid deductions
MSG-505	Carryover Validation	System	Error	Year-end processing	Carryover days exceed policy limit.	UC-5	Validates carryover rules

Figure 30: System Messages Table (Part 1)

Message ID	Name	Audience	Category	Trigger/Context	Text	Related Use Case IDs	Notes
MSG-601	No Pending Requests	User	Info	Empty state	No Pending Requests	UC-6	Empty state message when no pending requests exist
MSG-701	Search Parameters Required	User	Error	Search validation	Search parameters are required.	UC-7	Ensures search criteria are provided
MSG-702	Invalid Date Range	User	Error	Date validation	From Date is after To Date.	UC-7	Date range validation error
MSG-703	Department Not Found	User	Error	Data validation	Department not found in master data.	UC-7	Department data validation error
MSG-801	Print Not Available	User	Error	Print validation	Print option is available only for Approved requests.	UC-8, UC-9	Print access restriction for non-approved requests
MSG-901	Report Generation Failed	User	Error	Report generation	Failed to generate report. Please try again.	UC-9	Report generation error
MSG-1001	Comparative Report Failed	User	Error	Report generation	Failed to generate comparative report. Please try again.	UC-10	Comparative report generation error
MSG-1002	Department Selection Required	User	Error	Report validation	At least one Department must be selected.	UC-10	Department selection validation
MSG-902	Report Generation Failed - Data Missing	User	Error	Report generation	Unable to generate report – required data missing.	UC-10	Data validation error for report generation
MSG-1101	No Notifications	User	Info	Empty state	No new notifications.	UC-11	Empty state message when no notifications exist
MSG-1102	Request Not Available	User	Error	Data access	Request not available.	UC-11	Request accessibility error
MSG-1201	Balance Update Failed	System	Error	Balance calculation	Unable to update balance – employee data incomplete.	UC-12	Employee data validation error
MSG-1202	Employee Not Eligible	System	Error	Eligibility validation	Vacation request not permitted for this employee type.	UC-12	Employee eligibility restriction

Figure 31: System Messages Table (Part 2)

## 11.2 Message Categories

- **Validation:** Field and business rule violations
- **Workflow:** Approval and process progression updates

- **Notification:** General alerts and reminders
- **Error:** System/runtime errors
- **Success:** Operation confirmations

## 12 Glossary

- **Vacation:** Time off from work for personal reasons
- **Leave Balance:** Remaining vacation days available
- **Approval Workflow:** Process for request authorization
- **Escalation:** Automatic forwarding of delayed requests
- **Attachments:** Supporting documents for requests
- **Entitlement:** Annual vacation days allocation
- **Trainee:** Employee in training status, ineligible for vacation
- **Business Rule:** System behavior rule that governs functionality
- **Use Case:** Specific interaction scenario between users and system

## 13 Data Models

- Entity-Relationship Diagrams
- Database Schema Definitions
- API Specification Documents
- Integration Interface Definitions
- Master Data Entity Definitions

### 13.1 Entity Relationship Diagram (Conceptual)

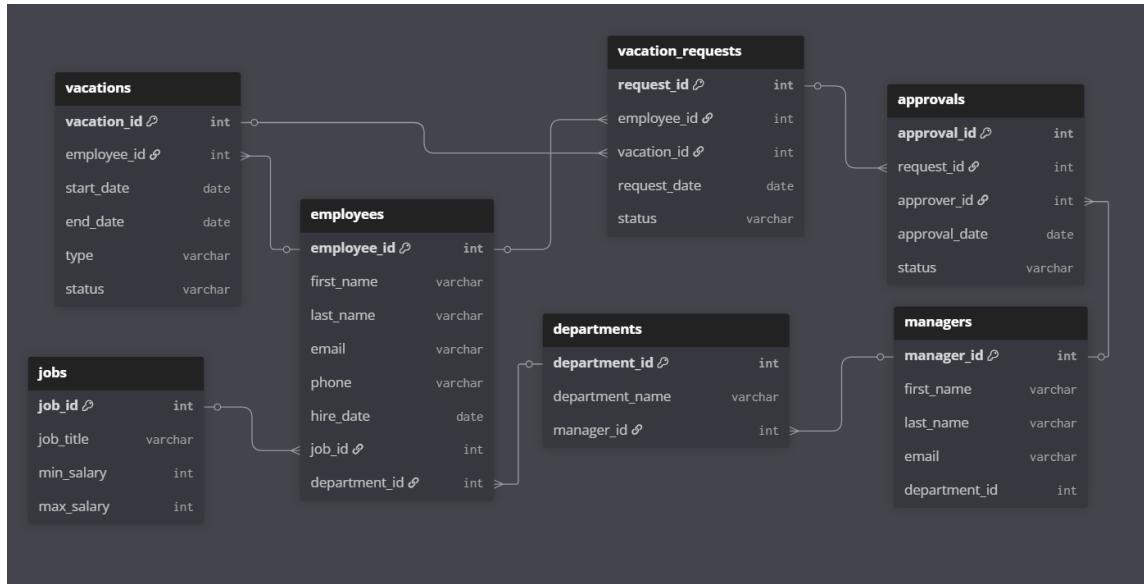


Figure 32: Conceptual ERD: Core entities and relationships

### 13.2 Data Dictionary Template

The following image shows the standard data dictionary template used for documenting all system data entities:

#### Vacation Request Screen - Data Dictionary

Complete field specifications for the Vacation Request interface

Field Name	Data/UI Type	Is Required	Data Source	Business Rules	Default Values
Employee ID	Text Input (Read-only)	Yes	Employee Master	Unique identifier; auto-filled; cannot be changed	Auto-filled
Employee Name	Text Input (Read-only)	Yes	Employee Master	Full legal name; auto-filled	Auto-filled
Vacation Type	Dropdown (Annual, Sick)	Yes	Vacation Types	Must select valid type	None
Start Date	Date Picker	Yes	User Input	Cannot be in past; must be < End Date	Today+1
End Date	Date Picker	Yes	User Input	Must be after Start Date	None
Period (Days)	Text Display (Read-only)	Yes	System Calculation	End Date - Start Date + 1	Auto-calculated
Notes	Textarea	No	User Input	Optional comments	Blank
Attachments	File Upload	Conditional	User Upload	Mandatory for Sick Leave; optional for Annual Leave	None

Figure 33: Data Dictionary Template

### 13.3 Comprehensive Data Dictionaries

This appendix consolidates all master and screen-level data dictionaries.

#### Employee Master Data - Data Dictionary

Complete field specifications for the Employee Master Data interface

Field Name	Data/UI Type	Is Required	Data Source	Business Rules	Default Values
<b>Employee ID</b>	Text	Yes	HR System	Unique; Primary Key	Auto-assigned
<b>Employee Name</b>	Text	Yes	HR System	Full legal name	None
<b>Department</b>	Dropdown	Yes	Department Master	Must map to valid department	None
<b>Job Title</b>	Text	Yes	HR System	Used in reporting	None
<b>Employee Status</b>	Enum	Yes	HR System	Active, Trainee, Inactive; Trainees not eligible	Active
<b>Hire Date</b>	Date	Yes	HR System	Used to calculate entitlement (21/30 days rule)	None
<b>Annual Vacation Balance</b>	Number	Yes	System Calc	Auto-updated by the system whenever the employee's balance changes	Auto-calc

Figure 34: Employee Master Data Dictionary

#### Departments Master Data - Data Dictionary

Complete field specifications for the Departments Master Data interface

Field Name	Data/UI Type	Is Required	Data Source	Business Rules	Default Values
<b>Department ID</b>	Text	Yes	Config	Unique ID	Auto-assigned
<b>Department Name</b>	Text	Yes	Config	Used in filters, reports, and groupings	None
<b>Description</b>	Textarea	No	Config	Optional; up to 500 characters	None
<b>Department Manager</b>	Employee Lookup	No	Employee Master Data	Must reference an active employee; used for approvals and escalations	None
<b>Location</b>	Text	No	Config	Used for reporting and filtering	None
<b>Parent Dept</b>	Text (Optional)	No	Config	Supports hierarchy if needed	Null

Figure 35: Departments Master Data Dictionary

## Vacation Types Master Data - Data Dictionary

Complete field specifications for the Vacation Types Master Data interface

Field Name	Data/UI Type	Is Required	Data Source	Business Rules	Default Values
<b>Vacation Type</b>	Enum	Yes	Config	Annual, Sick only	None
<b>Active</b>	Boolean Toggle	Yes	Config	If false, type is hidden from selection; retrieval filters to Active=true	True
<b>Entitlement</b>	Number	Yes	Config	21 or 30 days depending on years of service	21 days
<b>Carry Over</b>	Boolean	Yes	Config	Annual: No carry-over; Sick: No carry-over	False
<b>Proof Required</b>	Boolean	Yes	Config	Sick leave requires attachment	True for Sick

Figure 36: Vacation Types Master Data Dictionary

## Master Data Dictionaries

### Vacation Request Screen - Data Dictionary

Complete field specifications for the Vacation Request interface

Field Name	Data/UI Type	Is Required	Data Source	Business Rules	Default Values
<b>Employee ID</b>	Text Input (Read-only)	Yes	Employee Master	Unique identifier; auto-filled; cannot be changed	<i>Auto-filled</i>
<b>Employee Name</b>	Text Input (Read-only)	Yes	Employee Master	Full legal name; auto-filled	<i>Auto-filled</i>
<b>Vacation Type</b>	Dropdown (Annual, Sick)	Yes	Vacation Types	Only active types are selectable (Active=true)	None
<b>Start Date</b>	Date Picker	Yes	User Input	Cannot be in past; must be < End Date; Date type: Gregorian or Hijri (set to Gregorian)	Today+1
<b>End Date</b>	Date Picker	Yes	User Input	Must be after Start Date; Date type: Gregorian or Hijri (set to Gregorian)	None
<b>Period (Days)</b>	Text Display (Read-only)	Yes	System Calculation	End Date - Start Date + 1	<i>Auto-calculated</i>
<b>Notes</b>	Textarea	No	User Input	Optional comments	Blank
<b>Attachments</b>	File Upload	Conditional	User Upload	Mandatory for Sick Leave; optional for Annual Leave	None

Figure 37: Vacation Request Screen Data Dictionary

## Vacation Cancellation Request Screen - Data Dictionary

Complete field specifications for the Vacation Cancellation Request interface

Field Name	Data/UI Type	Is Required	Data Source	Business Rules	Default Values
Request ID	Text Input (Read-only)	Yes	System	References existing approved vacation	Auto-filled
Employee ID	Text Input (Read-only)	Yes	Employee Master	Same employee who submitted the request	Auto-filled
Employee Name	Text Input (Read-only)	Yes	Employee Master	Same employee	Auto-filled
Vacation Type	Dropdown (Read-only)	Yes	Vacation Types	Same as original request	Auto-filled
Start Date	Date Picker (Read-only)	Yes	Original Request	Must not be started yet; must be < End Date; Date type: Gregorian or Hijri (set to Gregorian)	Auto-filled
End Date	Date Picker (Read-only)	Yes	Original Request	Must be after Start Date; Date type: Gregorian or Hijri (set to Gregorian)	Auto-filled
Reason	Textarea	No	User Input	Optional cancellation justification	Blank
Status	Enum (Pending/Approved/Rejected)	Yes	System	Must pass HR/Manager approval before final cancellation	Pending

Figure 38: Vacation Cancellation Request Screen Data Dictionary

## Review Vacation Request Screen - Data Dictionary

Complete field specifications for the Review Vacation Request interface

Field Name	Data/UI Type	Is Required	Data Source	Business Rules	Default Values
Request ID	Text Display (Read-only)	Yes	System	Unique request identifier	Auto-generated
Employee ID	Text Display (Read-only)	Yes	Employee Master	Same as original request	Auto-filled
Employee Name	Text Display (Read-only)	Yes	Employee Master	Full employee name	Auto-filled
Department	Text Display (Read-only)	Yes	Department Master	Employee's department	Auto-filled
Vacation Type	Text Display (Read-only)	Yes	Vacation Types	From employee request	Auto-filled
Start Date	Text Display (Read-only)	Yes	Employee Request	From request; Date type: Gregorian or Hijri (set to Gregorian)	Auto-filled
End Date	Text Display (Read-only)	Yes	Employee Request	From request; Date type: Gregorian or Hijri (set to Gregorian)	Auto-filled
Period	Text Display (Read-only)	Yes	System Calculation	Auto-calculated	Auto-filled
Notes	Text Display	No	Employee Request	Optional comments from request	Blank
Attachments	File Link	Conditional	Employee Request	Must be attached if Sick leave	Auto-filled
Reviewer Notes	Textarea	No	Manager Input	Optional manager comments	Blank
Action	Buttons (Approve/Reject)	Yes	Manager Input	Required decision by reviewer	None

Figure 39: Review Vacation Request Screen Data Dictionary

## Review Vacation Cancellation Request Screen - Data Dictionary

Complete field specifications for the Review Vacation Cancellation Request interface

Field Name	Data/UI Type	Is Required	Data Source	Business Rules	Default Values
Cancellation Request ID	Text Display	Yes	System	Links to original request	Auto-generated
Original Request ID	Text Display	Yes	System	Reference of canceled vacation	Auto-filled
Employee ID	Text Display (Read-only)	Yes	Employee Master	From employee record	Auto-filled
Employee Name	Text Display (Read-only)	Yes	Employee Master	From employee record	Auto-filled
Vacation Type	Text Display (Read-only)	Yes	Vacation Types	From request	Auto-filled
Start Date	Text Display (Read-only)	Yes	Employee Request	Must not have started; Date type: Gregorian or Hijri (set to Gregorian)	Auto-filled
End Date	Text Display (Read-only)	Yes	Employee Request	Auto-filled; Date type: Gregorian or Hijri (set to Gregorian)	Auto-filled
Reason	Textarea	No	Employee Input	Cancellation justification	Blank
Reviewer Notes	Textarea	No	Manager Input	Optional HR/Manager comments	Blank
Action	Buttons (Approve/Reject)	Yes	Manager Input	HR/Manager must approve before effective cancellation	None

Figure 40: Review Vacation Cancellation Request Screen Data Dictionary

## My Vacation Requests Screen - Data Dictionary

Complete field specifications for the My Vacation Requests interface

Field Name	Data/UI Type	Is Required	Data Source	Business Rules	Default Values
Vacation Type	Text Display	Yes	Vacation Request	Shows in collapsed row view	N/A
Start Date	Text Display	Yes	Vacation Request	Shows in collapsed row view	N/A
End Date	Text Display	Yes	Vacation Request	Shows in collapsed row view	N/A
Status	Text Display	Yes	Workflow State	Current request status (Pending, Approved, Rejected, Canceled)	N/A
Expand/Collapse Control	UI Control	Yes	UI	Toggles detailed view visibility	+
Period	Text Display	Yes	System Calculation	Shows in expanded view; End Date - Start Date + 1	<i>Auto-calculated</i>
Notes	Text Display	No	Vacation Request	Shows in expanded view; Original request notes	N/A
Reviewer Name	Text Display	Yes	Workflow History	Name of the reviewing authority	N/A
Review Notes	Text Display	No	Workflow History	Comments from reviewer	N/A
Review Status	Text Display	Yes	Workflow History	Status given by reviewer	N/A
Review Date	Text Display	Yes	Workflow History	Date and time of review	N/A
File Number	Text Display	Yes	Document Store	Sequential number for attachments	<i>Auto-numbered</i>
File Name	Text Display	Yes	Document Store	Original filename of attachment	N/A
Cancel Button	Action Button	Conditional	UI Control	Enabled only if: Not approved; Not cancelled; Start date not passed	Cancel

Figure 41: My Vacation Requests Screen Data Dictionary

## Pending Vacation Requests Screen - Data Dictionary

Complete field specifications for the Pending Vacation Requests interface

Field Name	Data/UI Type	Is Required	Data Source	Business Rules	Default Values
Employee ID	Text Display	Yes	Employee Master	Unique identifier; displayed in grid	N/A
Name	Text Display	Yes	Employee Master	Full employee name	N/A
Department	Text Display	Yes	Department Master	Employee's current department	N/A
Vacation Type	Text Display	Yes	Vacation Request	Type of vacation requested	N/A
Start Date	Text Display	Yes	Vacation Request	Vacation start date in system date format	N/A
End Date	Text Display	Yes	Vacation Request	Vacation end date in system date format	N/A
View Request Button	Action Button	Yes	UI Control	Opens the review screen for the selected request; Always enabled	View Request

Figure 42: Pending Vacation Requests Screen Data Dictionary

## Vacation Inquiry Search Parameters Screen - Data Dictionary

Complete field specifications for the Vacation Inquiry Search Parameters interface

Field Name	Data/UI Type	Is Required	Data Source	Business Rules	Default Values
Employee ID	Text Input	No	Employee Master	Optional search filter	Blank
Vacation Type	Dropdown (Annual, Sick)	No	Vacation Types	Optional filter	All
Start Date	Date Picker	No	User Input	Optional range; Date type: Gregorian or Hijri (set to Gregorian)	Blank
End Date	Date Picker	No	User Input	Optional range; Date type: Gregorian or Hijri (set to Gregorian)	Blank
Status	Dropdown (Pending/Approved/Rejected)	No	System	Optional filter	All
Department	Dropdown	No	Department Master	Optional filter	All Departments

Figure 43: Vacation Inquiry Search Parameters Screen Data Dictionary

## Vacation Inquiry Search Results Screen - Data Dictionary

Complete field specifications for the Vacation Inquiry Search Results interface

Field Name	Data/UI Type	Is Required	Data Source	Business Rules	Default Values
<b>Request ID</b>	Text Display	Yes	System	Unique identifier	<i>Auto-generated</i>
<b>Employee ID</b>	Text Display	Yes	Employee Master	From request	<i>Auto-filled</i>
<b>Employee Name</b>	Text Display	Yes	Employee Master	From request	<i>Auto-filled</i>
<b>Department</b>	Text Display	Yes	Department Master	Employee's department	<i>Auto-filled</i>
<b>Vacation Type</b>	Text Display	Yes	Vacation Types	From request	<i>Auto-filled</i>
<b>Start Date</b>	Text Display	Yes	Employee Request	From request; Date type: Gregorian or Hijri (set to Gregorian)	<i>Auto-filled</i>
<b>End Date</b>	Text Display	Yes	Employee Request	From request; Date type: Gregorian or Hijri (set to Gregorian)	<i>Auto-filled</i>
<b>Period</b>	Text Display	Yes	System	Auto-calculated	<i>Auto-filled</i>
<b>Status</b>	Text Display	Yes	System	Pending, Approved, or Rejected	<i>Auto-filled</i>
<b>Print Action</b>	Button	No	System	Prints single transaction report	None

Figure 44: Vacation Inquiry Search Results Screen Data Dictionary

## Notifications Center Screen - Data Dictionary

Complete field specifications for the Notifications Center interface

Field Name	Data/UI Type	Is Required	Data Source	Business Rules	Default Values
Action Type	Text Display	Yes	Workflow State	Shows action type (Approval, Rejection, Pending, etc.); Part of notification text	N/A
Vacation Type	Text Display	Yes	Vacation Request	Type of vacation; Part of notification text	N/A
Date Range	Text Display	Yes	Vacation Request	Start and end dates with duration; Part of notification text	N/A
Employee Name	Text Display	Yes	Employee Master	Name of employee involved; Shown in bold in notification text	N/A
Additional Context	Text Display	Conditional	Workflow History	Additional information like rejection reasons or reviewer notes	N/A
View Button	Action Button	Yes	UI Control	Opens detailed view of related request; Always enabled	View
Context Button	Action Button	Yes	UI Control	Opens My Requests or Pending Tasks based on notification type; Dynamic label	My Requests/Pending Tasks
Notification Card	Container	Yes	UI	Groups notification text and actions; Ordered by date (newest first)	N/A
Notification Visibility	System Control	Yes	User Role	Shows notifications based on user role and permissions	<i>Role-based</i>

Figure 45: Notifications Center Screen Data Dictionary

## Print Single Transaction Report - Data Dictionary

Complete field specifications for the Print Single Transaction Report interface

Field Name	Data/UI Type	Is Required	Data Source	Business Rules	Default Values
<b>Employee ID</b>	Text Display	Yes	Employee Master	Shown in header	Auto-filled
<b>Employee Name</b>	Text Display	Yes	Employee Master	Shown in header	Auto-filled
<b>Department</b>	Text Display	Yes	Department Master	Included in report	Auto-filled
<b>Vacation Type</b>	Text Display	Yes	Vacation Types	Included	Auto-filled
<b>Start Date</b>	Text Display	Yes	Employee Request	Date type: Gregorian or Hijri (set to Gregorian); Start Date < End Date validated at request entry	Auto-filled
<b>End Date</b>	Text Display	Yes	Employee Request	Date type: Gregorian or Hijri (set to Gregorian)	Auto-filled
<b>Duration</b>	Text Display	Yes	System Calculation	End Date - Start Date + 1	Auto-filled
<b>Notes</b>	Text Display	No	Employee Request	Optional	Blank
<b>Attachments</b>	File Link	Conditional	Employee Request	Required if Sick leave	Auto-filled
<b>Approvals</b>	Text List	Yes	System Log	Names & job titles of approvers	Auto-filled
<b>Footer Info</b>	Text Display	Yes	System	Print time, page #, user who printed	Auto-filled

Figure 46: Print Single Transaction Report Data Dictionary

## Print Comparative Annual Report - Data Dictionary

Complete field specifications for the Print Comparative Annual Report interface

Field Name	Data/UI Type	Is Required	Data Source	Business Rules	Default Values
<b>Department</b>	Text Display	Yes	Department Master	Group by Department	Auto-filled
<b>Total Days</b>	Number Display	Yes	System Calculation	Sum of all employees' vacation days	Auto-calculated
<b>Details Flag</b>	Checkbox	No	User Input	If checked, expand employees under department	Unchecked
<b>Employee Name</b>	Text Display (Conditional)	No	Employee Master	Shown only if Details checked	Auto-filled
<b>Report Year</b>	Text Display	Yes	System	Report year (e.g., 2025)	Auto-filled
<b>Footer Info</b>	Text Display	Yes	System	Print time, page #, user who printed	Auto-filled

Figure 47: Print Comparative Annual Report Data Dictionary

## Screen-Level Data Dictionaries

## 14 Wireframe Images

This section contains all the wireframe images for the system's user interfaces:

### 14.0.1 Core Application Screens

### Vacation Request

<b>Employee Name</b> Omar Abdelrahman	<b>Employee ID</b> EMP12345	
<b>Vacation Type</b> Annual Leave		
<b>Start Date</b> 08/20/2025	<b>End Date</b> 08/25/2025	
<b>Period (Days)</b> 6 days		
<b>Notes</b> Family vacation abroad		
<b>Attachments</b> Drag & drop files here <input type="button" value="Browse"/>		
<b>Uploaded Files</b>		
Seq	File Name	Delete
1	travel_itinerary.pdf	X
2	vacation_request_form.jpg	X

Figure 48: Vacation Request Screen Wireframe

### Vacation Request Screen Data Dictionary (Vacation Request)

## Vacation Request Screen - Data Dictionary

Complete field specifications for the Vacation Request interface

Field Name	Data/UI Type	Is Required	Data Source	Business Rules	Default Values
Employee ID	Text Input (Read-only)	Yes	Employee Master	Unique identifier; auto-filled; cannot be changed	Auto-filled
Employee Name	Text Input (Read-only)	Yes	Employee Master	Full legal name; auto-filled	Auto-filled
Vacation Type	Dropdown (Annual, Sick)	Yes	Vacation Types	Only active types are selectable (Active=true)	None
Start Date	Date Picker	Yes	User Input	Cannot be in past; must be < End Date; Date type: Gregorian or Hijri (set to Gregorian)	Today+1
End Date	Date Picker	Yes	User Input	Must be after Start Date; Date type: Gregorian or Hijri (set to Gregorian)	None
Period (Days)	Text Display (Read-only)	Yes	System Calculation	End Date - Start Date + 1	Auto-calculated
Notes	Textarea	No	User Input	Optional comments	Blank
Attachments	File Upload	Conditional	User Upload	Mandatory for Sick Leave; optional for Annual Leave	None

Figure 49: Vacation Request Screen Data Dictionary

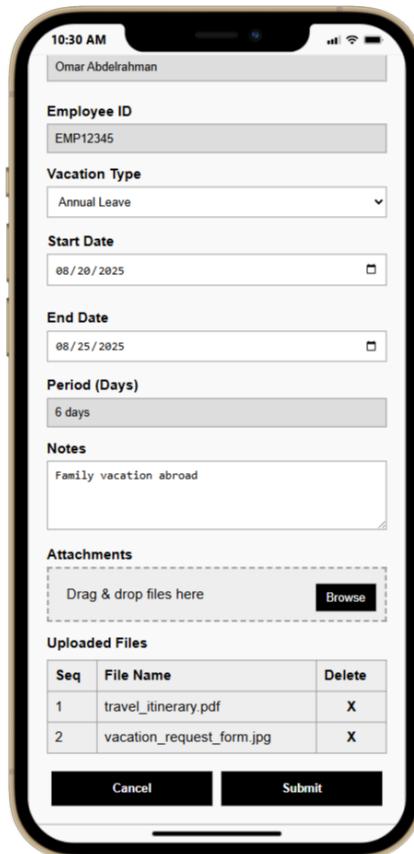


Figure 50: Vacation Request Screen Wireframe - Mobile

## Vacation Request Screen (Mobile)

## Vacation Cancellation Request

<b>Employee Name</b>	<b>Employee ID</b>
Omar Abdelrahman	EMP12345
<i>Cancellation must occur before the vacation start date.</i>	
<b>Vacation Type</b>	
Annual Leave	
<b>Start Date</b>	<b>End Date</b>
08/20/2025	08/25/2025
<b>Period (Days)</b>	
6 days	
<b>Original Attachments</b>	
<b>Seq</b>	<b>File Name</b>
1	travel_itinerary.pdf
2	vacation_request_form.jpg
<b>Cancellation Reason</b>	
Optional	
<b>Cancel</b>	<b>Submit Cancellation</b>

Figure 51: Vacation Cancellation Request Screen Wireframe

**Vacation Cancellation Request Screen Data Dictionary (Vacation Cancellation Request)**

## Vacation Cancellation Request Screen - Data Dictionary

Complete field specifications for the Vacation Cancellation Request interface

Field Name	Data/UI Type	Is Required	Data Source	Business Rules	Default Values
Request ID	Text Input (Read-only)	Yes	System	References existing approved vacation	Auto-filled
Employee ID	Text Input (Read-only)	Yes	Employee Master	Same employee who submitted the request	Auto-filled
Employee Name	Text Input (Read-only)	Yes	Employee Master	Same employee	Auto-filled
Vacation Type	Dropdown (Read-only)	Yes	Vacation Types	Same as original request	Auto-filled
Start Date	Date Picker (Read-only)	Yes	Original Request	Must not be started yet; must be < End Date; Date type: Gregorian or Hijri (set to Gregorian)	Auto-filled
End Date	Date Picker (Read-only)	Yes	Original Request	Must be after Start Date; Date type: Gregorian or Hijri (set to Gregorian)	Auto-filled
Reason	Textarea	No	User Input	Optional cancellation justification	Blank
Status	Enum (Pending/Approved/Rejected)	Yes	System	Must pass HR/Manager approval before final cancellation	Pending

Figure 52: Vacation Cancellation Request Screen Data Dictionary

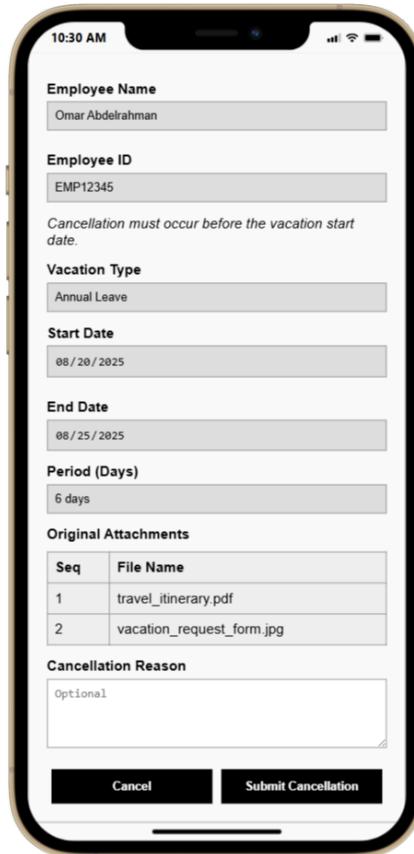


Figure 53: Vacation Cancellation Request Screen Wireframe - Mobile

## Vacation Cancellation Request Screen (Mobile)

**Review Vacation Request**

<b>Employee Name</b>	<b>Employee ID</b>
Omar Abdelrahman	EMP12345
<b>Department</b>	
Information Technology	
<b>Vacation Type</b>	
Annual Leave	
<b>Start Date</b>	<b>End Date</b>
08 / 28 / 2025	08 / 25 / 2025
<b>Period (Days)</b>	
6 days	
<b>Notes</b>	
Family vacation abroad	
<b>Attachments</b>	
<b>Seq</b>	<b>File Name</b>
1	travel_itinerary.pdf
2	vacation_request_form.jpg
<b>Reason for Accept/Reject</b>	
Required	
<b>Reject</b>	<b>Accept</b>

Figure 54: Review Vacation Request Screen Wireframe

### Review Vacation Request Screen Data Dictionary (Review Vacation Request)

## Review Vacation Request Screen - Data Dictionary

Complete field specifications for the Review Vacation Request interface

Field Name	Data/UI Type	Is Required	Data Source	Business Rules	Default Values
Request ID	Text Display (Read-only)	Yes	System	Unique request identifier	Auto-generated
Employee ID	Text Display (Read-only)	Yes	Employee Master	Same as original request	Auto-filled
Employee Name	Text Display (Read-only)	Yes	Employee Master	Full employee name	Auto-filled
Department	Text Display (Read-only)	Yes	Department Master	Employee's department	Auto-filled
Vacation Type	Text Display (Read-only)	Yes	Vacation Types	From employee request	Auto-filled
Start Date	Text Display (Read-only)	Yes	Employee Request	From request; Date type: Gregorian or Hijri (set to Gregorian)	Auto-filled
End Date	Text Display (Read-only)	Yes	Employee Request	From request; Date type: Gregorian or Hijri (set to Gregorian)	Auto-filled
Period	Text Display (Read-only)	Yes	System Calculation	Auto-calculated	Auto-filled
Notes	Text Display	No	Employee Request	Optional comments from request	Blank
Attachments	File Link	Conditional	Employee Request	Must be attached if Sick leave	Auto-filled
Reviewer Notes	Textarea	No	Manager Input	Optional manager comments	Blank
Action	Buttons (Approve/Reject)	Yes	Manager Input	Required decision by reviewer	None

Figure 55: Review Vacation Request Screen Data Dictionary

## Review Vacation Cancellation Request

<b>Employee Name</b>	<b>Employee ID</b>
Omar Abdelrahman	EMP12345
<b>Department</b>	
Information Technology	
<b>Vacation Type</b>	
Annual Leave	
<b>Start Date</b>	<b>End Date</b>
08/20/2025	08/25/2025
<b>Period (Days)</b>	
6 days	
<b>Original Notes</b>	
Family vacation abroad	
<b>Cancellation Reason</b>	
Change in travel plans	
<b>Original Attachments</b>	
Seq	File Name
1	travel_itinerary.pdf
2	vacation_request_form.jpg
<b>Cancellation Submitted</b>	
2025-08-10 14:30	
<b>Reason for Accept/Reject</b>	
Required	
<b>Reject Cancellation</b>	<b>Approve Cancellation</b>

Figure 56: Review Vacation Cancellation Request Screen Wireframe

**Review Vacation Cancellation Request Screen Data Dictionary (Review Vacation Cancellation Request)**

## Review Vacation Cancellation Request Screen - Data Dictionary

Complete field specifications for the Review Vacation Cancellation Request interface

Field Name	Data/UI Type	Is Required	Data Source	Business Rules	Default Values
Cancellation Request ID	Text Display	Yes	System	Links to original request	Auto-generated
Original Request ID	Text Display	Yes	System	Reference of canceled vacation	Auto-filled
Employee ID	Text Display (Read-only)	Yes	Employee Master	From employee record	Auto-filled
Employee Name	Text Display (Read-only)	Yes	Employee Master	From employee record	Auto-filled
Vacation Type	Text Display (Read-only)	Yes	Vacation Types	From request	Auto-filled
Start Date	Text Display (Read-only)	Yes	Employee Request	Must not have started; Date type: Gregorian or Hijri (set to Gregorian)	Auto-filled
End Date	Text Display (Read-only)	Yes	Employee Request	Auto-filled; Date type: Gregorian or Hijri (set to Gregorian)	Auto-filled
Reason	Textarea	No	Employee Input	Cancellation justification	Blank
Reviewer Notes	Textarea	No	Manager Input	Optional HR/Manager comments	Blank
Action	Buttons (Approve/Reject)	Yes	Manager Input	HR/Manager must approve before effective cancellation	None

Figure 57: Review Vacation Cancellation Request Screen Data Dictionary

My Vacation Requests				
Vacation Type	Start Date	End Date	Status	Expand
Annual Leave	08/20/2025	08/25/2025	Pending	+
Sick Leave	07/01/2025	07/03/2025	Approved	+
Emergency Leave	09/10/2025	09/11/2025	Rejected	+
Annual Leave	10/15/2025	10/20/2025	Canceled	+

Figure 58: My Vacation Requests Screen Wireframe

## My Vacation Requests Screen Data Dictionary (My Vacation Requests)

## My Vacation Requests Screen - Data Dictionary

Complete field specifications for the My Vacation Requests interface

Field Name	Data/UI Type	Is Required	Data Source	Business Rules	Default Values
Vacation Type	Text Display	Yes	Vacation Request	Shows in collapsed row view	N/A
Start Date	Text Display	Yes	Vacation Request	Shows in collapsed row view	N/A
End Date	Text Display	Yes	Vacation Request	Shows in collapsed row view	N/A
Status	Text Display	Yes	Workflow State	Current request status (Pending, Approved, Rejected, Canceled)	N/A
Expand/Collapse Control	UI Control	Yes	UI	Toggles detailed view visibility	+
Period	Text Display	Yes	System Calculation	Shows in expanded view; End Date - Start Date + 1	Auto-calculated
Notes	Text Display	No	Vacation Request	Shows in expanded view; Original request notes	N/A
Reviewer Name	Text Display	Yes	Workflow History	Name of the reviewing authority	N/A
Review Notes	Text Display	No	Workflow History	Comments from reviewer	N/A
Review Status	Text Display	Yes	Workflow History	Status given by reviewer	N/A
Review Date	Text Display	Yes	Workflow History	Date and time of review	N/A
File Number	Text Display	Yes	Document Store	Sequential number for attachments	Auto-numbered
File Name	Text Display	Yes	Document Store	Original filename of attachment	N/A
Cancel Button	Action Button	Conditional	UI Control	Enabled only if: Not approved; Not cancelled; Start date not passed	Cancel

Figure 59: My Vacation Requests Screen Data Dictionary

Pending Vacation Requests (Tasks)						
Employee ID	Name	Department	Vacation Type	Start Date	End Date	Action
EMP101	Omar Abdelrahman	IT	Annual	2025-08-20	2025-08-25	<button>View Request</button>
EMP202	Mohamed Ali	Finance	Sick	2025-09-01	2025-09-03	<button>View Request</button>

Figure 60: Pending Vacation Requests Screen Wireframe

Pending Vacation Requests Screen Data Dictionary (Pending Vacation Requests)

## Pending Vacation Requests Screen - Data Dictionary

Complete field specifications for the Pending Vacation Requests interface

Field Name	Data/UI Type	Is Required	Data Source	Business Rules	Default Values
Employee ID	Text Display	Yes	Employee Master	Unique identifier; displayed in grid	N/A
Name	Text Display	Yes	Employee Master	Full employee name	N/A
Department	Text Display	Yes	Department Master	Employee's current department	N/A
Vacation Type	Text Display	Yes	Vacation Request	Type of vacation requested	N/A
Start Date	Text Display	Yes	Vacation Request	Vacation start date in system date format	N/A
End Date	Text Display	Yes	Vacation Request	Vacation end date in system date format	N/A
View Request Button	Action Button	Yes	UI Control	Opens the review screen for the selected request; Always enabled	View Request

Figure 61: Pending Vacation Requests Screen Data Dictionary

### Employee Vacation Inquiry - Search Parameters

From Date
To Date

□

□

**Department (Multi-select)**

All Departments  
IT  
HR  
Finance  
Marketing  
Operations  
Sales

**Employee Name or ID (Optional)**

Type name or ID

**Vacation Type (Multi-select)**

Annual  
Sick  
All

**Vacation Request Status (Multi-select)**

Pending  
Approved  
Rejected  
Cancelled  
All

Reset
Generate Report

Figure 62: Vacation Inquiry Search Parameters Screen Wireframe

## Vacation Inquiry Search Parameters Screen - Data Dictionary (Inquiry Search Parameters)

### Vacation Inquiry Search Parameters Screen - Data Dictionary

Complete field specifications for the Vacation Inquiry Search Parameters interface

Field Name	Data/UI Type	Is Required	Data Source	Business Rules	Default Values
Employee ID	Text Input	No	Employee Master	Optional search filter	Blank
Vacation Type	Dropdown (Annual, Sick)	No	Vacation Types	Optional filter	All
Start Date	Date Picker	No	User Input	Optional range; Date type: Gregorian or Hijri (set to Gregorian)	Blank
End Date	Date Picker	No	User Input	Optional range; Date type: Gregorian or Hijri (set to Gregorian)	Blank
Status	Dropdown (Pending/Approved/Rejected)	No	System	Optional filter	All
Department	Dropdown	No	Department Master	Optional filter	All Departments

Figure 63: Vacation Inquiry Search Parameters Screen Data Dictionary

Employee Vacation Inquiry - Search Results							
Showing matching inquiry results based on search criteria							
Action		Records per page: 25 ▾					
Employee ID	Employee Name	Vacation Type	Vacation Start	Vacation End	Duration	Status	Action
EMP001	Ahmed Al-Rashid	Annual	2025-01-15	2025-01-20	6 days	Approved	<button>Print</button>
EMP002	Fatima Al-Zahra	Sick	2025-02-01	2025-02-03	3 days	Pending	<button>Print</button>
EMP003	Omar Al-Mansouri	Annual	2025-03-10	2025-03-17	8 days	Rejected	<button>Print</button>
EMP004	Sara Al-Mahmoud	Annual	2025-04-05	2025-04-09	5 days	Approved	<button>Print</button>
EMP005	Khalid Al-Rashid	Sick	2025-05-01	2025-05-02	2 days	Approved	<button>Print</button>
EMP006	Omar Al-Qasimi	Annual	2025-06-12	2025-06-16	5 days	Cancelled	<button>Print</button>
EMP007	Layla Mostafa	Sick	2025-07-03	2025-07-04	2 days	Approved	<button>Print</button>
EMP008	Hassan Adel	Annual	2025-08-20	2025-08-25	6 days	Approved	<button>Print</button>
EMP009	Youssef Nabil	Sick	2025-09-14	2025-09-15	2 days	Rejected	<button>Print</button>
EMP010	Nourhan Sameh	Annual	2025-10-01	2025-10-05	5 days	Approved	<button>Print</button>
EMP011	Ahmed Al-Rashid	Annual	2025-01-15	2025-01-20	6 days	Approved	<button>Print</button>
EMP012	Fatima Al-Zahra	Sick	2025-02-01	2025-02-03	3 days	Pending	<button>Print</button>
EMP013	Omar Al-Mansouri	Annual	2025-03-10	2025-03-17	8 days	Rejected	<button>Print</button>
EMP014	Sara Al-Mahmoud	Annual	2025-04-05	2025-04-09	5 days	Approved	<button>Print</button>
EMP015	Khalid Al-Rashid	Sick	2025-05-01	2025-05-02	2 days	Approved	<button>Print</button>
EMP016	Omar Al-Qasimi	Annual	2025-06-12	2025-06-16	5 days	Cancelled	<button>Print</button>
EMP017	Layla Mostafa	Sick	2025-07-03	2025-07-04	2 days	Approved	<button>Print</button>
EMP018	Hassan Adel	Annual	2025-08-20	2025-08-25	6 days	Approved	<button>Print</button>
EMP019	Youssef Nabil	Sick	2025-09-14	2025-09-15	2 days	Rejected	<button>Print</button>
EMP020	Nourhan Sameh	Annual	2025-10-01	2025-10-05	5 days	Approved	<button>Print</button>
EMP021	Ahmed Al-Rashid	Annual	2025-01-15	2025-01-20	6 days	Approved	<button>Print</button>
EMP022	Fatima Al-Zahra	Sick	2025-02-01	2025-02-03	3 days	Pending	<button>Print</button>

Figure 64: Vacation Inquiry Search Results Screen Wireframe

### Vacation Inquiry Search Results Screen Data Dictionary (Inquiry Search Results)

## Vacation Inquiry Search Results Screen - Data Dictionary

Complete field specifications for the Vacation Inquiry Search Results interface

Field Name	Data/UI Type	Is Required	Data Source	Business Rules	Default Values
<b>Request ID</b>	Text Display	Yes	System	Unique identifier	Auto-generated
<b>Employee ID</b>	Text Display	Yes	Employee Master	From request	Auto-filled
<b>Employee Name</b>	Text Display	Yes	Employee Master	From request	Auto-filled
<b>Department</b>	Text Display	Yes	Department Master	Employee's department	Auto-filled
<b>Vacation Type</b>	Text Display	Yes	Vacation Types	From request	Auto-filled
<b>Start Date</b>	Text Display	Yes	Employee Request	From request; Date type: Gregorian or Hijri (set to Gregorian)	Auto-filled
<b>End Date</b>	Text Display	Yes	Employee Request	From request; Date type: Gregorian or Hijri (set to Gregorian)	Auto-filled
<b>Period</b>	Text Display	Yes	System	Auto-calculated	Auto-filled
<b>Status</b>	Text Display	Yes	System	Pending, Approved, or Rejected	Auto-filled
<b>Print Action</b>	Button	No	System	Prints single transaction report	None

Figure 65: Vacation Inquiry Search Results Screen Data Dictionary

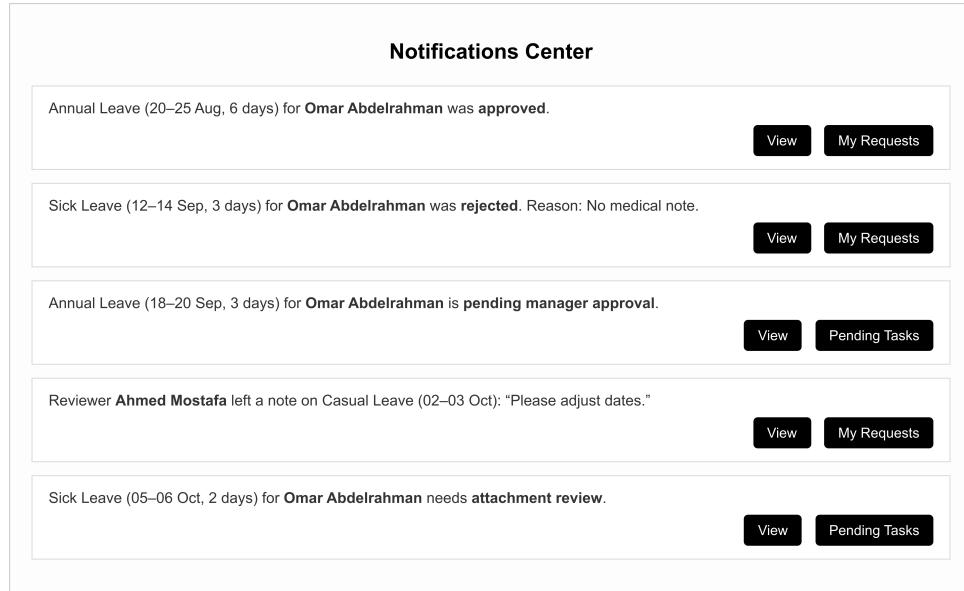


Figure 66: Notifications Center Screen Wireframe

## Notifications Center Screen Data Dictionary (Notifications Center)

## Notifications Center Screen - Data Dictionary

Complete field specifications for the Notifications Center interface

Field Name	Data/UI Type	Is Required	Data Source	Business Rules	Default Values
Action Type	Text Display	Yes	Workflow State	Shows action type (Approval, Rejection, Pending, etc.); Part of notification text	N/A
Vacation Type	Text Display	Yes	Vacation Request	Type of vacation; Part of notification text	N/A
Date Range	Text Display	Yes	Vacation Request	Start and end dates with duration; Part of notification text	N/A
Employee Name	Text Display	Yes	Employee Master	Name of employee involved; Shown in bold in notification text	N/A
Additional Context	Text Display	Conditional	Workflow History	Additional information like rejection reasons or reviewer notes	N/A
View Button	Action Button	Yes	UI Control	Opens detailed view of related request; Always enabled	View
Context Button	Action Button	Yes	UI Control	Opens My Requests or Pending Tasks based on notification type; Dynamic label	My Requests/Pending Tasks
Notification Card	Container	Yes	UI	Groups notification text and actions; Ordered by date (newest first)	N/A
Notification Visibility	System Control	Yes	User Role	Shows notifications based on user role and permissions	Role-based

Figure 67: Notifications Center Screen Data Dictionary

### Requests Center

Pending Vacation Requests
My Vacation Requests

Employee ID	Name	Department	Vacation Type	Start Date	End Date	Action
EMP101	Omar Abdelrahman	IT	Annual	2025-08-20	2025-08-25	<span style="border: 1px solid black; padding: 2px;">View Request</span>
EMP202	Mohamed Ali	Finance	Sick	2025-09-01	2025-09-03	<span style="border: 1px solid black; padding: 2px;">View Request</span>

Figure 68: Requests Center Screen Wireframe

**Requests Center Screen** Note: Requests Center reuses data elements from Pending and My Vacation Requests screens.

#### 14.0.2 Report Layout Screens

VACATION TRANSACTION REPORT	
<b>REQUEST INFORMATION</b>	
Request Date: January 10, 2025 at 2:30 PM	
<b>EMPLOYEE INFORMATION</b>	
Employee ID: EMP001	Employee Name: Omar Abdelrahman
Department Name: IT Department	
<b>VACATION DETAILS</b>	
Vacation Type: Annual Vacation	Start Date: January 15, 2025
End Date: January 20, 2025	Duration: 5 Days
<b>APPROVAL INFORMATION</b>	
Names and Job Titles of Reviewers:	
<ul style="list-style-type: none"><li>• Direct Manager: Sarah Mahmoud, IT Manager</li><li>• HR Department: Khalid Hassan, HR Specialist</li><li>• General Manager: Abdullah Kareem, General Manager</li></ul>	
Date and Time of Request Approval: January 12, 2025 at 10:30 AM	

---

Print Time: August 18, 2025 at 3:45 PM

Page Number: Page 1 of 1

Name of User Who Printed: Ahmad Al-Manager

Figure 69: Single Transaction Report Layout Wireframe

**Single Transaction Report Layout Data Dictionary (Single Transaction Report)**

## Print Single Transaction Report - Data Dictionary

Complete field specifications for the Print Single Transaction Report interface

Field Name	Data/UI Type	Is Required	Data Source	Business Rules	Default Values
<b>Employee ID</b>	Text Display	Yes	Employee Master	Shown in header	<i>Auto-filled</i>
<b>Employee Name</b>	Text Display	Yes	Employee Master	Shown in header	<i>Auto-filled</i>
<b>Department</b>	Text Display	Yes	Department Master	Included in report	<i>Auto-filled</i>
<b>Vacation Type</b>	Text Display	Yes	Vacation Types	Included	<i>Auto-filled</i>
<b>Start Date</b>	Text Display	Yes	Employee Request	Date type: Gregorian or Hijri (set to Gregorian); Start Date < End Date validated at request entry	<i>Auto-filled</i>
<b>End Date</b>	Text Display	Yes	Employee Request	Date type: Gregorian or Hijri (set to Gregorian)	<i>Auto-filled</i>
<b>Duration</b>	Text Display	Yes	System Calculation	End Date - Start Date + 1	<i>Auto-filled</i>
<b>Notes</b>	Text Display	No	Employee Request	Optional	<i>Blank</i>
<b>Attachments</b>	File Link	Conditional	Employee Request	Required if Sick leave	<i>Auto-filled</i>
<b>Approvals</b>	Text List	Yes	System Log	Names & job titles of approvers	<i>Auto-filled</i>
<b>Footer Info</b>	Text Display	Yes	System	Print time, page #, user who printed	<i>Auto-filled</i>

Figure 70: Print Single Transaction Report Data Dictionary

ANNUAL COMPARATIVE REPORT BY DEPARTMENT - 2025		
<b>Search Parameters Used</b>		
Department/Section: All Departments Selected	Vacation Start Date: January 1, 2025	
Vacation End Date: December 31, 2025	<input checked="" type="checkbox"/> Employees Check Box: Include employee names under departments	
<b>Report Content</b>		
Department Name	Total Annual Vacation Days	Remaining Balance
Information Technology <ul style="list-style-type: none"> <li>• Ahmed Al-Rashid</li> <li>• Sara Al-Mahmoud</li> <li>• Omar Al-Qasimi</li> </ul>	245 days	89 days
Human Resources <ul style="list-style-type: none"> <li>• Fatima Al-Zahra</li> <li>• Khalid Al-Rashid</li> </ul>	156 days	34 days
Finance <ul style="list-style-type: none"> <li>• Layla Mostafa</li> <li>• Hassan Adel</li> <li>• Youssef Nabil</li> </ul>	198 days	67 days
Marketing <ul style="list-style-type: none"> <li>• Nourhan Sameh</li> <li>• Amira Hassan</li> </ul>	134 days	45 days
Operations <ul style="list-style-type: none"> <li>• Mohammed Ali</li> <li>• Rania Ahmed</li> <li>• Karim Omar</li> </ul>	223 days	78 days

Print Time: August 18, 2025 at 4:15 PM

Page Number: Page 1 of 3

Name of User Who Printed: Ahmad Al-Manager

Figure 71: Annual Comparative Report Layout Wireframe

## Annual Comparative Report Layout Data Dictionary (Annual Comparative Report)

## Print Comparative Annual Report - Data Dictionary

Complete field specifications for the Print Comparative Annual Report interface

Field Name	Data/UI Type	Is Required	Data Source	Business Rules	Default Values
Department	Text Display	Yes	Department Master	Group by Department	Auto-filled
Total Days	Number Display	Yes	System Calculation	Sum of all employees' vacation days	Auto-calculated
Details Flag	Checkbox	No	User Input	If checked, expand employees under department	Unchecked
Employee Name	Text Display (Conditional)	No	Employee Master	Shown only if Details checked	Auto-filled
Report Year	Text Display	Yes	System	Report year (e.g., 2025)	Auto-filled
Footer Info	Text Display	Yes	System	Print time, page #, user who printed	Auto-filled

Figure 72: Print Comparative Annual Report Data Dictionary

### Annual Comparative Report - Search Parameters

Generate annual comparative PDF by department

**Vacation Start Date**

□

**Vacation End Date**

□

**Department/Section (Multi-select)**

- All Departments
- IT
- HR
- Finance
- Marketing
- Operations
- Sales

Include employee names under departments

Reset
Generate Report

Figure 73: Annual Comparative Report Search Parameters Wireframe

### Annual Comparative Report Search Parameters Data Dictionary (Annual Comparative Report Search Parameters)

## Print Comparative Annual Report - Data Dictionary

Complete field specifications for the Print Comparative Annual Report interface

Field Name	Data/UI Type	Is Required	Data Source	Business Rules	Default Values
Department	Text Display	Yes	Department Master	Group by Department	Auto-filled
Total Days	Number Display	Yes	System Calculation	Sum of all employees' vacation days	Auto-calculated
Details Flag	Checkbox	No	User Input	If checked, expand employees under department	Unchecked
Employee Name	Text Display (Conditional)	No	Employee Master	Shown only if Details checked	Auto-filled
Report Year	Text Display	Yes	System	Report year (e.g., 2025)	Auto-filled
Footer Info	Text Display	Yes	System	Print time, page #, user who printed	Auto-filled

Figure 74: Annual Comparative Report Search/Data Dictionary

## 15 System Architecture & Context (Additional)

The system architecture details are now presented in Section 3: System Architecture and Context for better contextual understanding. This appendix contains additional technical implementation details that complement the main architecture section.

## 16 Technical Specifications

This appendix contains technical implementation details that are typically covered in a System Design Document:

### 16.0.1 Technology Stack

- **Frontend:** HTML5, CSS3, JavaScript, React/Angular
- **Backend:** Node.js/Python/Java
- **Database:** SQL Server/MySQL/PostgreSQL
- **PDF Generation:** jsPDF, iText, or similar
- **Authentication:** JWT, OAuth, or session-based
- **Workflow Engine:** Custom implementation or BPMS

### 16.0.2 Performance Specifications

- **Response Time:** under 3 seconds for page loads
- **Database Queries:** < 1 second for standard operations
- **PDF Generation:** < 5 seconds for standard reports
- **Concurrent Users:** Support for 100+ simultaneous users
- **File Upload:** Support for multiple file types and sizes

### 16.0.3 Security Specifications

- **Encryption:** AES-256 for sensitive data
- **Password Policy:** Minimum 8 characters, complexity requirements
- **Session Management:** Secure session handling with timeout
- **Input Validation:** SQL injection and XSS prevention
- **File Security:** Secure file upload and storage

## 17 Testing Requirements

This appendix contains testing specifications that are typically covered in a Test Plan:

### 17.0.1 Functional Testing

- **Unit Testing:** Individual component testing
- **Integration Testing:** Module interaction testing
- **System Testing:** End-to-end functionality testing
- **User Acceptance Testing:** Stakeholder validation
- **Workflow Testing:** Approval process validation

### 17.0.2 Non-Functional Testing

- **Performance Testing:** Load and stress testing
- **Security Testing:** Vulnerability assessment
- **Usability Testing:** User experience validation
- **Compatibility Testing:** Cross-browser and device testing
- **PDF Generation Testing:** Report output validation

## 18 Deployment and Maintenance

This appendix contains deployment and maintenance specifications that are typically covered in a Project Plan:

### 18.0.1 Deployment Strategy

- **Environment Setup:** Development, testing, production
- **Database Migration:** Schema creation and data migration
- **User Training:** Comprehensive training program
- **Go-Live Plan:** Phased rollout strategy
- **Integration Testing:** External system integration validation

### 18.0.2 Maintenance Requirements

- **Regular Updates:** Security patches and bug fixes
- **Performance Monitoring:** System health tracking
- **Backup Verification:** Regular backup testing
- **User Support:** Help desk and documentation
- **Policy Updates:** Vacation policy configuration management

## 19 Quality Criteria and Review Practices

This appendix articulates how the SRS adheres to quality criteria and the review process to maintain clarity and traceability.

### 19.0.1 Quality Criteria Mapping

- **Correct**  
**Complete:** Centralized Business Rules (Section 4) and comprehensive traceability matrix (Section 5) ensure accuracy and coverage.
- **Clear**  
**Unambiguous:** Quantified NFRs (Section 8) and explicit field definitions (Appendix B.2) reduce ambiguity.
- **Consistent:** Glossary (Appendix A) governs terminology across sections; references avoid duplicate definitions.
- **Feasible:** Constraints and architecture (Sections 2 and 3) bound implementation scope.
- **Traceable:** Table mappings in Section 5 link UCs, BRs, FRs, UIs, and Data, and Section 6 provides user story perspectives.
- **Testable:** Each FR/NFR includes measurable outcomes enabling verification.
- **INVEST for Stories:** Use cases and FRs are structured to be valuable, estimable, and testable; large items are decomposed.

### 19.0.2 Review Techniques

- **Peer Review:** Cross-functional review sessions to identify ambiguities and inconsistencies.
- **Timed Re-read:** Authors re-read after a cooling-off period ( $\geq 2$  weeks) to spot unclear phrasing.
- **Checklist:** Verify against quality criteria above before approval.
- **Traceability Audit:** Confirm every FR/NFR maps to UCs and BRs.
- **Terminology Audit:** Ensure all terms align with the glossary; replace "e.g." / "i.e." with full words.

## 20 Document Approval

### 20.1 Stakeholder Signatures

Name	Role	Signature & Date
	Project Manager	
	Technical Lead	
	Business Analyst	
	Stakeholder Representative	

Table 8: Document Approval Signatures

### 20.2 Version History

Version	Date	Changes	Author
1.0	Initial	Initial SRS Document	System Analyst
2.0	Previous	Complete rewrite with all project materials	System Analyst
2.1	Previous	Restructured for clarity, reduced redundancy, consolidated business rules	System Analyst
2.2	Previous	Added all use case images, wireframes, and data dictionary images	System Analyst
2.3	Previous	Reorganized structure for logical flow, embedded key diagrams in relevant sections, added comprehensive traceability matrix	System Analyst
2.4	Current	Added comprehensive User Stories section with all 12 user story diagrams, updated section numbering and references	System Analyst

Table 9: Document Version History