

# **Vacation Management System**

## **Software Requirements Specification**

Version 2.1

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## Contents

|          |  |           |
|----------|--|-----------|
| <b>1</b> | <b>Introduction</b>                                | <b>7</b>  |
| 1.1      | Purpose . . . . .                                  | 7         |
| 1.2      | Scope . . . . .                                    | 7         |
| 1.3      | Definitions, Acronyms, and Abbreviations . . . . . | 7         |
| 1.4      | References . . . . .                               | 7         |
| 1.5      | Overview . . . . .                                 | 8         |
| <b>2</b> | <b>Overall Description</b>                         | <b>8</b>  |
| 2.1      | Product Perspective . . . . .                      | 8         |
| 2.2      | Product Functions . . . . .                        | 8         |
| 2.3      | User Classes and Characteristics . . . . .         | 10        |
| 2.4      | Stakeholder Register . . . . .                     | 10        |
| 2.5      | Operating Environment . . . . .                    | 10        |
| 2.6      | Design and Implementation Constraints . . . . .    | 11        |
| 2.7      | Assumptions and Dependencies . . . . .             | 11        |
| <b>3</b> | <b>System Architecture and Context</b>             | <b>11</b> |
| 3.1      | System Context Diagram . . . . .                   | 11        |
| 3.2      | System Architecture Overview . . . . .             | 12        |
| 3.3      | Core System Components . . . . .                   | 12        |
| 3.4      | System State Management . . . . .                  | 12        |
| 3.5      | Core Workflow Processes . . . . .                  | 13        |
| 3.5.1    | Basic Vacation Request Flow . . . . .              | 13        |
| 3.5.2    | Escalation to Sponsor Flow . . . . .               | 14        |
| 3.5.3    | Resubmission After Rejection Flow . . . . .        | 15        |
| <b>4</b> | <b>Business Rules and Logic</b>                    | <b>16</b> |
| 4.1      | Vacation Policy Rules . . . . .                    | 16        |
| 4.1.1    | BR-001: Annual Entitlement . . . . .               | 16        |
| 4.1.2    | BR-002: Extended Entitlement . . . . .             | 16        |
| 4.1.3    | BR-003: Leave Types . . . . .                      | 16        |
| 4.1.4    | BR-004: Unused Days Policy . . . . .               | 17        |
| 4.1.5    | BR-005: Trainee Restrictions . . . . .             | 17        |
| 4.2      | Approval Workflow Rules . . . . .                  | 17        |
| 4.2.1    | BR-006: Approval Hierarchy . . . . .               | 17        |
| 4.2.2    | BR-007: Escalation Policy . . . . .                | 17        |
| 4.2.3    | BR-008: Balance Update Timing . . . . .            | 17        |
| 4.2.4    | BR-009: Rejection Documentation . . . . .          | 17        |
| 4.2.5    | BR-010: No Modification Policy . . . . .           | 17        |
| 4.3      | Validation Rules . . . . .                         | 17        |
| 4.3.1    | BR-011: Date Validation . . . . .                  | 17        |
| 4.3.2    | BR-012: Overlap Prevention . . . . .               | 18        |
| 4.3.3    | BR-013: Balance Validation . . . . .               | 18        |
| 4.3.4    | BR-014: Attachment Requirements . . . . .          | 18        |
| 4.3.5    | BR-015: Cancellation Eligibility . . . . .         | 18        |
| 4.3.6    | BR-016: Cancellation Timing . . . . .              | 18        |

|          |  |           |
|----------|--|-----------|
| 4.4      | System Behavior Rules . . . . .                                | 18        |
| 4.4.1    | BR-017: Notification Delivery . . . . .                        | 18        |
| 4.4.2    | BR-018: Data Integrity . . . . .                               | 18        |
| 4.4.3    | BR-019: Policy Configuration . . . . .                         | 18        |
| <b>5</b> | <b>User Requirements / Use Cases</b>                           | <b>19</b> |
| 5.1      | Use Case Summary . . . . .                                     | 19        |
| 5.2      | Use Case Details . . . . .                                     | 20        |
| 5.2.1    | UC-1: Employee Submits Vacation Request . . . . .              | 20        |
| 5.2.2    | UC-2: Employee Submits Vacation Cancellation Request . . . . . | 21        |
| 5.2.3    | UC-3: My Vacation Requests . . . . .                           | 22        |
| 5.2.4    | UC-4: Review Vacation Request (Approval/Rejection) . . . . .   | 23        |
| 5.2.5    | UC-5: Review Vacation Cancellation Request . . . . .           | 24        |
| 5.2.6    | UC-6: Pending Vacation Requests . . . . .                      | 25        |
| 5.2.7    | UC-7: Vacation Inquiry (Search Parameters) . . . . .           | 26        |
| 5.2.8    | UC-8: Vacation Inquiry (Search Results) . . . . .              | 27        |
| 5.2.9    | UC-9: Print Single Vacation Transaction Report (PDF) . . . . . | 28        |
| 5.2.10   | UC-10: Print Comparative Annual Report (PDF) . . . . .         | 29        |
| 5.2.11   | UC-11: Notifications Center . . . . .                          | 30        |
| 5.2.12   | UC-12: Automated Update of Employee Annual Vacation Balance    | 31        |
| 5.3      | System Component Mapping and Traceability . . . . .            | 32        |
| <b>6</b> | <b>Functional Requirements</b>                                 | <b>34</b> |
| 6.1      | FR-001: Vacation Request Management . . . . .                  | 34        |
| 6.2      | FR-002: Vacation Cancellation Management . . . . .             | 34        |
| 6.3      | FR-003: Multi-Level Approval Workflow . . . . .                | 34        |
| 6.4      | FR-004: Vacation Inquiry and Search . . . . .                  | 34        |
| 6.5      | FR-005: Report Generation . . . . .                            | 35        |
| 6.6      | FR-006: Automated Balance Management . . . . .                 | 35        |
| 6.7      | FR-007: Notification System . . . . .                          | 35        |
| <b>7</b> | <b>Non-Functional Requirements</b>                             | <b>35</b> |
| 7.1      | Performance Requirements . . . . .                             | 35        |
| 7.1.1    | NFR-001: Response Time . . . . .                               | 35        |
| 7.1.2    | NFR-002: Throughput . . . . .                                  | 35        |
| 7.1.3    | NFR-003: Availability . . . . .                                | 35        |
| 7.1.4    | NFR-004: Scalability . . . . .                                 | 35        |
| 7.1.5    | NFR-005: PDF Generation . . . . .                              | 36        |
| 7.2      | Security Requirements . . . . .                                | 36        |
| 7.2.1    | NFR-006: Authentication . . . . .                              | 36        |
| 7.2.2    | NFR-007: Authorization . . . . .                               | 36        |
| 7.2.3    | NFR-008: Data Protection . . . . .                             | 36        |
| 7.2.4    | NFR-009: Audit Trail . . . . .                                 | 36        |
| 7.2.5    | NFR-010: Input Validation . . . . .                            | 36        |
| 7.3      | Usability Requirements . . . . .                               | 36        |
| 7.3.1    | NFR-011: User Interface . . . . .                              | 36        |
| 7.3.2    | NFR-012: Accessibility . . . . .                               | 36        |
| 7.3.3    | NFR-013: Multi-language Support . . . . .                      | 37        |
| 7.3.4    | NFR-014: Mobile Support . . . . .                              | 37        |

|           |   |           |
|-----------|---|-----------|
| 7.3.5     | NFR-015: Error Handling . . . . .                           | 37        |
| 7.4       | Reliability Requirements . . . . .                          | 37        |
| 7.4.1     | NFR-016: Error Handling . . . . .                           | 37        |
| 7.4.2     | NFR-017: Data Integrity . . . . .                           | 37        |
| 7.4.3     | NFR-018: Backup and Recovery . . . . .                      | 37        |
| 7.4.4     | NFR-019: Validation . . . . .                               | 37        |
| <b>8</b>  | <b>User Interface Overview</b>                              | <b>38</b> |
| 8.1       | Core Application Screens . . . . .                          | 38        |
| 8.2       | Report Layout Screens . . . . .                             | 38        |
| 8.3       | Additional Screens . . . . .                                | 38        |
| <b>9</b>  | <b>Data Requirements Overview</b>                           | <b>38</b> |
| 9.1       | Master Data . . . . .                                       | 38        |
| 9.2       | Operational Data . . . . .                                  | 38        |
| <b>10</b> | <b>System Messages</b>                                      | <b>38</b> |
| 10.1      | System Messages Table . . . . .                             | 39        |
| 10.2      | Message Categories . . . . .                                | 39        |
| <b>11</b> | <b>Appendices</b>   | <b>40</b> |
| 11.1      | Appendix A: Glossary . . . . .                              | 40        |
| 11.2      | Appendix B: Data Models . . . . .                           | 40        |
| 11.3      | Appendix B.1: Data Dictionary Template . . . . .            | 40        |
| 11.4      | Appendix B.2: Comprehensive Data Dictionaries . . . . .     | 41        |
| 11.5      | Appendix C: Wireframe Images . . . . .                      | 51        |
| 11.5.1    | Core Application Screens . . . . .                          | 51        |
| 11.5.2    | Report Layout Screens . . . . .                             | 59        |
| 11.6      | Appendix D: [Reserved] . . . . .                            | 61        |
| 11.7      | Appendix E: [Reserved] . . . . .                            | 61        |
| 11.8      | Appendix F: Use Case Templates . . . . .                    | 61        |
| 11.9      | Appendix G: System Architecture & Context . . . . .         | 63        |
| 11.10     | Appendix H: Technical Specifications . . . . .              | 63        |
| 11.10.1   | Technology Stack . . . . .                                  | 63        |
| 11.10.2   | Performance Specifications . . . . .                        | 63        |
| 11.10.3   | Security Specifications . . . . .                           | 63        |
| 11.11     | Appendix I: Testing Requirements . . . . .                  | 63        |
| 11.11.1   | Functional Testing . . . . .                                | 64        |
| 11.11.2   | Non-Functional Testing . . . . .                            | 64        |
| 11.12     | Appendix J: Deployment and Maintenance . . . . .            | 64        |
| 11.12.1   | Deployment Strategy . . . . .                               | 64        |
| 11.12.2   | Maintenance Requirements . . . . .                          | 64        |
| 11.13     | Appendix K: Quality Criteria and Review Practices . . . . . | 64        |
| 11.13.1   | Quality Criteria Mapping . . . . .                          | 65        |
| 11.13.2   | Review Techniques . . . . .                                 | 65        |
| <b>12</b> | <b>Document Approval</b>                                    | <b>65</b> |
| 12.1      | Stakeholder Signatures . . . . .                            | 65        |
| 12.2      | Version History . . . . .                                   | 66        |

## List of Figures

|    |   |    |
|----|---|----|
| 1  | System Context Diagram - Vacation Management System Integration . . . . . | 12 |
| 2  | Vacation Request State Diagram - Complete Request Lifecycle . . . . .     | 13 |
| 3  | Basic Vacation Request Workflow - Standard Approval Process . . . . .     | 14 |
| 4  | Vacation Request Escalation to Sponsor Workflow - Automatic Escalation    | 15 |
| 5  | Vacation Request Resubmission After Rejection Workflow . . . . .          | 16 |
| 6  | UC-1: Employee Vacation Request Use Case . . . . .                        | 20 |
| 7  | UC-2: Employee Vacation Cancellation Request Use Case . . . . .           | 21 |
| 8  | UC-3: My Vacation Requests Use Case . . . . .                             | 22 |
| 9  | UC-4: Review Vacation Request Use Case . . . . .                          | 23 |
| 10 | UC-5: Review Vacation Cancellation Request Use Case . . . . .             | 24 |
| 11 | UC-6: Pending Vacation Requests Use Case . . . . .                        | 25 |
| 12 | UC-7: Vacation Inquiry Search Parameters Use Case . . . . .               | 26 |
| 13 | UC-8: Vacation Inquiry Search Results Use Case . . . . .                  | 27 |
| 14 | UC-9: Print Single Vacation Transaction Report Use Case . . . . .         | 28 |
| 15 | UC-10: Print Comparative Annual Report Use Case . . . . .                 | 29 |
| 16 | UC-11: Notifications Center Use Case . . . . .                            | 30 |
| 17 | UC-12: Automated Update of Employee Annual Vacation Balance Use Case      | 31 |
| 18 | System Messages Table - Part 1 . . . . .                                  | 39 |
| 19 | System Messages Table - Part 2 . . . . .                                  | 39 |
| 20 | Data Dictionary Template . . . . .  | 41 |
| 21 | Employee Master Data Dictionary . . . . .                                 | 41 |
| 22 | Departments Master Data Dictionary . . . . .                              | 42 |
| 23 | Vacation Types Master Data Dictionary . . . . .                           | 42 |
| 24 | Vacation Request Screen Data Dictionary . . . . .                         | 43 |
| 25 | Vacation Cancellation Request Screen Data Dictionary . . . . .            | 43 |
| 26 | Review Vacation Request Screen Data Dictionary . . . . .                  | 44 |
| 27 | Review Vacation Cancellation Request Screen Data Dictionary . . . . .     | 45 |
| 28 | My Vacation Requests Screen Data Dictionary . . . . .                     | 46 |
| 29 | Pending Vacation Requests Screen Data Dictionary . . . . .                | 47 |
| 30 | Vacation Inquiry Search Parameters Screen Data Dictionary . . . . .       | 47 |
| 31 | Vacation Inquiry Search Results Screen Data Dictionary . . . . .          | 48 |
| 32 | Notifications Center Screen Data Dictionary . . . . .                     | 49 |
| 33 | Print Single Transaction Report Data Dictionary . . . . .                 | 50 |
| 34 | Print Comparative Annual Report Data Dictionary . . . . .                 | 50 |
| 35 | Vacation Request Screen Wireframe . . . . .                               | 51 |
| 36 | Vacation Cancellation Request Screen Wireframe . . . . .                  | 52 |
| 37 | Review Vacation Request Screen Wireframe . . . . .                        | 53 |
| 38 | Review Vacation Cancellation Request Screen Wireframe . . . . .           | 54 |
| 39 | My Vacation Requests Screen Wireframe . . . . .                           | 55 |
| 40 | Pending Vacation Requests Screen Wireframe . . . . .                      | 55 |
| 41 | Vacation Inquiry Search Parameters Screen Wireframe . . . . .             | 56 |
| 42 | Vacation Inquiry Search Results Screen Wireframe . . . . .                | 57 |
| 43 | Notifications Center Screen Wireframe . . . . .                           | 58 |
| 44 | Requests Center Screen Wireframe . . . . .                                | 58 |
| 45 | Single Transaction Report Layout Wireframe . . . . .                      | 59 |
| 46 | Annual Comparative Report Layout Wireframe . . . . .                      | 60 |

|    |   |    |
|----|---|----|
| 47 | Annual Comparative Report Search Parameters Wireframe . . . . . | 61 |
| 48 | Use Case Template . . . . .                                     | 62 |

## List of Tables

|   |  |    |
|---|--|----|
| 1 | User Classes and Access Rights . . . . .                           | 10 |
| 2 | Stakeholder Register . . . . .                                     | 10 |
| 3 | Use Case Summary with Business Rule References . . . . .           | 19 |
| 4 | Comprehensive System Component Mapping and Traceability Matrix . . | 33 |
| 5 | Document Approval Signatures . . . . .                             | 65 |
| 6 | Document Version History . . . . .                                 | 66 |

# 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: Functional Requirements
- Section 7: Non-Functional Requirements
- Section 8: User Interface Overview
- Section 9: Data Requirements Overview
- Section 10: System Messages
- Section 11: Appendices
- Section 12: Document Approval

## 2 Overall Description

### 2.1 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.

### 2.2 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

## 2.3 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

## 2.4 Stakeholder Register

| Stakeholder      | Role / Title        | Power | Interest | Key Requirements                   | Main Concerns                       |
|------------------|---------------------|-------|----------|------------------------------------|-------------------------------------|
| Employees        | Staff               | L     | H        | Submit and track vacation requests | Rejections, delays, unclear process |
| Direct Managers  | Supervisor          | H     | H        | Approve/reject requests            | Delays, incomplete information      |
| HR Personnel     | HR Officer          | H     | H        | Manage policies, approve requests  | Misuse, balance errors              |
| General Managers | GM / Senior Manager | H     | H        | Final approvals, system oversight  | Delayed approvals, wrong balances   |
| System           | Automated Actor     | H     | H        | Update balances, enforce policies  | Wrong calculations, workflow errors |

Table 2: Stakeholder Register

## 2.5 Operating Environment

- **Platform:** Web-based application with mobile responsive design
- **Browsers:** Chrome, Firefox, Safari, Edge (latest versions)
- **Mobile:** iOS 12+, Android 8+

- **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
- 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 and Context

## 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:

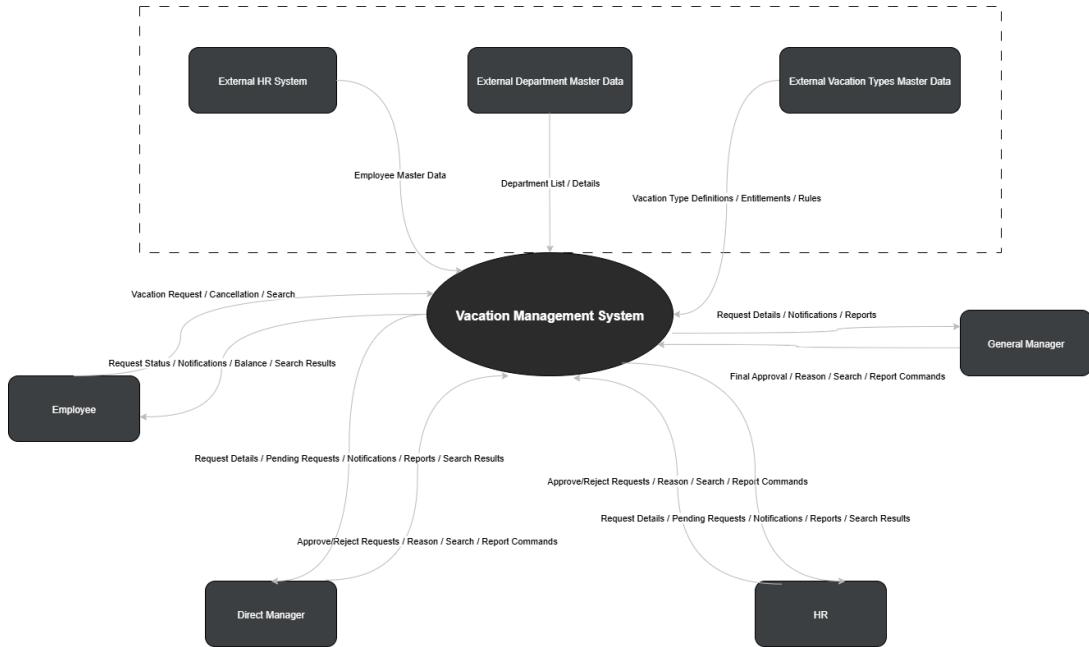


Figure 1: System Context Diagram - Vacation Management System Integration

### 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 System State Management

The system manages various states for vacation requests and the overall workflow. The following state diagram illustrates the complete lifecycle of a vacation request:

### Vacation Request - State Diagram

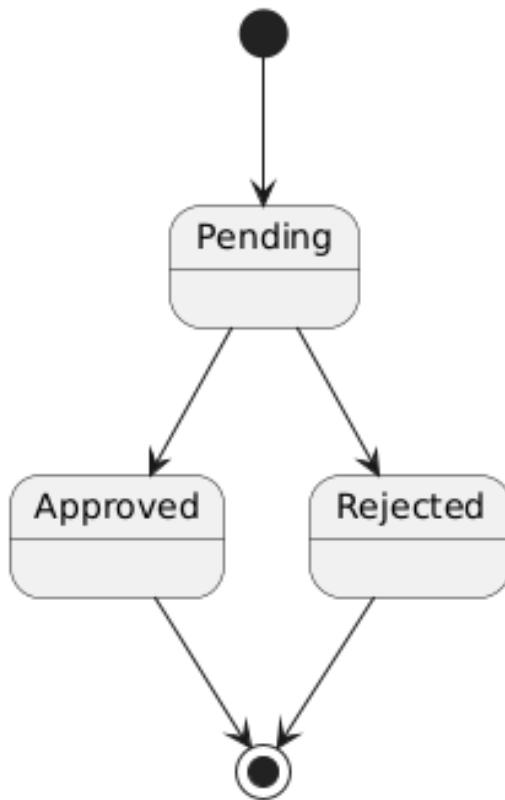


Figure 2: Vacation Request State Diagram - Complete Request Lifecycle

## 3.5 Core Workflow Processes

The system implements several key workflow processes that define the approval and processing logic:

### 3.5.1 Basic Vacation Request Flow

The standard vacation request follows this workflow:

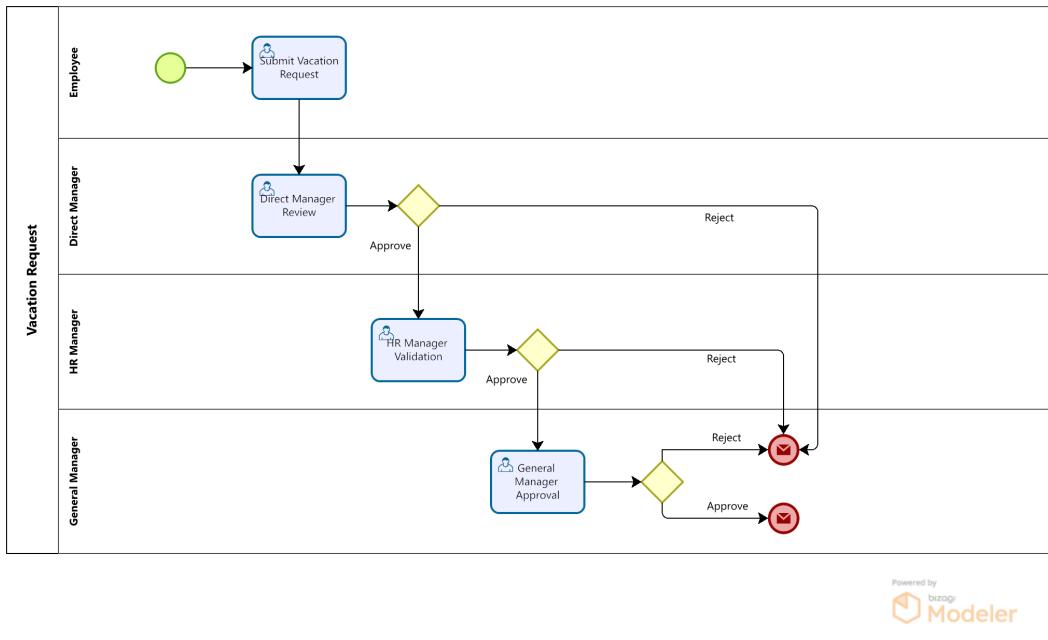
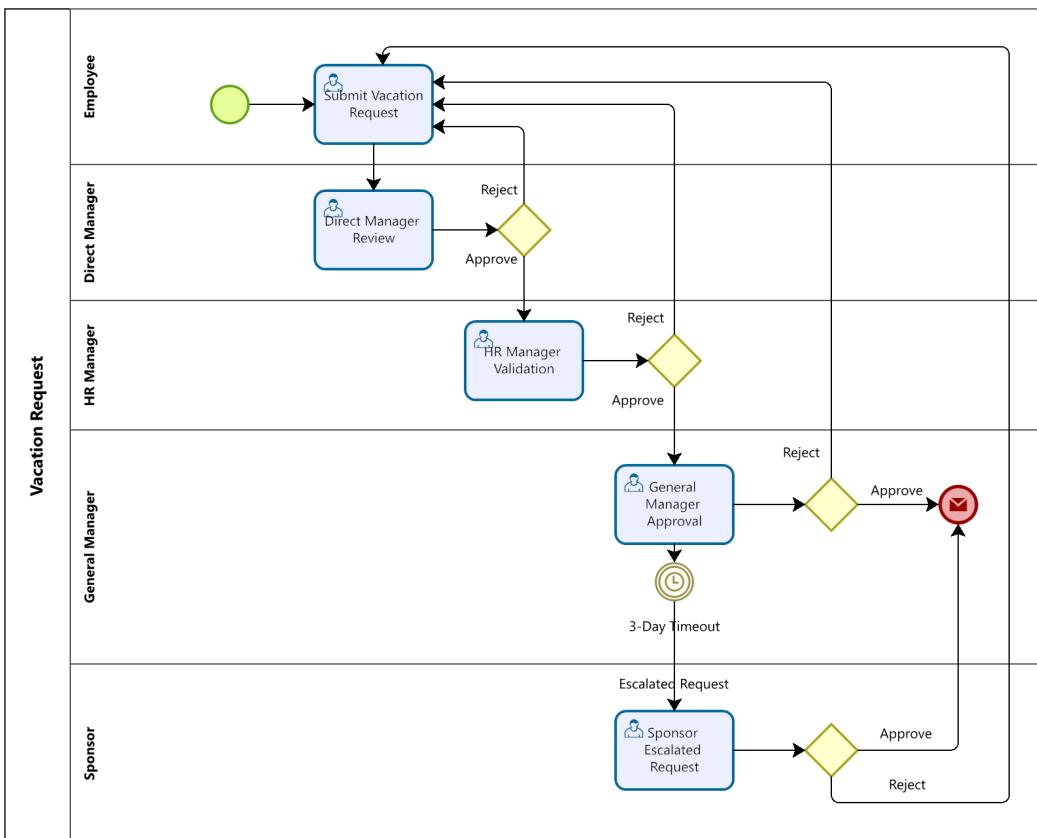


Figure 3: Basic Vacation Request Workflow - Standard Approval Process

### 3.5.2 Escalation to Sponsor Flow

When approvals are delayed, the system automatically escalates requests:



Powered by  
**Modeler**

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

### 3.5.3 Resubmission After Rejection Flow

Rejected requests can be resubmitted following this process:

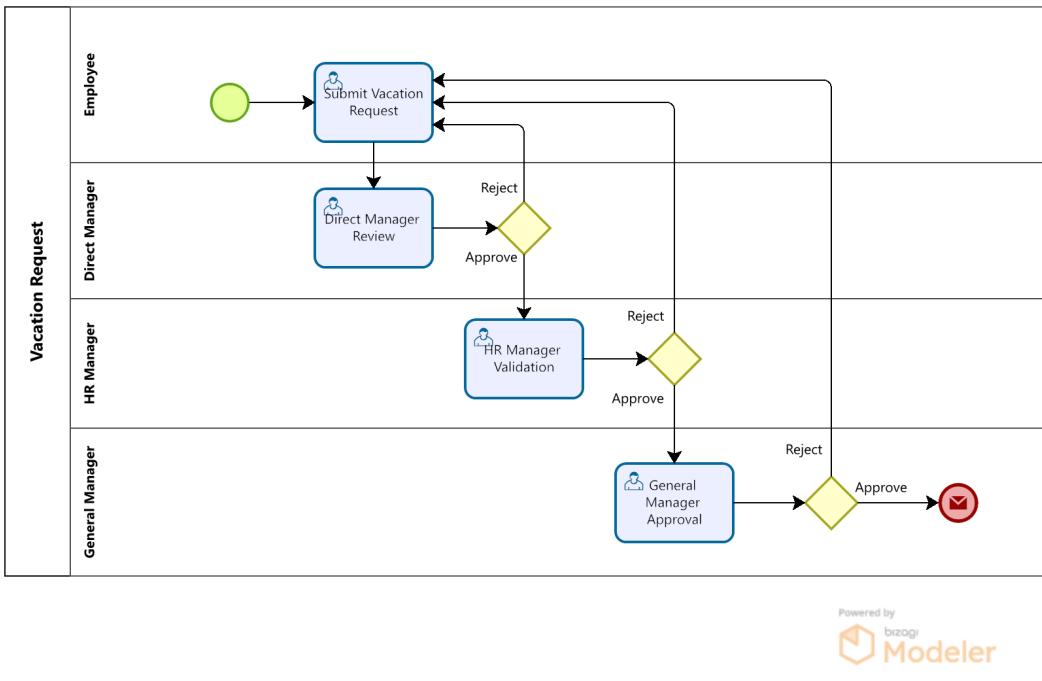


Figure 5: Vacation Request Resubmission After Rejection Workflow

## 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 Consolidated Rules from All-UseCases.json (Canonical)

The following rules are consolidated verbatim from the detailed use cases and serve as the canonical set. Where legacy IDs (BR-001..BR-019) overlap in meaning, both IDs may be referenced during transition; new references should prefer the IDs below.

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

- **BV-001:** End date must be strictly after start date. (Condition: `endDate > startDate`)
- **BV-002:** Requested days must not exceed available leave balance. (Condition: `daysRequested ≤ leaveBalance`)
- **BV-003:** Sick leave requires a medical certificate attachment. (Condition: `type == "Sick"`)

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

- **BV-201:** Cancellation must occur before vacation start date. (Condition: `currentDate < vacation.startDate`)
- **BV-202:** Only requests in Pending or Approved status can be cancelled. (Condition: `status ∈ {Pending, Approved}`)

- **BV-203:** Cancellation request data must match original request. (Condition: `cancellationData == originalData`)

#### 4.1.3 UC-3: My Vacation Requests

- **BV-301:** Cancel button disabled for approved requests. (Condition: `status == Approved`)
- **BV-302:** Cancel button disabled for already cancelled requests. (Condition: `status == Cancelled`)
- **BV-303:** Cancel button disabled for requests with passed start dates. (Condition: `currentDate ≥ startDate`)
- **BV-304:** All request details in detailed view are read-only. (Condition: `fieldEditable == false`)

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

- **BV-401:** Reason for decision is mandatory for all reviewers. (Condition: non-empty reason)
- **BV-402:** Attachments are mandatory for sick leave requests. (Condition: `vacationType == 'Sick Leave'`)
- **BV-403:** Vacation balance is updated only after General Manager approval.
- **BV-404:** System auto-escalates pending requests after 2 days.

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

- **BV-501:** Cancellation must occur before vacation start date. (Condition: `currentDate < vacation.startDate`)
- **BV-502:** Only Pending or Approved requests are eligible for cancellation. (Condition: `status ∈ {Pending, Approved}`)
- **BV-503:** Reviewer must provide a decision reason. (Condition: non-empty reason)

#### 4.1.6 UC-6: Pending Vacation Requests

- **BV-601:** Only pending requests appear on this screen. (Condition: `status == 'Pending'`)
- **BV-602:** Action column always provides [View Request] button. (Condition: `row ∈ PendingRequests`)

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

- **BV-701:** From Date and To Date must be valid dates.
- **BV-702:** From Date must not be after To Date. (Condition: `fromDate > toDate`)
- **BV-703:** Department dropdown options must come from Department Master.

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

- **BV-801:** Print option allowed only for Approved requests. (Blocks when `Status != Approved`)
- **BV-802:** Pagination controls must be consistent and not exceed total record count.

#### 4.1.9 UC-9: Print Single Vacation Transaction Report

- **BV-901:** Report can only be generated for Approved vacation requests.
- **BV-902:** All footer elements must be included on every page of the PDF.

#### 4.1.10 UC-10: Print Comparative Annual Report

- **BV-1002:** At least one Department must be selected or 'All Departments' chosen.
- **BV-1003:** Footer elements must appear on every page of the PDF.

#### 4.1.11 UC-11: Notifications Center

- **BR-1101:** System displays notifications relevant to the logged-in user's role.
- **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:** For HR/Managers, notifications contain only the header with a link to full details.
- **BR-1106:** Each notification must contain text and at least one actionable button ([View] or Context).

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

- **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  $\geq$  10 years or age  $\geq$  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 scope aligns with Saudi vacation regulations (full-time Muslim Saudi employees).

## 4.2 Vacation Policy Rules

### 4.2.1 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.

### 4.2.2 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.

### 4.2.3 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.

### 4.2.4 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.

### 4.2.5 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.

## 4.3 Approval Workflow Rules

### 4.3.1 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.

### 4.3.2 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.

### 4.3.3 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.

#### 4.3.4 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.

#### 4.3.5 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.

### 4.4 Validation Rules

#### 4.4.1 BR-011: Date Validation

**Rule:** Start date must be in the future, and end date must be after start date. **Applicable Use Cases:** UC-1 **Implementation:** System validates date inputs in real-time and prevents submission of invalid dates.

#### 4.4.2 BR-012: Overlap Prevention

**Rule:** The system must ensure an employee has at most one active vacation request for any given date range. **Applicable Use Cases:** UC-1 **Implementation:** System checks existing requests against proposed dates and blocks submission if conflicts exist.

#### 4.4.3 BR-013: Balance Validation

**Rule:** Requested vacation days must not exceed available leave balance. **Applicable Use Cases:** UC-1 **Implementation:** System calculates available balance (Total - Taken - Pending) and validates against request.

#### 4.4.4 BR-014: Attachment Requirements

**Rule:** Medical certificates are mandatory for sick leave requests. **Applicable Use Cases:** UC-1, UC-4 **Implementation:** System requires file upload for sick leave type and validates attachment presence.

#### 4.4.5 BR-015: Cancellation Eligibility

**Rule:** Only requests in Pending or Approved status can be cancelled. **Applicable Use Cases:** UC-2, UC-3, UC-5 **Implementation:** System checks request status and enables/disables cancellation functionality accordingly.

#### 4.4.6 BR-016: Cancellation Timing

**Rule:** Cancellation must occur before vacation start date. **Applicable Use Cases:** UC-2, UC-5 **Implementation:** System compares current date with vacation start date and blocks late cancellations.

## 4.5 System Behavior Rules

### 4.5.1 BR-017: Notification Delivery

**Rule:** System must notify all stakeholders of status changes within 5 minutes. **Applicable Use Cases:** UC-1, UC-2, UC-4, UC-5, UC-11 **Implementation:** Real-time notification system triggers alerts upon workflow state changes.

### 4.5.2 BR-018: Data Integrity

**Rule:** All vacation transactions must maintain complete audit trail. **Applicable Use Cases:** All UC **Implementation:** System logs all actions with timestamp, user ID, and action details.

### 4.5.3 BR-019: Policy Configuration

**Rule:** Vacation policies must be configurable through administrative interface. **Applicable Use Cases:** UC-12 **Implementation:** System provides configuration screens for entitlement days, eligibility criteria, and escalation timeframes.

## 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/Employee | BR-018   |
| UC-8  | Vacation Inquiry (Search Results)                    | HR/Managers/Employee | BR-018   |
| UC-9  | Print Single Vacation Transaction Report (PDF)       | HR/Managers/Employee | BR-018   |
| 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                                 | FR-006                  | System Process                 | Employee Master, Vacati                             |

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 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), where detailed flows illustrate scenarios. Avoid duplicating scenario steps here; use cases serve as the canonical behavioral narratives.

### 6.1 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

### 6.2 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

### 6.3 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

### 6.4 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

## 6.5 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

## 6.6 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

## 6.7 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

# 7 Non-Functional Requirements

## 7.1 Performance Requirements

### 7.1.1 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.

### 7.1.2 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.

### 7.1.3 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.

### 7.1.4 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.

### 7.1.5 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.

## 7.2 Security Requirements

### 7.2.1 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.

### 7.2.2 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.

### 7.2.3 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.

### 7.2.4 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.

### 7.2.5 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.

## 7.3 Usability Requirements

### 7.3.1 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.

### 7.3.2 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.

### 7.3.3 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.

### 7.3.4 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.

### 7.3.5 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.

## 7.4 Reliability Requirements

### 7.4.1 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.

### 7.4.2 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.

### 7.4.3 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.

### 7.4.4 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.

## 8 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.

### 8.1 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.

### 8.2 Report Layout Screens

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

### 8.3 Additional Screens

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

## 9 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.

### 9.1 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.

### 9.2 Operational Data

Vacation Requests, Vacation Cancellations, Approval History, and Notification Data constitute the operational entities. See Appendix B.2 for the 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 18: 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 19: 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 20: Print Comparative Annual Report Data Dictionary

### 9.3 Appendix C: Wireframe Images

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

#### 9.3.1 Core Application Screens

### Vacation Request

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

Figure 21: Vacation Request Screen Wireframe

#### Vacation Request Screen

## 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   |                           |
| Cancel   | Submit Cancellation       |

Figure 22: Vacation Cancellation Request Screen Wireframe

### Vacation Cancellation Request Screen

**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 23: Review Vacation Request Screen Wireframe

### Review Vacation Request Screen

## 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>     |                             |
| <b>Seq</b>                      | <b>File Name</b>            |
| 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 24: Review Vacation Cancellation Request Screen Wireframe

### Review Vacation Cancellation Request Screen

| 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 25: My Vacation Requests Screen Wireframe

## My Vacation Requests Screen

| 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 26: Pending Vacation Requests Screen Wireframe

## Pending Vacation Requests Screen

### 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)**

**Vacation Type (Multi-select)**

Annual

Sick

All

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

Pending

Approved

Rejected

Cancelled

All

Reset

Generate Report

Figure 27: Vacation Inquiry Search Parameters Screen Wireframe

### Vacation Inquiry Search Parameters Screen

| Employee Vacation Inquiry - Search Results                |                  |                            |                |                        |          |           |                       |
|---|------------------|----------------------------|----------------|------------------------|----------|-----------|-----------------------|
| Showing matching inquiry results based on search criteria |                  |                            |                |                        |          |           |                       |
| <a href="#">Export to Excel</a>                           |                  | <a href="#">New Search</a> |                | 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  | <a href="#">Print</a> |
| EMP002  | Fatima Al-Zahra  | Sick                       | 2025-02-01     | 2025-02-03             | 3 days   | Pending   | <a href="#">Print</a> |
| EMP003  | Omar Al-Mansouri | Annual                     | 2025-03-10     | 2025-03-17             | 8 days   | Rejected  | <a href="#">Print</a> |
| EMP004  | Sara Al-Mahmoud  | Annual                     | 2025-04-05     | 2025-04-09             | 5 days   | Approved  | <a href="#">Print</a> |
| EMP005  | Khalid Al-Rashid | Sick                       | 2025-05-01     | 2025-05-02             | 2 days   | Approved  | <a href="#">Print</a> |
| EMP006  | Omar Al-Qasimi   | Annual                     | 2025-06-12     | 2025-06-16             | 5 days   | Cancelled | <a href="#">Print</a> |
| EMP007  | Layla Mostafa    | Sick                       | 2025-07-03     | 2025-07-04             | 2 days   | Approved  | <a href="#">Print</a> |
| EMP008  | Hassan Adel      | Annual                     | 2025-08-20     | 2025-08-25             | 6 days   | Approved  | <a href="#">Print</a> |
| EMP009  | Youssef Nabil    | Sick                       | 2025-09-14     | 2025-09-15             | 2 days   | Rejected  | <a href="#">Print</a> |
| EMP010  | Nourhan Sameh    | Annual                     | 2025-10-01     | 2025-10-05             | 5 days   | Approved  | <a href="#">Print</a> |
| EMP011  | Ahmed Al-Rashid  | Annual                     | 2025-01-15     | 2025-01-20             | 6 days   | Approved  | <a href="#">Print</a> |
| EMP012  | Fatima Al-Zahra  | Sick                       | 2025-02-01     | 2025-02-03             | 3 days   | Pending   | <a href="#">Print</a> |
| EMP013  | Omar Al-Mansouri | Annual                     | 2025-03-10     | 2025-03-17             | 8 days   | Rejected  | <a href="#">Print</a> |
| EMP014  | Sara Al-Mahmoud  | Annual                     | 2025-04-05     | 2025-04-09             | 5 days   | Approved  | <a href="#">Print</a> |
| EMP015  | Khalid Al-Rashid | Sick                       | 2025-05-01     | 2025-05-02             | 2 days   | Approved  | <a href="#">Print</a> |
| EMP016  | Omar Al-Qasimi   | Annual                     | 2025-06-12     | 2025-06-16             | 5 days   | Cancelled | <a href="#">Print</a> |
| EMP017  | Layla Mostafa    | Sick                       | 2025-07-03     | 2025-07-04             | 2 days   | Approved  | <a href="#">Print</a> |
| EMP018  | Hassan Adel      | Annual                     | 2025-08-20     | 2025-08-25             | 6 days   | Approved  | <a href="#">Print</a> |
| EMP019  | Youssef Nabil    | Sick                       | 2025-09-14     | 2025-09-15             | 2 days   | Rejected  | <a href="#">Print</a> |
| EMP020  | Nourhan Sameh    | Annual                     | 2025-10-01     | 2025-10-05             | 5 days   | Approved  | <a href="#">Print</a> |
| EMP021  | Ahmed Al-Rashid  | Annual                     | 2025-01-15     | 2025-01-20             | 6 days   | Approved  | <a href="#">Print</a> |
| EMP022  | Fatima Al-Zahra  | Sick                       | 2025-02-01     | 2025-02-03             | 3 days   | Pending   | <a href="#">Print</a> |

Figure 28: Vacation Inquiry Search Results Screen Wireframe

## Vacation Inquiry Search Results Screen

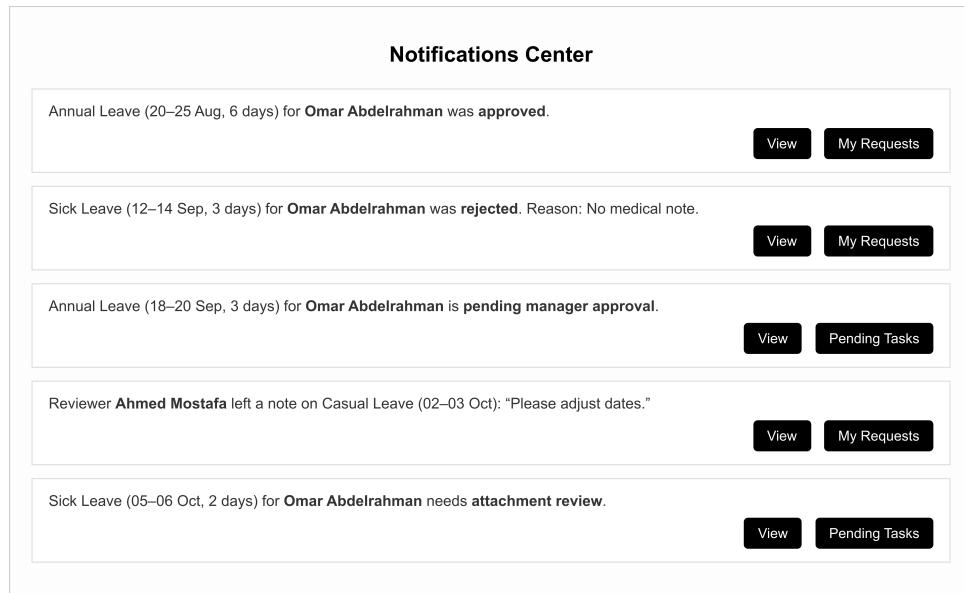


Figure 29: Notifications Center Screen Wireframe

## Notifications Center Screen

| Requests Center           |                     |            |                      |            |            |                               |
|---------------------------|---------------------|------------|----------------------|------------|------------|-------------------------------|
| Pending Vacation Requests |                     |            | My Vacation Requests |            |            |                               |
| Employee ID               | Name                | Department | Vacation Type        | Start Date | End Date   | Action                        |
| EMP101                    | Omar<br>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 30: Requests Center Screen Wireframe

## Requests Center Screen

### 9.3.2 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 31: Single Transaction Report Layout Wireframe

### Single Transaction Report Layout

| 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 32: Annual Comparative Report Layout Wireframe

## Annual Comparative Report Layout

**Annual Comparative Report - Search Parameters**

*Generate annual comparative PDF by department*

| Vacation Start Date                        | Vacation End Date                          |
|--|--|
| 01/01/2025 <input type="button" value=""/> | 12/31/2025 <input type="button" value=""/> |

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

All Departments

IT

HR

Finance

Marketing

Operations

Sales

Include employee names under departments

Figure 33: Annual Comparative Report Search Parameters Wireframe

## Annual Comparative Report Search Parameters

### 9.4 Appendix D: State Diagrams

The system implements comprehensive state management for vacation requests and work-flows:

## Vacation Request - State Diagram

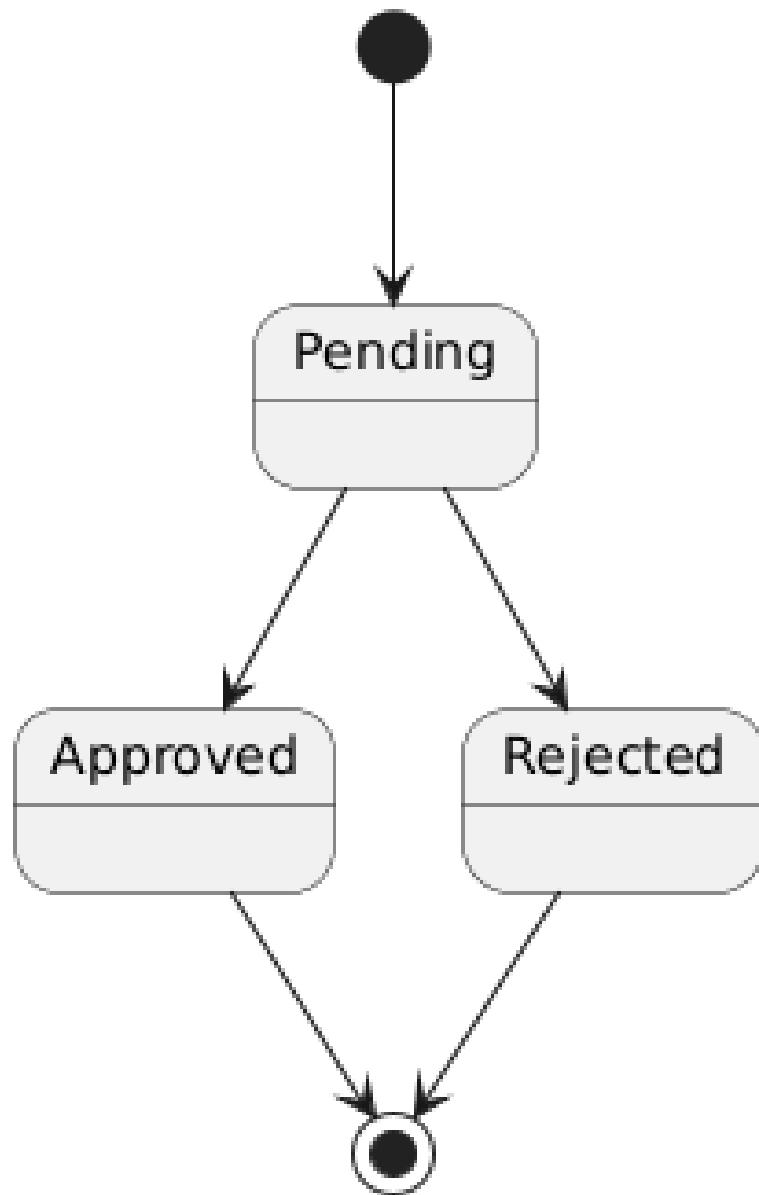


Figure 34: Vacation Request State Diagram

### 9.5 Appendix E: Workflow Diagrams

The system implements several key workflow processes:

### 9.5.1 Basic Vacation Request Flow

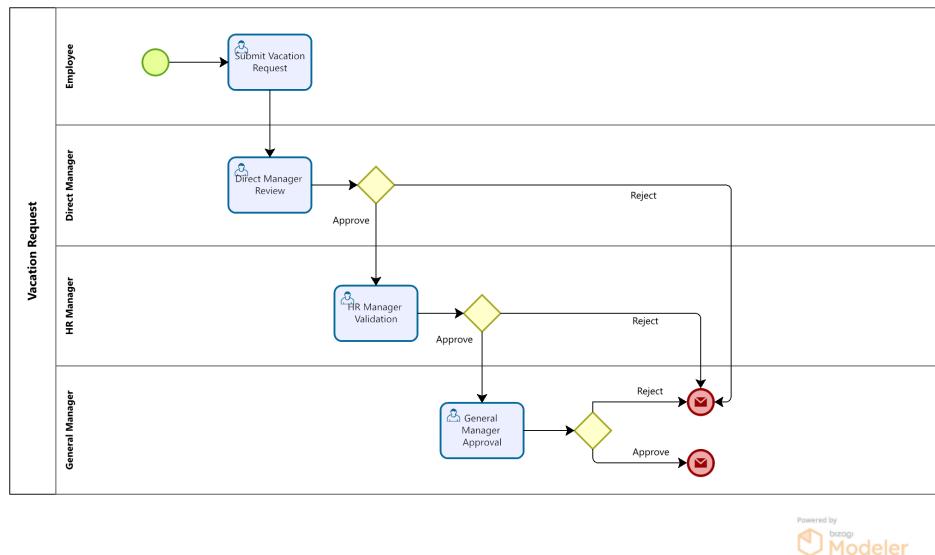
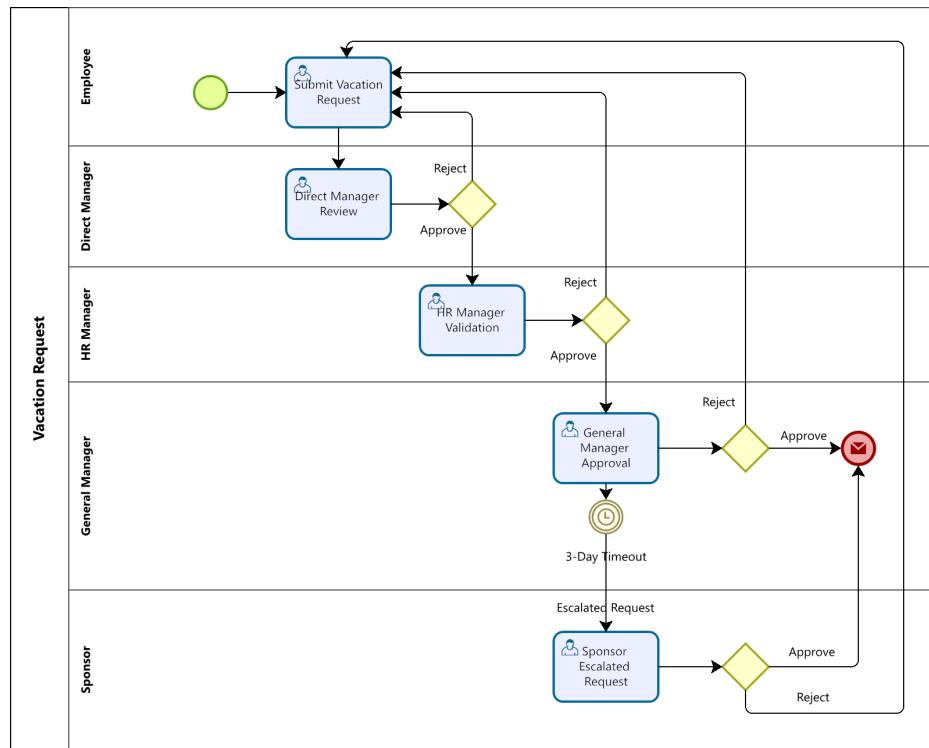


Figure 35: Basic Vacation Request Workflow

### 9.5.2 Escalation to Sponsor Flow



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 **bizagi** Modeler

Figure 36: Vacation Request Escalation to Sponsor Workflow

### 9.5.3 Resubmission After Rejection Flow

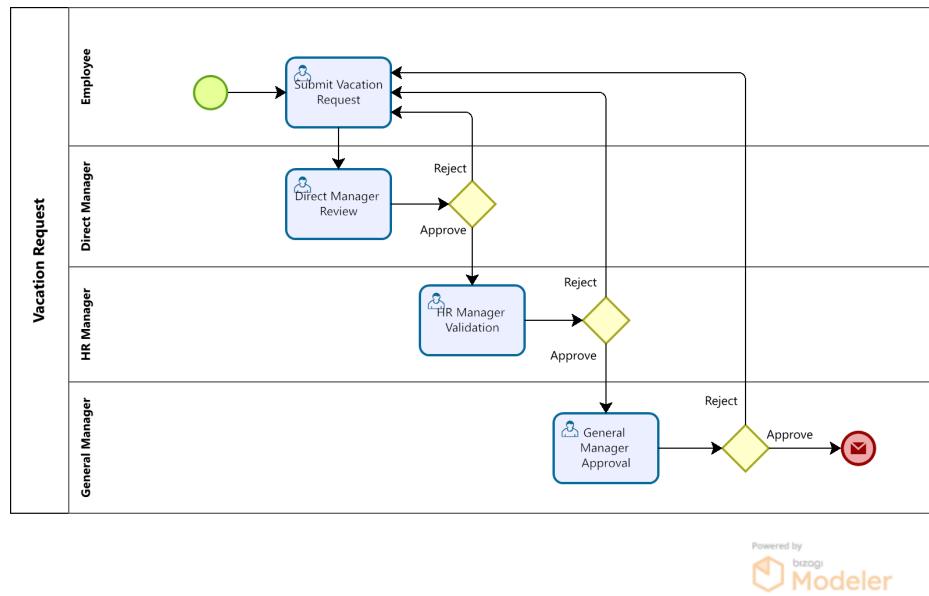


Figure 37: Vacation Request Resubmission After Rejection Workflow

## 9.6 Appendix F: Use Case Templates

The following image shows the standard use case template used for documenting all system use cases:

## Use Case: UC-1 – Employee Submits Vacation Request

Compact use case template with actors in the summary, rules before deviations, and qualities merged into validation rules.

| 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. |  |   |                                 |  |  |
| Scope                                 | HR Self-Service Portal   |  |   |                                 |  |  |
| Actors                                | Employee (primary), Manager (secondary), HR System (supporting)                          |  |   |                                 |  |  |
| 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 validates dates in real-time and shows current leave balance.   |   |                                 |  |  |
| 3                                     | Employee clicks "Submit".  | System saves request, assigns a Request ID, and routes to the Manager. |   |                                 |  |  |
| 4                                     | —  | Manager receives a notification for pending approval.                  |   |                                 |  |  |
| BUSINESS VALIDATION RULES             |  |  |   |                                 |  |  |
| Rule ID                               | Description  | Condition  | Message ID  | Notes                           |  |  |
| BV-001                                | End date must be strictly after start date.  | endDate > startDate  | MSG-101   | Validated client & server.      |  |  |
| BV-002                                | Requested days must not exceed available leave balance.                                  | daysRequested ≤ leaveBalance   | MSG-102   | Override requires HR approval.  |  |  |
| BV-003                                | Sick leave requires a medical certificate attachment.                                    | type == "Sick"   | MSG-103   | Attachment is mandatory.        |  |  |
| BV-004                                | Submission should complete quickly for good UX.  | submissionTime ≤ 120s  | N/A   | Performance/quality constraint. |  |  |
| 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, logs incident, 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                                  | All details consolidated in a single table for consistency and easy export/printing.     |  |   |                                 |  |  |

Figure 38: Use Case Template

For complete use case specifications, refer to the All-UseCases.json document. This document contains:

- Standard Use Case Template
- Use Case Documentation Standards
- Business Rule Definition Format

- Exception Handling Documentation
- Complete specifications for all 12 use cases

## 9.7 Appendix G: System Architecture & Context

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.

## 9.8 Appendix H: Technical Specifications

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

### 9.8.1 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

### 9.8.2 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

### 9.8.3 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

## 9.9 Appendix I: Testing Requirements

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

### 9.9.1 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

### 9.9.2 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

## 9.10 Appendix J: Deployment and Maintenance

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

### 9.10.1 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

### 9.10.2 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

## 9.11 Appendix K: Quality Criteria and Review Practices

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

### 9.11.1 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 7) 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.
- **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.

### 9.11.2 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.

## 10 Document Approval

### 10.1 Stakeholder Signatures

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

Table 5: Document Approval Signatures

## 10.2 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     | Current  | Reorganized structure for logical flow, embedded key diagrams in relevant sections, added comprehensive traceability matrix | System Analyst |

Table 6: Document Version History