

Vacation Management System

Software Requirements Specification

Version 1.0

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1 Introduction

1.1 Purpose

This Software Requirements Specification (SRS) document describes the functional and non-functional requirements for the Vacation Management System. The document serves as a contract between the development team and stakeholders, providing a comprehensive understanding of what the system should accomplish.

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.

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

1.4 References

- Project Scope Document
- Requirements Specification
- Wireframe Specifications
- Data Dictionary Documentation
- Use Case Documentation

1.5 Overview

The remainder of this document is organized as follows:

- Section 2: Overall Description
- Section 3: Specific Requirements
- Section 4: External Interface Requirements
- Section 5: Non-Functional Requirements

- Section 6: System Architecture
- Section 7: Data Requirements
- Section 8: Appendices

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 and modify vacation requests
- Support for Annual and Sick leave types
- File attachment capabilities
- Real-time validation and balance checking

2. Vacation Cancellation Management

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

3. Approval Workflow

- Multi-level approval process
- Manager and HR review capabilities
- Automatic escalation after delays

4. Reporting and Analytics

- Single transaction reports
- Comparative annual reports
- Department-wise vacation analytics

5. Inquiry and Search

- Advanced search capabilities
- Filter by multiple criteria
- Export functionality

2.3 User Classes and Characteristics

User Class	Characteristics	Access Rights
Employees	Regular users, submit vacation requests	Create, view, modify own requests
Direct Managers	Supervisors, approve subordinate requests	Review, approve/reject requests
HR Personnel	Administrative users, manage policies	Full access, policy management
General Managers	Senior management, final approval	Final approval, reports access
System Administrators	Technical users, system maintenance	Full system access

Table 1: User Classes and Access Rights

2.4 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

2.5 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

2.6 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

3 Specific Requirements

3.1 Functional Requirements

3.1.1 FR-001: Vacation Request Creation

- **Description:** Employees must be able to create new vacation requests
- **Inputs:** Start date, end date, vacation type, notes, attachments
- **Processing:** Validate dates, check balance, calculate period
- **Outputs:** Request ID, confirmation message
- **Business Rules:**
 - Start date cannot be in the past
 - End date must be after start date
 - No overlapping requests for same employee
 - Sick leave requires document attachments
 - Trainees cannot submit requests

3.1.2 FR-002: Vacation Request Modification

- **Description:** Employees can modify requests before submission
- **Inputs:** Modified request details
- **Processing:** Re-validate all fields, update request
- **Outputs:** Updated request, validation results
- **Business Rules:** Only pending requests can be modified

3.1.3 FR-003: Vacation Cancellation

- **Description:** Employees can cancel pending or approved requests
- **Inputs:** Cancellation reason
- **Processing:** Validate cancellation eligibility
- **Outputs:** Cancellation request, approval workflow
- **Business Rules:** Cancellation only allowed before start date

3.1.4 FR-004: Multi-Level Approval

- **Description:** Requests follow approval hierarchy
- **Inputs:** Manager decisions, reasons
- **Processing:** Route through approval levels
- **Outputs:** Approval status, notifications
- **Business Rules:** Employee → Direct Manager → HR → General Manager

3.1.5 FR-005: Vacation Inquiry

- **Description:** Search and filter vacation requests
- **Inputs:** Search criteria (dates, department, employee, type, status)
- **Processing:** Apply filters, execute search
- **Outputs:** Filtered results grid
- **Business Rules:** Results based on user access rights

3.1.6 FR-006: Report Generation

- **Description:** Generate PDF reports for vacation data
- **Inputs:** Report parameters, data selection
- **Processing:** Format data, generate PDF
- **Outputs:** PDF report with standard footer
- **Business Rules:** Include print time, page number, user name

3.2 Non-Functional Requirements

3.2.1 Performance Requirements

- **Response Time:** Page load < 3 seconds
- **Throughput:** Support 100+ concurrent users
- **Availability:** 99.5% uptime during business hours
- **Scalability:** Support up to 1000 employees

3.2.2 Security Requirements

- **Authentication:** Secure login with session management
- **Authorization:** Role-based access control
- **Data Protection:** Encrypt sensitive employee information
- **Audit Trail:** Log all system activities

3.2.3 Usability Requirements

- **User Interface:** Intuitive, responsive design
- **Accessibility:** WCAG 2.1 AA compliance
- **Multi-language:** Arabic and English support
- **Mobile Support:** Responsive design for all devices

3.2.4 Reliability Requirements

- **Error Handling:** Graceful error messages
- **Data Integrity:** Prevent data corruption

- **Backup:** Daily automated backups
- **Recovery:** 4-hour maximum recovery time

4 External Interface Requirements

4.1 User Interfaces

4.1.1 Web Interface

- Modern, responsive web design
- Consistent navigation and layout
- Form validation with real-time feedback
- Accessible design elements
- Cross-browser compatibility

4.1.2 Mobile Interface

- Mobile-responsive design
- Touch-friendly interface elements
- Optimized for small screens
- Native app-like experience

4.2 Hardware Interfaces

- Server hardware requirements
- Network infrastructure specifications
- Storage capacity planning
- Backup system requirements

4.3 Software Interfaces

- Database management system
- Web server software
- PDF generation libraries
- Email notification system
- Integration APIs

4.4 Communication Interfaces

- HTTP/HTTPS protocols
- RESTful API endpoints

- Email notifications
- SMS alerts (optional)
- Push notifications

5 System Architecture

5.1 Architecture Overview

The system follows a three-tier architecture:

- **Presentation Tier:** Web and mobile interfaces
- **Business Logic Tier:** Application services and workflows
- **Data Tier:** Database and file storage

5.2 Component Design

- **User Management Module:** Authentication and authorization
- **Vacation Management Module:** Core business logic
- **Workflow Engine:** Approval process management
- **Reporting Module:** Report generation and export
- **Notification Module:** Communication services

5.3 Database Design

- **Employee Master:** Employee information and balances
- **Vacation Requests:** Request details and status
- **Approval History:** Workflow tracking
- **System Configuration:** Policies and settings
- **Audit Logs:** Activity tracking

6 Data Requirements

6.1 Data Dictionary

The system includes comprehensive data dictionaries for:

- Screen-specific data fields
- Master data entities
- Business rules and validation
- Default values and constraints

6.2 Data Migration

- Employee data from Excel to database
- Historical vacation records
- Department and organizational structure
- User accounts and permissions

6.3 Data Backup and Recovery

- Automated daily backups
- Point-in-time recovery capability
- Data retention policies
- Disaster recovery procedures

7 Wireframe Specifications

7.1 Screen 1: Vacation Request Screen

- **Header:** Vacation Request
- **Purpose:** Create new vacation requests and modify before submission
- **Fields:** Employee details, vacation type, dates, notes, attachments
- **Validation:** Real-time validation with error messages
- **Actions:** Submit and Cancel buttons

7.2 Screen 2: Vacation Cancellation Request Screen

- **Header:** Vacation Cancellation Request
- **Purpose:** Cancel pending vacation requests
- **Fields:** Original request details, cancellation reason
- **Validation:** Cancellation eligibility checks
- **Actions:** Submit Cancellation and Cancel buttons

7.3 Screen 3: Review Vacation Request Screen

- **Header:** Review Vacation Request
- **Purpose:** HR/Managers review and approve/reject requests
- **Fields:** Request details in view mode, reviewer notes
- **Workflow:** Multi-level approval process
- **Actions:** Accept and Reject buttons

7.4 Screen 4: Review Cancellation Request Screen

- **Header:** Review Vacation Cancellation Request
- **Purpose:** Approve or reject cancellation requests
- **Fields:** Original request and cancellation details
- **Workflow:** Manager approval process
- **Actions:** Approve and Reject Cancellation buttons

7.5 Screen 5: Vacation Inquiry Search Parameters

- **Header:** Employee Vacation Inquiry - Search Parameters
- **Purpose:** Enter search criteria for vacation inquiries
- **Fields:** Date range, department, employee, type, status
- **Filters:** Multi-select dropdown options
- **Actions:** Generate Report and Reset buttons

7.6 Screen 6: Vacation Inquiry Search Results

- **Header:** Employee Vacation Inquiry - Search Results
- **Purpose:** Display grid of matching inquiry results
- **Columns:** Employee details, vacation info, status, actions
- **Pagination:** Page navigation and records per page
- **Actions:** Print, Export to Excel, New Search

7.7 Screen 7: Single Transaction Report

- **Header:** Leave Transaction Report
- **Purpose:** PDF report for single vacation transaction
- **Content:** Request details, employee info, approval history
- **Footer:** Print time, page number, user name
- **Format:** Professional PDF layout

7.8 Screen 8: Comparative Annual Report

- **Header:** Annual Comparative Report by Department
- **Purpose:** Annual view by department with vacation statistics
- **Content:** Department totals, remaining balances, employee details
- **Parameters:** Date range, department selection, employee inclusion
- **Format:** Multi-page PDF report

7.9 Screen 9: Pending Vacation Requests

- **Header:** Pending Vacation Requests (Tasks)
- **Purpose:** Display pending requests requiring action
- **Columns:** Employee details, vacation info, action
- **Layout:** Clean table with headers
- **Actions:** View Request button for each row

7.10 Screen 10: My Vacation Requests

- **Header:** My Vacation Requests
- **Purpose:** Personal vacation request management
- **View:** Summary columns with expandable details
- **Sections:** Request details, review history, attachments
- **Actions:** Cancel button (when applicable)

7.11 Screen 11: Notifications Center

- **Header:** Notifications Center
- **Purpose:** System notifications and updates
- **Components:** Notification text and action buttons
- **Types:** Approval, rejection, pending, review notes
- **Layout:** Card-style with clear hierarchy

8 Business Rules and Logic

8.1 Vacation Policy Rules

- **Standard Entitlement:** 21 days per year
- **Extended Entitlement:** 30 days for employees with >10 years service or >50 years old
- **Leave Types:** Annual and Sick leave only
- **Unused Days:** Forfeited annually, no carryover
- **Emergency Exceptions:** Supported via flags even with zero balance

8.2 Approval Workflow Rules

- **Approval Hierarchy:** Employee → Direct Manager → HR → General Manager
- **Escalation:** Automatic after 2 days of delay
- **Balance Update:** Only after General Manager approval

- **Rejection Reasons:** Required for all rejections
- **Notification:** Sent for all status changes

8.3 Validation Rules

- **Date Validation:** No past dates, logical date ranges
- **Overlap Prevention:** No conflicting requests for same employee
- **Balance Checking:** Requested days < available balance
- **Attachment Requirements:** Mandatory for sick leave
- **Trainee Restrictions:** Cannot submit vacation requests

9 Use Cases

9.1 UC-1: Employee Submits Vacation Request

- **Primary Actor:** Employee
- **Goal:** Submit a vacation request for approval
- **Preconditions:** Employee authenticated, has leave balance
- **Main Flow:** Navigate to form, enter details, submit
- **Postconditions:** Request created, workflow initiated

9.2 UC-2: Employee Cancels Vacation Request

- **Primary Actor:** Employee
- **Goal:** Cancel a pending or approved vacation request
- **Preconditions:** Request exists, not yet started
- **Main Flow:** Select request, provide reason, submit cancellation
- **Postconditions:** Cancellation request created

9.3 UC-3: Manager Reviews Vacation Request

- **Primary Actor:** Manager/HR Personnel
- **Goal:** Review and approve/reject vacation requests
- **Preconditions:** Pending request exists
- **Main Flow:** View details, make decision, provide notes
- **Postconditions:** Request status updated, notifications sent

9.4 UC-4: Generate Vacation Reports

- **Primary Actor:** Manager/HR Personnel

- **Goal:** Generate vacation reports for analysis
- **Preconditions:** Access to reporting functions
- **Main Flow:** Select parameters, generate report, export
- **Postconditions:** Report generated and available

10 Technical Specifications

10.1 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

10.2 Performance Specifications

- **Response Time:** < 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

10.3 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

11 Testing Requirements

11.1 Functional Testing

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

11.2 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

12 Deployment and Maintenance

12.1 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

12.2 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

13 Appendices

13.1 Appendix A: Glossary

- **Vacation:** Time off from work for personal reasons
- **Leave Balance:** Remaining vacation days available
- **Approval Workflow:** Process for request authorization
- **Escalation:** Automatic forwarding of delayed requests
- **Attachments:** Supporting documents for requests

13.2 Appendix B: Data Models

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

13.3 Appendix C: Wireframe Images

- Vacation Request Screen (Web & Mobile)
- Vacation Cancellation Screen (Web & Mobile)

- Review Screens (Web & Mobile)
- Inquiry and Search Screens
- Report Layouts
- Dashboard and Analytics Screens

13.4 **Appendix D: State Diagrams**

- Vacation Request State Flow
- Approval Workflow States
- Cancellation Process States
- System Status Transitions

13.5 **Appendix E: Workflow Diagrams**

- Basic Vacation Request Flow
- Escalation to Sponsor Flow
- Resubmission After Rejection Flow
- Cancellation Approval Flow

14 **Document Approval**

14.1 **Stakeholder Signatures**

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

Table 2: Document Approval Signatures

14.2 **Version History**

Version	Date	Changes	Author
1.0	August 24, 2025	Initial SRS Document	System Analyst

Table 3: Document Version History