A company is having manufacturing plants and warehouses in various parts of the country. They manufacture ice-cream and milk products. They want to build sohware to achieve two goals.

* Manage the inventory
* Quickest delivery to the customers

**1. Please make a BRD which can be presented to the client along with complete development and resource plan.**

# **1. Executive Summary**

This document outlines the requirements for developing software for XYZ, a manufacturer of ice-cream and milk products with a network of manufacturing plants and warehouses across the country. The proposed system will focus on two primary objectives: effective inventory management and enabling the quickest delivery to customers. By achieving these goals, the company aims to enhance operational efficiency, minimize waste, and improve customer satisfaction.

# **2. Business Goals**

1. **Streamlined Inventory Management**: Ensure real-time monitoring of inventory levels across all warehouses and plants to reduce spoilage and optimize stock levels.
2. **Enhanced Delivery Efficiency**: Implement a system to identify the fastest delivery routes and automate order allocation based on proximity and inventory availability.
3. **Improved Customer Satisfaction**: Minimize order fulfillment time and ensure product freshness at delivery.
4. **Cost Optimization**: Reduce transportation costs and optimize inventory procurement to minimize operational expenses.

# **3. Business Objectives**

1. Develop a centralized system to track and manage inventory across all locations.
2. Automate order processing, allocation, and dispatch based on inventory and location proximity.
3. Integrate delivery route optimization with real-time traffic and weather data.
4. Reduce inventory wastage by implementing an expiry-date tracking mechanism.
5. Enable reporting and analytics for better decision-making and demand forecasting.
6. Implement an intuitive user interface for warehouse managers and delivery teams to access and update data effortlessly.
7. Ensure compliance with food safety regulations and quality control standards.

# **4. Business Rules**

1. Inventory must be updated in real-time upon receipt, dispatch, or adjustment.
2. Orders should only be fulfilled if the inventory is available and meets the required shelf-life criteria.
3. Delivery routes must prioritize freshness while minimizing transportation costs.
4. Customer priority orders (e.g., bulk orders) must be flagged for immediate action.
5. Warehouse reordering thresholds should trigger automated purchase orders.
6. Only authorized users can modify stock levels or override system-generated orders.
7. Automated alerts should notify managers about low stock, expired items, or delivery delays.

# **5. Scope of the System**

### **In-Scope:**

* Inventory tracking at manufacturing plants and warehouses.
* Order management and allocation.
* Delivery route optimization.
* Analytics and reporting dashboards.
* User authentication and role-based access control.
* Integration with third-party GPS tracking and weather APIs.

### **Out-of-Scope:**

* Manufacturing process management.
* Customer relationship management (CRM).
* Financial accounting and invoicing.

# **6. Assumptions**

1. All warehouses and plants have internet connectivity for real-time updates.
2. Delivery vehicles are GPS-enabled to support route optimization.
3. Data from external sources (e.g., traffic, weather) is available via APIs.
4. Users will be trained to operate the new system effectively.
5. Integration with legacy systems will be supported by existing IT infrastructure.

# **7. Constraints**

1. Budget limitations may restrict the scope of features.
2. Integration with legacy systems may pose technical challenges.
3. Project timelines must align with the company’s peak season schedules.
4. Security measures must comply with industry regulations for data protection.

# **8. Risk Analysis**

### **Technical Risks:**

* Integration issues with existing systems.
* System scalability with increasing business demand.
* Data synchronization challenges across multiple locations.

### **Operational Risks:**

* Employee resistance to adopting new technology.
* Potential disruptions during system rollout.

### **Business Risks:**

* Downtime during deployment affecting order fulfillment.
* Customer dissatisfaction due to transition delays.
* Misalignment of system functionalities with business needs.

# **9. Business Process Overview**

### **AS-IS:**

* Inventory is managed manually or using isolated systems.
* Order allocation is manually determined, leading to inefficiencies.
* Delivery routes are planned based on experience, not optimized.

### **TO-BE:**

* A centralized system enables automated inventory management.
* Orders are allocated and dispatched through an intelligent algorithm.
* Delivery routes are optimized dynamically for speed and cost.
* Real-time notifications and tracking are available for stakeholders.

# **10. Business Requirements**

### **1. Inventory Management Module:**

* Real-time inventory tracking across locations.
* Expiry-date monitoring and alerts for perishable items.
* Automated reordering based on stock levels.

### **2. Order Management Module:**

* Automated order allocation based on location and inventory.
* Bulk order prioritization.
* Order tracking and fulfillment status updates.

### **3. Delivery Optimization Module:**

* Integration with GPS and real-time data for route planning.
* Dynamic rerouting in case of delays.
* Estimated delivery time prediction and live tracking for customers.

### **4. Reporting Module:**

* Insights into inventory levels, order trends, and delivery performance.
* Customizable reports for demand forecasting.
* User activity logs for audit purposes.

# **11. Development and Resource Plan**

### **Development Plan:**

1. **Phase 1:** Requirement gathering, stakeholder workshops, and system design (4 weeks).
2. **Phase 2:** Development of core modules (Inventory, Order, Delivery) (12 weeks).
3. **Phase 3:** Integration with external systems (APIs, GPS) and legacy systems (6 weeks).
4. **Phase 4:** Testing and quality assurance (4 weeks).
5. **Phase 5:** Deployment, training, and support (4 weeks).

### **Resource** **Plan**:

• **Project** **Manager**: 1 FTE

• **Developers**: 3 FTE (Backend, Frontend, Integration specialists)

• **QA** **Engineers**: 2 FTE

• **Business** **Analyst**: 1 FTE

• **Support** **Team**: 2 FTE

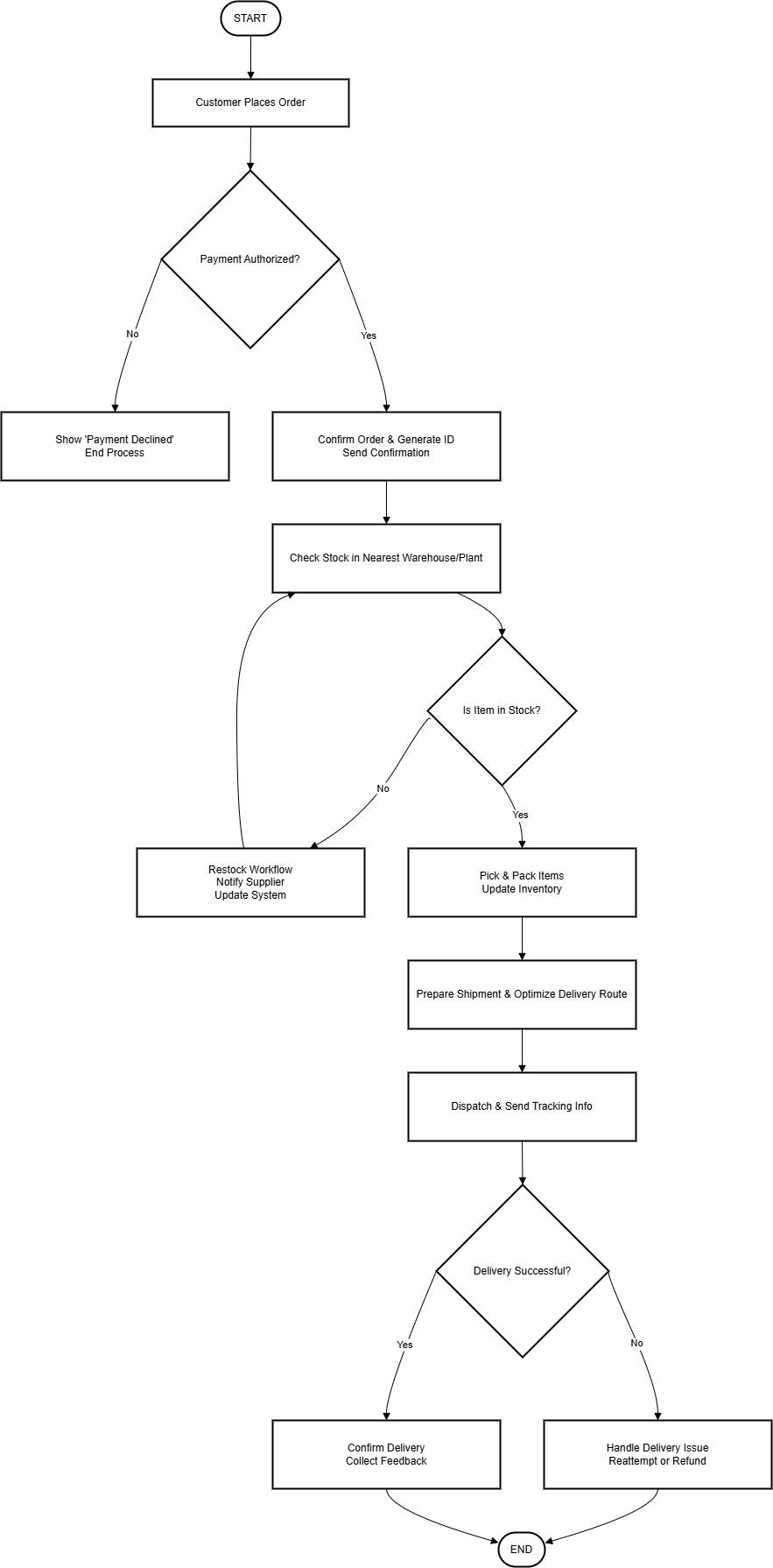
### **Resource Plan:12. Appendices**

1. Glossary of Terms
2. Abbreviations Used
3. Compliance and Regulatory Considerations

# **13. Related Documents**

1. Feasibility Study Report
2. Market Analysis for Inventory and Delivery Optimization Software
3. Stakeholder Requirements Document
4. Software Architecture Documentation

**2. Prepare process flow diagram using your imagination**



### **Explanation of the Flowchart**

1. **START**The process begins when a customer decides to purchase ice-cream or milk products.
2. **Customer Places Order**The customer selects products and proceeds to checkout.
3. **Payment Authorized?**
   * **No** → The system displays a “Payment Declined” message, and the process ends.
   * **Yes** → The system confirms the order and generates an Order ID, then proceeds to check inventory.
4. **Check Stock**The system verifies if the requested items are available in the nearest warehouse/plant.
5. **Is Item in Stock?**
   * **No** → The system triggers a restock workflow, notifies the supplier, and updates the inventory once stock arrives. Then it returns to the “Check Stock” step.
   * **Yes** → Warehouse staff picks and packs items, updating inventory afterward.
6. **Prepare Shipment & Optimize Delivery Route**The system calculates the best delivery route using traffic and weather data, then assigns the order to the nearest delivery vehicle.
7. **Dispatch & Send Tracking Info**The driver loads the order, and the system sends real-time tracking updates to the customer.
8. **Delivery Successful?**
   * **No** → The system handles delivery issues (e.g., reattempt, refund if necessary).
   * **Yes** → The order is marked as delivered, and feedback is collected from the customer.
9. **END**The process concludes once the order is delivered or any issues are resolved.

**Assignment** **2**

1. **Write** **an** **introduction** **letter** **to** **a** **client** **introducing** **yourself** **as** **a** **business** **analyst** **in** **charge** **of** **working** **with** **the** **client** **and** **his** **team** **to** **start** **the** **business** **understanding** **process.**

**Subject:** Introduction as Your Business Analyst Partner Dear *[Client's* *Name],*

I hope this message finds you well. My name is Mukram Patel, and I am delighted to introduce myself as the Business Analyst assigned to collaborate with you and your team on this exciting project.

Understanding the challenges and opportunities within the manufacturing and logistics sectors, particularly in delivering exceptional customer service, is a domain I am passionate about. With your vision of managing inventory and ensuring the quickest delivery of your ice-cream and milk products, my role will be to work closely with you to transform these goals into a robust, tailor- made software solution.

To begin, I aim to thoroughly understand your current processes, challenges, and aspirations. Together, we will explore your operational workflows, identify key requirements, and map out a strategic plan that aligns with your business objectives. Your insights will be invaluable in ensuring the solution we design is practical, scalable, and optimized for your unique needs.

I look forward to discussing your expectations and gathering inputs from your team during our initial meetings. In the meantime, please feel free to share any documents, current processes, or initial thoughts that could help us hit the ground running.

Thank you for the opportunity to collaborate on this project. I am confident that, together, we will develop a solution that adds significant value to your business operations. Please let me know a convenient time for us to connect further.

Looking forward to working with you.

Warm regards,

Mukram Patel

Business Analyst

+91 7400194330

# **Prepare a brief BRD and SRS for a project- Ticketing system**

**Business** **Requirements** **Document** **(BRD)**

**Project** **Name:** Ticketing System

**Prepared** **By:** Mukram Patel

**Date:** 06 March 2025



### **Executive** **Summary**

The objective of the Ticketing System project is to implement a comprehensive solution for managing customer support tickets effectively. The system will streamline the process of ticket creation, tracking, resolution, and closure. It will be designed to ensure seamless communication between users, support agents, and managers, improving the overall efficiency of customer support operations. Additionally, the system will include advanced features for monitoring service level agreement (SLA) compliance, enhancing reporting capabilities, and integrating with a knowledge base for faster problem resolution.

1. **Document** **Revision**

| **Date** | **Version** **Number** | **Document** **Changes** |
| --- | --- | --- |
| 23/10/2024 | 1 | Initial draft of Requirement Gathering |
| 24/10/2024 | 2 | Made changes in the requirement gathering |
| 25/10/2024 | 3 | Updated RACI |
| 26/10/2024 | 4 | Changed the use case diagram |
| 27/10/2024 | 5 | Updated RTM |

1. **Approval**

| **Role** | **Name** | **Title** | **Signature** | **Date** |
| --- | --- | --- | --- | --- |
| Project Sponsor | Kalpana Kale, Sandeep Kumar | Requirements | Kalpana Kale Sandeep Kumar | 23/10/2025 |
| Business Owner | Vaishnavee Deshmukh | Requirements | Vaishnavee Deshmukh | 24/10/2025 |
| Project | Parth Desai | BRD | Parth Desai | 23/10/20245 |

| Manager |  |  |  |  |
| --- | --- | --- | --- | --- |
| System Architect | Major Verma | Architecture | Manoj Verma | 24/10/2024 |
| Development Lead | Kashi Tayde | Requirement | Kashi Tayde | 24/10/2024 |
| User Experience Lead | Pooja Nagul | Design | Pooja Nagul | 24/10/2024 |
| Quality Lead | Payal Tiwari | Quality | Payal Tiwari | 24/10/2024 |
| Content Lead | Dilip Kumar | Content | Dilip Kumar | 24/10/2024 |

1. **RACI**

| **Name** | **Position** | **\*** | **R** | **A** | **S** | **C** | **I** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Aditya** **Jha** | **Hirirng** **Manager** |  |  |  |  | **Yes** |  |
| **Aradhana** **Sunny** | **Recuiter** |  |  |  |  | **Yes** |  |
| **Kalpana** **Kale,Sandee** **p** **Kumar** | **Project** **Sponsor** | **Yes** | **Yes** |  |  | **YES** | **Yes** |
| **Piyush** **Jha** | **Business** **Owner** | **Yes** | **Yes** | **Yes** |  | **Yes** | **Yes** |

## **Introduction:**

* 1. **Business** **Goals**

### **Streamline** **Issue** **Resolution**

Enable users to easily raise and track tickets while ensuring quick and efficient resolution by support teams.

### **Enhance** **Transparency**

Provide users and stakeholders with real-time updates on ticket status and resolution timelines.

### **Improve** **Accountability**

Introduce clear ownership of tickets through automated assignments and escalation mechanisms.

### **Boost** **Operational** **Efficiency**

Automate routine processes such as ticket routing and SLA monitoring to reduce manual intervention and errors.

### **Enable** **Data-Driven** **Decisions**

Generate actionable insights through reporting and analytics to identify patterns, improve service quality, and optimize resources.

* 1. Business Objectives

1. **Enhanced** **Customer** **Satisfaction:** By reducing resolution time and ensuring timely support through SLA compliance.
2. **Optimized** **Support** **Team** **Performance:** By providing tools for assigning tickets to the appropriate agents, managing workloads, and tracking performance.
3. **Better** **Decision-Making:** By offering detailed reports on ticket trends, SLA performance, and agent efficiency.
4. **Cost** **Efficiency:** By automating routine support processes, reducing human error, and speeding up the resolution process, leading to a reduction in operational costs.
   1. Business Rules

 Tickets must be assigned to agents within 15 minutes of creation.

 Tickets cannot be closed until all required information is provided, and the issue is fully

resolved.

 Support agents must adhere to the SLAs defined for each ticket type.

 A ticket must be reopened if a customer reports the issue again within 30 days of closure.

* 1. Background
     + The company’s current ticketing system is inefficient, causing slow response times, missed SLAs, and manual processing. To address these issues, the company will implement a new Ticketing System that automates ticket management, tracks SLAs, integrates a knowledge base, and provides detailed reporting. This system will streamline support processes, improve customer satisfaction, and ensure compliance with SLAs.
     + The project aims to enhance efficiency, reduce costs, and provide better data insights for decision-making. Key stakeholders include customer support, IT, and business leadership. The project will be completed in 6 months, with phased rollout and ongoing support.

### **Scope** **of** **the** **System** **In-Scope:**

1. User portal for raising tickets.
2. Admin/Support team portal for ticket management.
3. Automated ticket assignment and prioritization based on predefined rules.
4. SLA tracking and notification alerts for pending tickets.
5. Reports and dashboards for performance analysis.

### **Out-of-Scope:**

1. Integration with third-party tools (to be planned in future phases).
2. Hardware procurement and setup.

### **Assumptions**

* All users will have access to a computer or mobile device with an internet connection.
* Support teams will adhere to SLA policies as defined by the organization.

### **Constraints:**

* The system must be developed and implemented within a 6-month timeline.
* The system should be scalable to handle up to 10,000 tickets per day without performance degradation.
* It must comply with applicable data privacy regulations (e.g., GDPR).

### **Risk**

1. **Technical** **Risk:**
   * **Risk:** Integration and compatibility issues with existing systems (CRM, email, chat, etc.) could lead to delays or functionality problems, causing disruptions in the ticket management process.
   * **Mitigation:** Conduct detailed technical assessments and integration testing to ensure compatibility with current systems. Allocate time for troubleshooting and ensure robust APIs for seamless data exchange.

### **Political** **Risk:**

* + **Risk:** Internal organizational changes, such as shifts in key personnel or management priorities, could affect the project's support or direction, causing delays or shifting project goals.
  + **Mitigation:** Maintain regular communication with key stakeholders and senior leadership to ensure alignment. Create clear documentation to keep all parties informed, regardless of organizational changes.

### **Requirement** **Risk:**

* + **Risk:** The requirements for the ticketing system might not be fully understood or documented, leading to misalignment between business needs and the delivered solution.
  + **Mitigation:** Engage stakeholders early in the project to define detailed requirements. Use iterative feedback and validation (e.g., user stories and prototypes) to refine the system according to actual needs.

### **Business** **Risk:**

* + **Risk:** The new ticketing system might not achieve the expected improvements in customer satisfaction or operational efficiency, leading to a lack of return on investment (ROI).
  + **Mitigation:** Set clear, measurable business objectives before the project starts (e.g., reduced response time, SLA compliance). Regularly assess the system post- implementation and adjust processes as needed based on feedback and performance metrics.

### **Business** **Process** **Overview**

1. **Legacy** **System** **(AS-IS)**

The current ticketing process is largely manual, involving several disconnected systems and processes that result in inefficiencies and delays. Below are the key elements of the legacy system:

* + **Ticket** **Creation:** Customers submit support tickets via email or phone, which are manually entered into the system by agents. This often leads to errors in ticket categorization and delays in assignment.
  + **Ticket** **Assignment:** Tickets are manually assigned to support agents based on availability or expertise. This process is time-consuming and lacks prioritization, leading to unequal workload distribution among agents.
  + **SLA** **Management:** SLA compliance is monitored manually through spreadsheets or ad hoc tracking, which is prone to human error. Tickets often exceed SLA timelines, leading to customer dissatisfaction.
  + **Resolution** **&** **Closure:** Agents resolve tickets based on available information, but often have limited access to knowledge resources, requiring them to solve recurring issues from scratch. The closure process is also manual and lacks consistency, leading to reopened tickets.
  + **Reporting:** Reporting is done manually through ad hoc data collection and spreadsheets, making it difficult to track key performance metrics (KPIs) like ticket resolution time, agent performance, and SLA adherence.
  + **Knowledge** **Sharing:** Information related to past issues and resolutions is stored across different systems, making it challenging for agents to quickly access relevant solutions.

### **Proposed** **Recommendations** **(TO-BE)**

The proposed ticketing system aims to address the inefficiencies of the legacy system by automating and streamlining key processes. The following changes will improve the overall ticketing process:

* + **Ticket** **Creation:** The new system will allow customers to create tickets through multiple channels (email, web portal, chat, etc.). The system will automatically capture key details such as issue type, urgency, and customer information, eliminating manual data entry and reducing errors.
  + **Ticket** **Assignment:** The system will automatically categorize and prioritize tickets based on predefined rules (e.g., urgency, issue type). Tickets will be assigned to the most appropriate agent based on their expertise and availability, ensuring a more efficient workload distribution.
  + **SLA** **Management:** The new system will include automated SLA tracking, with real- time alerts and escalations for tickets nearing or exceeding their resolution deadlines. This will help ensure that tickets are resolved on time and SLAs are met.
  + **Resolution** **&** **Closure:** The system will integrate a knowledge base, allowing agents to quickly access solutions for common issues. Automated workflows will guide agents through the ticket resolution process, ensuring consistency and reducing resolution time. Tickets will be automatically closed once all resolution steps are completed, and customers are satisfied.
  + **Reporting:** The system will include built-in reporting features, providing real-time dashboards and detailed reports on KPIs such as ticket volume, resolution time, agent performance, and SLA compliance. These reports will be customizable, enabling managers to monitor performance and identify areas for improvement.
  + **Knowledge** **Sharing:** A centralized knowledge base will be integrated into the system, allowing agents to search for and contribute solutions to recurring issues. This will help reduce resolution times, improve consistency, and enable new agents to ramp up more quickly.

### **Business** **Requirements** **Ticket** **Creation** **and** **Submission**

The system must allow customers to submit tickets through multiple channels, including

email, web portal, and chat, ensuring seamless ticket creation across various platforms.

### **Automated** **Ticket** **Categorization** **and** **Prioritization**

The system must automatically categorize and prioritize tickets based on predefined criteria such as issue type, urgency, and customer profile.

### **SLA** **Management** **and** **Alerts**

The system must track and monitor ticket SLAs automatically, providing real-time alerts and escalation notifications for tickets approaching or breaching their SLA deadlines.

### **Ticket** **Assignment** **and** **Routing**

The system must automatically assign tickets to the most appropriate agent based on factors such as expertise, workload, and availability.

### **Knowledge** **Base** **Integration**

The system must integrate a centralized knowledge base that allows agents to access solutions for recurring issues. The knowledge base must be easily searchable and allow agents to contribute new solutions.

### **Ticket** **Resolution** **Workflow**

The system must provide an automated workflow for ticket resolution that guides agents through the necessary steps, ensuring consistency in the resolution process.

### **Ticket** **History** **and** **Audit** **Trail**

The system must maintain a complete history of all interactions related to each ticket, including agent notes, customer updates, and actions taken.

### **Reporting** **and** **Dashboards**

The system must include customizable reporting features and real-time dashboards to track KPIs such as ticket volume, resolution time, SLA compliance, and agent performance.

### **User** **Roles** **and** **Permissions**

The system must have configurable user roles and permissions to restrict access to sensitive data and ensure that agents and managers can only view or edit information relevant to their roles.

### **Multi-Language** **Support**

The system must support multiple languages to cater to a diverse customer base, allowing customers and agents to interact in their preferred language.

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### **Mobile** **Access** **for** **Support** **Agents**

The system must provide mobile access for support agents, allowing them to view and manage tickets from anywhere.

### **Ticket** **Escalation** **Process**

The system must include an automated ticket escalation process that triggers based on predefined conditions (e.g., unresolved ticket for a certain period or SLA breach).

### **Customer** **Feedback** **and** **Satisfaction** **Tracking**

The system must allow customers to provide feedback on ticket resolution and agent performance, and this data must be captured and analyzed for continuous improvement.

### **Security** **and** **Data** **Privacy** **Compliance**

The system must comply with relevant data privacy regulations (e.g., GDPR) and ensure secure handling of sensitive customer data.

### **Appendices**

* 1. **List** **of** **Acronyms**
* **AI** - Artificial Intelligence
* **GDPR** - General Data Protection Regulation
* **UAT** - User Acceptance Testing
* **D&I** - Diversity and Inclusion
* **ROI** - Return on Investment
* **AS-IS** - Current State of the Process/System
* **TO-BE** - Future State of the Process/System
* **KPI** - Key Performance Indicator
* **TAT** - Turnaround Time
* **SLA** - Service Level Agreement
* **API** - Application Programming Interface
* **UI** - User Interface
* **UX** - User Experience
* **BRD** - Business Requirements Document
* **RTM** - Requirement Traceability Matrix
* **DPA** - Data Protection Act (often used with GDPR)

### **Ticket**

A record of a customer's issue, question, or request that is tracked and managed through the ticketing system. Tickets are created by customers or automatically generated by the system, and they represent an individual support case to be resolved by an agent.

### **SLA** **(Service** **Level** **Agreement)**

A formal agreement between the company and the customer that defines the expected timeframes for responding to and resolving tickets. SLAs outline the maximum time allowed for each stage of the ticket lifecycle.

### **Knowledge** **Base**

A centralized repository of articles, solutions, FAQs, and troubleshooting guides accessible to support agents to assist in resolving tickets more efficiently.

### **Ticket** **Assignment**

The process of routing a support ticket to the appropriate agent or team for resolution, based on factors such as expertise, availability, and workload..

### **Ticket** **Lifecycle**

The various stages a ticket goes through from creation to closure. These stages typically include ticket creation, categorization, assignment, resolution, and closure.

### **Escalation**

The process of transferring a ticket to a higher level of support or management when it cannot be resolved at the current level within the defined SLA or requires additional expertise.

### **Agent**

A support team member responsible for handling and resolving customer tickets within the ticketing system.

### **Customer** **Feedback**

Feedback provided by customers after the resolution of their support tickets, typically through surveys or ratings.

### **Report/Reporting** **Dashboard**

A tool within the ticketing system that generates visual or written reports based on key performance metrics such as ticket volume, SLA compliance, resolution times, and agent performance.

### **Multi-channel** **Support**

The ability for customers to submit tickets through various communication channels, such as email, web forms, live chat, or social media.

### **Ticket** **Categorization**

The process of assigning tickets to specific categories or types, such as technical support, billing inquiries, or product issues, to streamline the resolution process.

### **Ticket** **Status**

The current state of a ticket, indicating its progress in the resolution process (e.g., New, In Progress, Awaiting Customer Response, Resolved, Closed).

### **Automated** **Workflow**

A set of predefined rules or processes that automatically guide tickets through their lifecycle, such as ticket assignment, escalations, and reminders for overdue tickets.

### **Ticket** **Closure**

The final stage in the ticket lifecycle, where a ticket is marked as resolved and closed after the customer’s issue has been addressed and no further action is needed.

### **User** **Role/Permissions**

The access level and permissions assigned to different users within the ticketing system, such as agents, managers, and administrators, to ensure appropriate access to data and functions.

### **10.3** **Related** **Documents**

* Business Case Document
* Business Requirement Document

**SRS**

### **Purpose**

The purpose of the Ticketing Life Cycle System is to streamline the process of issue reporting, tracking, and resolution within an organization. It provides users with a platform to create tickets for their concerns or inquiries, assigns these tickets to appropriate agents, and ensures timely updates on their progress. The system fosters effective communication between users and support teams, enhancing customer satisfaction while improving the efficiency of ticket management processes.

### **Scope**

The Ticketing Life Cycle System is designed to cater to organizations of varying sizes, supporting multiple roles such as users, agents, and administrators. Key functionalities include:

* + **Ticket** **Creation** **and** **Management:** Users can report issues, which are categorized and prioritized for resolution.
  + **Agent** **Assignment** **and** **Resolution:** Tickets are assigned to agents based on predefined rules and availability.
  + **Role-Based** **Dashboards:** Users, agents, and administrators have tailored views to manage their specific tasks efficiently.
  + **Tracking** **and** **Notifications:** The system keeps stakeholders informed through real-time updates and alerts.
  + **Analytics** **and** **Reporting:** Administrators can analyze trends, monitor performance, and generate reports to optimize operations.

The system supports scalability, security, and compliance with industry standards, making it suitable for technical support, customer service, and other business functions requiring issue resolution.

### **Overview**

The Ticketing Life Cycle System is a web-based application offering a user-friendly interface accessible across devices. It incorporates modules for:

* + **User** **Management:** Facilitates user registration, login, and profile management.
  + **Ticket** **Management:** Covers the full ticketing workflow, including creation, assignment, status updates, and resolution.
  + **Agent** **Management:** Allows administrators to assign roles, monitor workloads, and evaluate agent performance.
  + **Notification** **System:** Ensures users and agents receive timely updates about ticket status and escalations.
  + **Integration** **and** **Extensibility:** The system supports integration with third-party tools like Slack or Microsoft Teams and offers APIs for additional customization.

1. **Software** **Interfaces**

* Operating Systems:
  + The system shall be compatible with Windows, macOS, and Linux for on-premises deployments and accessible on any OS via a browser for cloud-based deployments
* Web Browsers:
  + Supports modern web browsers like Google Chrome, Mozilla Firefox, Microsoft Edge, and Safari (latest versions).
* Database Management System
  + Utilizes relational databases such as MySQL, PostgreSQL, or cloud-based alternatives like AWS RDS or Azure SQL Database.
* Notification Services
  + Integrates with email systems (e.g., SMTP) and SMS gateways (e.g., Twilio) for sending ticket status notifications.

1. **Hardware** **Interfaces**
   * User devise
     + Users and agents require devices like desktops, laptops, tablets, or smartphones with internet connectivity to access the system.
   * Network Infrastructure
     + Requires a reliable internet connection with a minimum bandwidth of 10 Mbps for smooth access and operation.

**Functional** **Requirement**

| **Req** **ID** | **Requirement** **Name** | **Requirement** **Description** | **Priority** |
| --- | --- | --- | --- |
| FR-001 | User Registration | The system shall allow users to register by providing their name, email, and password. | High |
| FR-002 | User Login | The system shall allow registered users to log in using their email and password. | High |
| FR-003 | Ticket Creation | Users shall be able to create new tickets by entering a title, description, category, and priority. | High |
| FR-004 | Ticket Assignment | The system shall automatically assign a ticket to an available agent based on the category. | High |
| FR-005 | Ticket Status Update | Agents shall update the status of tickets to Open, In Progress, or Closed. | High |
| FR-006 | Ticket Priority Update | The system shall allow users or agents to update the ticket's priority. | Medium |
| FR-007 | View Ticket Details | Users and agents shall be able to view all ticket details, including status, category, and assigned agent. | High |
| FR-008 | User Dashboard | Users shall have a dashboard displaying their open and | Medium |

|  |  | closed tickets. |  |
| --- | --- | --- | --- |
| FR-009 | Agent Dashboard | Agents shall have a dashboard displaying assigned tickets with filters for status and priority. | Medium |
| FR-010 | Ticket Search | Users and agents shall be able to search for tickets using keywords or filters like status and priority. | High |
| FR-011 | Add Ticket Comments | Users and agents shall add comments to tickets for better collaboration. | Medium |
| FR-012 | Email Notifications | The system shall send email notifications for ticket updates, such as status changes or new comments. | Medium |
| FR-013 | Auto-assign Ticket to Agent | The system shall use predefined rules to assign tickets automatically to agents based on their availability and category. | High |
| FR-014 | Ticket Escalation | Tickets not resolved within a specific timeframe shall be automatically escalated to a higher authority. | Medium |
| FR-015 | Role-Based Access Control | The system shall provide role-based access control, restricting features for users, agents, and admins. | Medium |
| FR-016 | View Ticket History | Users and agents shall view the history of changes made to a ticket, including status and priority updates. | High |
| FR-017 | Add Attachments to Tickets | Users and agents shall attach files to tickets for additional context or support. | Medium |
| FR-018 | View Agent Performance | Admins shall view performance metrics for agents, such as the number of resolved tickets. | Medium |
| FR-019 | Define Ticket Categories | Admins shall create and manage ticket categories, such as Technical or Billing. | Low |
| FR-020 | Filter Tickets | Users and agents shall filter tickets by status, priority, or category in their dashboards. | Medium |
| FR-021 | SLA  Configuration | The system shall allow admins to configure Service Level Agreements (SLAs) for ticket resolution. | Medium |
| FR-022 | Audit Trail | The system shall maintain an audit trail of all ticket updates for compliance and troubleshooting. | Medium |
| FR-023 | Mobile-Friendly Interface | The system shall provide a mobile-friendly interface for creating and managing tickets. | High |
| FR-024 | Priority-Based Alerts | The system shall notify agents about high-priority tickets through pop-up alerts or email. | Medium |
| FR-025 | Auto-Status Transition | The system shall automatically transition a ticket's status to "In Progress" when an agent starts working on it. | Medium |
| FR-026 | Mobile-Friendly Interface | The system shall provide a mobile-friendly interface for creating and managing tickets. | Medium |
| FR-027 | Export Ticket Data | Users, agents, and admins shall export ticket data in CSV or Excel format. | Low |
| FR-028 | Multi-Language Support | The system shall support multiple languages for users in different regions. | Low |
| FR-029 | Customize Ticket Fields | Admins shall customize ticket fields, adding new ones if required. | Low |
| FR-030 | Agent | Admins shall reassign tickets from one agent to another. | Medium |

|  | Reassignment |  |  |
| --- | --- | --- | --- |
| FR-031 | Ticket Merging | The system shall allow agents to merge duplicate tickets. | Medium |
| FR-032 | Report Generation | Admins shall generate reports on ticket trends, resolution times, and category-wise breakdowns. | Medium |
| FR-033 | Feedback Collection | Users shall provide feedback on ticket resolution. | Medium |
| FR-034 | Archive Closed Tickets | The system shall archive closed tickets after a specified period. | Low |
| FR-035 | Integration with Third-Party Tools | The system shall integrate with third-party tools like Slack or Microsoft Teams for ticket updates. | Low |
| FR-036 | Ticket Duplication Check | The system shall check for duplicate tickets based on title and description. | Medium |
| FR-037 | Visual Ticket Status Indicators | The system shall provide visual indicators (e.g., color codes) for ticket status and priority. | Low |
| FR-038 | SLA Violation Alerts | The system shall alert agents and admins when a ticket is at risk of breaching SLA deadlines. | Medium |
| FR-039 | Delete User Account | Users shall delete their accounts and associated data, adhering to data protection regulations. | Low |
| FR-040 | Accessibility Compliance | The system shall comply with accessibility standards like WCAG 2.1 for users with disabilities. | High |

**Non-Functional** **Requirements**

| **Req** **ID** | **Requirement** **Name** | **Requirement** **Description** |
| --- | --- | --- |
| NFR001 | System Availability | The system shall maintain an uptime of 99.9% to ensure uninterrupted access to users and agents. |
| NFR002 | Performance | The system shall handle up to 1,000 concurrent users without degradation in performance. |
| NFR003 | Scalability | The system shall scale horizontally to accommodate up to 10,000 users and 50,000 tickets per month. |
| NFR004 | Security | The system shall comply with industry security standards, such as OWASP guidelines, to prevent unauthorized access. |
| NFR005 | Data Encryption | All sensitive data, including passwords and ticket information, shall be encrypted at rest and in transit. |
| NFR006 | Response Time | The system shall provide responses to user actions, such as ticket creation, within 2 seconds under normal load. |
| NFR007 | Browser Compatibility | The system shall support all major browsers, including Chrome, Firefox, Safari, and Edge. |
| NFR008 | Mobile Compatibility | The system shall provide a responsive design for seamless operation on mobile devices. |
| NFR009 | Accessibility Compliance | The system shall adhere to WCAG 2.1 Level AA standards to ensure accessibility for users with disabilities. |
| NFR010 | Maintainability | The system shall allow developers to update or extend features |

|  |  | with minimal impact on existing functionality. |
| --- | --- | --- |
| NFR011 | Backup and Recovery | The system shall perform daily backups and provide data recovery within 2 hours in case of failure. |
| NFR012 | Logging and Monitoring | The system shall log all critical events and provide real-time monitoring for troubleshooting and performance analysis. |
| NFR013 | Usability | The system shall provide an intuitive user interface, requiring no more than 30 minutes of training for basic operations. |
| NFR014 | Localization | The system shall support localization for at least 5 languages, including English, Spanish, French, German, and Chinese. |
| NFR015 | Data Retention | Closed tickets and related data shall be retained for a minimum of 5 years. |
| NFR016 | Integration | The system shall integrate with third-party tools such as Slack, Microsoft Teams, and email systems. |
| NFR017 | Fault Tolerance | The system shall automatically recover from a single point of failure within 30 seconds. |
| NFR018 | Auditability | All user and system actions shall be auditable for compliance and troubleshooting purposes. |
| NFR019 | Cost Efficiency | The system shall operate within an annual maintenance budget of $50,000. |
| NFR020 | API Response Time | The system's APIs shall respond to requests within 500 milliseconds under normal load. |

**Use** **Case** **Specifications**

## **Use** **Case** **1:** **Raise** **a** **New** **Ticket**

### **Use** **Case** **Name:**

Raise a New Ticket

### **Description:**

A user creates a ticket to report an issue, provide details, and request assistance.

### **Actors:**

* + **Primary:** End-User
  + **Secondary:** System

### **Basic** **Flow:**

1. User logs into the ticketing system.
2. User navigates to the "Raise a Ticket" section.
3. User selects the issue type.
4. User provides a detailed description of the issue.
5. User attaches files, if necessary.
6. User sets the ticket priority.
7. User submits the ticket.
8. System generates a unique ticket ID and confirms submission.

### **Alternate** **Flow:**

* + **5a.** User saves the ticket as a draft instead of submitting it.
    1. System stores the ticket as a draft for later editing.

### **Exceptional** **Flow:**

* + **6a.** Required fields are incomplete:
    1. System highlights missing fields and prevents submission.
  + **6b.** File exceeds the allowed size limit:
    1. System displays an error and prevents file upload.

### **Pre-Conditions:**

* + User must have an active account.

### **Post-Conditions:**

* + Ticket is logged in the system and assigned a unique ID.
  + Notification is sent to the user.

### **Assumptions:**

* + Users know how to navigate the ticketing system interface.

### **Constraints:**

* + Attachments must not exceed 5MB per file.
  + Submission allowed only during system operational hours.

### **Dependencies:**

* + Database and notification systems must be operational.

### **Inputs** **and** **Outputs:**

* + **Inputs:** Issue type, description, priority, optional attachments.
  + **Outputs:** Ticket ID, confirmation notification.

### **Business** **Rules:**

* + Tickets must include all mandatory fields before submission.
  + Duplicate tickets should be flagged.

### **Miscellaneous** **Information:**

* + Interface should support mobile and desktop views.

## **Use** **Case** **2:** **View** **Ticket** **Details**

### **Use** **Case** **Name:**

View Ticket Details

### **Description:**

A user views the details of a previously submitted ticket.

### **Actors:**

* + **Primary:** End-User
  + **Secondary:** System

### **Basic** **Flow:**

1. User logs into the system.
2. User navigates to "My Tickets."
3. User selects a ticket to view.
4. System displays ticket details: ID, issue type, description, status, and history.

### **Alternate** **Flow:**

* + - System displays resolution details.

### **Exceptional** **Flow:**

* + **6a.** Ticket is not accessible:

1. System displays "Ticket not found" error.

### **Pre-Conditions:**

* + User must have access rights to the ticket.

### **Post-Conditions:**

* + Ticket details are displayed to the user.

### **Assumptions:**

* + System’s database is up-to-date.

### **Constraints:**

* + Users can view only their own tickets.

### **Dependencies:**

* + Database must store ticket details accurately.

### **Inputs** **and** **Outputs:**

* + **Inputs:** Ticket ID or selection from list.
  + **Outputs:** Detailed ticket information.

### **Business** **Rules:**

* + Closed tickets should display resolution summaries.

### **Miscellaneous** **Information:**

* + Interface may limit details for mobile views.

## **Use** **Case** **3:** **Edit** **Draft** **Ticket**

### **Use** **Case** **Name:**

Edit Draft Ticket

### **Description:**

User updates the details of a saved draft ticket.

### **Actors:**

* + **Primary:** End-User
  + **Secondary:** System

### **Basic** **Flow:**

1. User logs into the system.
2. User navigates to the "My Drafts" section.
3. User selects a draft ticket.
4. User updates fields and saves changes or submits the ticket.

### **Alternate** **Flow:**

* + **4a.** If the user decides not to submit the ticket:
    1. User saves changes and exits without submitting.

### **Exceptional** **Flow:**

* + **6a.** Draft is not found:
    1. System displays "Draft not found" error.

### **Pre-Conditions:**

* + A draft ticket must exist in the system.

### **Post-Conditions:**

* + Draft is updated, or ticket is submitted.

### **Assumptions:**

* + User has edit rights for the draft.

### **Constraints:**

* + Drafts expire after 30 days.

### **Dependencies:**

* + Drafts must be stored in the system.

### **Inputs** **and** **Outputs:**

* + **Inputs:** Updated ticket details.
  + **Outputs:** Updated draft or new ticket ID.

### **Business** **Rules:**

* + Mandatory fields must be completed for submission.

### **Miscellaneous** **Information:**

* + Drafts support multiple edits before submission.

## **Use** **Case** **4:** **Delete** **Draft** **Ticket**

### **Use** **Case** **Name:**

Delete Draft Ticket

### **Description:**

User deletes a saved draft ticket they no longer wish to submit.

### **Actors:**

* + **Primary:** End-User
  + **Secondary:** System

### **Basic** **Flow:**

1. User logs into the system.
2. User navigates to the "My Drafts" section.
3. User selects a draft ticket.
4. User chooses the "Delete" option.
5. System confirms deletion.

### **Alternate** **Flow:**

* + **5a.** If the user cancels the deletion:
    - Draft remains in the system.

### **Exceptional** **Flow:**

* + Draft not found:
    - System displays "Draft not found" error.

### **Pre-Conditions:**

* + Draft ticket exists in the system.

### **Post-Conditions:**

* + Draft is removed from the system.

### **Assumptions:**

* + User has the right to delete drafts.

### **Constraints:**

* + Drafts cannot be recovered after deletion.

### **Dependencies:**

* + Draft tickets must be stored in the system.

### **Inputs** **and** **Outputs:**

* + **Inputs:** Draft ticket ID.
  + **Outputs:** Deletion confirmation.

### **Business** **Rules:**

* + Only the ticket owner can delete their draft.

### **Miscellaneous** **Information:**

* + Deletion requires user confirmation.

## **Use** **Case** **2:** **View** **Ticket** **Details**

### **Use** **Case** **Name:**

View Ticket Details

### **Description:**

A user views the details of a previously submitted ticket.

### **Actors:**

* + **Primary:** End-User
  + **Secondary:** System

### **Basic** **Flow:**

1. User logs into the system.
2. User navigates to "My Tickets."
3. User selects a ticket to view.
4. System displays ticket details: ID, issue type, description, status, and history.

### **Alternate** **Flow:**

* + **4a.** If the ticket is closed:
    - System displays resolution details.

### **Exceptional** **Flow:**

* + **6a.** Ticket is not accessible:

1. System displays "Ticket not found" error.

### **Pre-Conditions:**

* + User must have access rights to the ticket.

### **Post-Conditions:**

* + Ticket details are displayed to the user.

### **Assumptions:**

* + System’s database is up-to-date.

### **Constraints:**

* + Users can view only their own tickets.

### **Dependencies:**

* + Database must store ticket details accurately.

### **Inputs** **and** **Outputs:**

* + **Inputs:** Ticket ID or selection from list.
  + **Outputs:** Detailed ticket information.

### **Business** **Rules:**

* + Closed tickets should display resolution summaries.

### **Miscellaneous** **Information:**

* + Interface may limit details for mobile views.

## **Use** **Case** **3:** **Edit** **Draft** **Ticket**

### **Use** **Case** **Name:**

Edit Draft Ticket

### **Description:**

User updates the details of a saved draft ticket.

### **Actors:**

* + **Primary:** End-User
  + **Secondary:** System

### **Basic** **Flow:**

1. User logs into the system.
2. User navigates to the "My Drafts" section.
3. User selects a draft ticket.
4. User updates fields and saves changes or submits the ticket.

### **Alternate** **Flow:**

* + **4a.** If the user decides not to submit the ticket:
    1. User saves changes and exits without submitting.

### **Exceptional** **Flow:**

* + **6a.** Draft is not found:
    1. System displays "Draft not found" error.

### **Pre-Conditions:**

* + A draft ticket must exist in the system.

### **Post-Conditions:**

* + Draft is updated, or ticket is submitted.

### **Assumptions:**

* + User has edit rights for the draft.

### **Constraints:**

* + Drafts expire after 30 days.

### **Dependencies:**

* + Drafts must be stored in the system.

### **Inputs** **and** **Outputs:**

* + **Inputs:** Updated ticket details.
  + **Outputs:** Updated draft or new ticket ID.

### **Business** **Rules:**

* + Mandatory fields must be completed for submission.

### **Miscellaneous** **Information:**

* + Drafts support multiple edits before submission.



## **Use** **Case** **4:** **Delete** **Draft** **Ticket**

### **Use** **Case** **Name:**

Delete Draft Ticket

### **Description:**

User deletes a saved draft ticket they no longer wish to submit.

### **Actors:**

* + **Primary:** End-User
  + **Secondary:** System

### **Basic** **Flow:**

1. User logs into the system.
2. User navigates to the "My Drafts" section.
3. User selects a draft ticket.
4. User chooses the "Delete" option.
5. System confirms deletion.

### **Alternate** **Flow:**

* + **5a.** If the user cancels the deletion:
    - Draft remains in the system.

### **Exceptional** **Flow:**

* + Draft not found:
    - System displays "Draft not found" error.

### **Pre-Conditions:**

* + Draft ticket exists in the system.

### **Post-Conditions:**

* + Draft is removed from the system.

### **Assumptions:**

* + User has the right to delete drafts.

### **Constraints:**

* + Drafts cannot be recovered after deletion.

### **Dependencies:**

* + Draft tickets must be stored in the system.

### **Inputs** **and** **Outputs:**

* + **Inputs:** Draft ticket ID.
  + **Outputs:** Deletion confirmation.

### **Business** **Rules:**

* + Only the ticket owner can delete their draft.

### **Miscellaneous** **Information:**

* + Deletion requires user confirmation.

## **Use** **Case** **5:** **Submit** **Feedback** **for** **a** **Resolved** **Ticket**

### **Use** **Case** **Name:**

Submit Feedback for a Resolved Ticket

### **Description:**

A user provides feedback on the resolution of a ticket.

### **Actors:**

* + **Primary:** End-User
  + **Secondary:** System

### **Basic** **Flow:**

1. User logs into the system.
2. User navigates to "Resolved Tickets."
3. User selects a ticket.
4. System displays the resolution details.
5. User submits feedback, including ratings and optional comments.
6. System saves the feedback and updates the ticket record.

### **Alternate** **Flow:**

* + **5a.** User opts to skip providing feedback.

### **Exceptional** **Flow:**

* + **6a.** Feedback submission fails due to system error:
    1. System notifies the user and prompts them to retry later.

### **Pre-Conditions:**

* + Ticket must have a "Resolved" status.

### **Post-Conditions:**

* + Feedback is successfully recorded in the system.

### **Assumptions:**

* + User understands how to provide feedback.

### **Constraints:**

* + Feedback must be submitted within 30 days of ticket resolution.

### **Dependencies:**

* + Ticket details and resolution history must be accessible.

### **Inputs** **and** **Outputs:**

* + **Inputs:** Rating, comments.
  + **Outputs:** Confirmation of feedback submission.

### **Business** **Rules:**

* + Users can submit feedback only once per ticket.

### **Miscellaneous** **Information:**

* + Feedback may influence team performance metrics.



## **Use** **Case** **6:** **Reopen** **a** **Closed** **Ticket**

### **Use** **Case** **Name:**

Reopen a Closed Ticket

### **Description:**

Users can reopen a ticket if the issue persists after it was marked resolved.

### **Actors:**

* + **Primary:** End-User
  + **Secondary:** Support Team, System

### **Basic** **Flow:**

1. User logs into the system.
2. User navigates to "Closed Tickets."
3. User selects a ticket and clicks "Reopen."
4. System changes the ticket status to "Reopened" and notifies the support team.

### **Alternate** **Flow:**

* + **5a.** User provides additional information while reopening the ticket.

### **Exceptional** **Flow:**

* + **6a.** Reopening is not allowed due to policy:
    1. System displays a message stating, "Reopening is not permitted for this ticket."

### **Pre-Conditions:**

* + Ticket must have a "Closed" status.

### **Post-Conditions:**

* + Ticket status changes to "Reopened."
  + Notification is sent to the support team.

### **Assumptions:**

* + Users understand when reopening a ticket is appropriate.

### **Constraints:**

* + Tickets can only be reopened within 15 days of closure.

### **Dependencies:**

* + Notification system must be functional.

### **Inputs** **and** **Outputs:**

* + **Inputs:** Ticket ID, additional details (optional).
  + **Outputs:** Updated ticket status, notification.

### **Business** **Rules:**

* + Tickets closed due to policy violations cannot be reopened.

### **Miscellaneous** **Information:**

* + Reopening requests are logged for audit purposes.



## **Use** **Case** **7:** **Attach** **Files** **to** **a** **Ticket**

### **Use** **Case** **Name:**

Attach Files to a Ticket

### **Description:**

Users can upload files to provide additional context for a ticket.

### **Actors:**

* + **Primary:** End-User
  + **Secondary:** System

### **Basic** **Flow:**

1. User navigates to the ticket submission or update page.
2. User clicks "Attach File."
3. User selects a file from their device.
4. System uploads and attaches the file to the ticket.

### **Alternate** **Flow:**

* + User removes the attachment before submitting the ticket.

### **Exceptional** **Flow:**

* + **6a.** File exceeds size limit:
    1. System displays an error message and cancels the upload.

### **Pre-Conditions:**

* + Ticket must be in draft or active status.

### **Post-Conditions:**

* + File is successfully attached to the ticket.

### **Assumptions:**

* + User has the required file ready to upload.

### **Constraints:**

* + Maximum file size is 5MB.
  + Only specific file types (e.g., PDF, PNG) are allowed.

### **Dependencies:**

* + Storage system must be operational.

### **Inputs** **and** **Outputs:**

* + **Inputs:** File.
  + **Outputs:** Confirmation of successful upload.

### **Business** **Rules:**

* + Sensitive files must be flagged for restricted access.

### **Miscellaneous** **Information:**

* + Attachments are virus-scanned before being uploaded.

## **Use** **Case** **8:** **Set** **Priority** **for** **a** **Ticket**

### **Use** **Case** **Name:**

Set Priority for a Ticket

### **Description:**

Users set the priority level for a ticket during submission.

### **Actors:**

* + **Primary:** End-User
  + **Secondary:** System

### **Basic** **Flow:**

1. User selects the priority level (Low, Medium, High) from a dropdown menu.
2. System associates the priority with the ticket.

### **Alternate** **Flow:**

* + **5a.** Priority is automatically assigned based on issue type.

### **Exceptional** **Flow:**

* + **6a.** Priority selection is missing:
    1. System prompts the user to select a priority before proceeding.

### **Pre-Conditions:**

* + User must be submitting a new ticket.

### **Post-Conditions:**

* + Ticket is created with a defined priority level.

### **Assumptions:**

* + Users understand the importance of priority levels.

### **Constraints:**

* + System defaults to "Medium" priority if no selection is made.

### **Dependencies:**

* + Issue type must be mapped to priority rules.

### **Inputs** **and** **Outputs:**

* + **Inputs:** Priority level.
  + **Outputs:** Confirmation of priority assignment.

### **Business** **Rules:**

* + Only "Critical" priority requires manager approval.

### **Miscellaneous** **Information:**

* + Priority levels influence SLA timelines.



## **Use** **Case** **9:** **Receive** **Confirmation** **for** **Ticket** **Submission**

### **Use** **Case** **Name:**

Receive Confirmation for Ticket Submission

### **Description:**

Users receive a confirmation notification after submitting a ticket.

### **Actors:**

* + **Primary:** System
  + **Secondary:** End-User

### **Basic** **Flow:**

1. User submits a ticket.
2. System generates a unique ticket ID.
3. System sends a confirmation email to the user.

### **Alternate** **Flow:**

* + **5a.** Confirmation is sent via SMS instead of email.

### **Exceptional** **Flow:**

* + **6a.** Email server is unavailable:
    1. System queues the email for later delivery.

### **Pre-Conditions:**

* + Ticket submission process is completed successfully.

### **Post-Conditions:**

* + User is notified of ticket submission.

### **Assumptions:**

* + User’s contact information is accurate.

### **Constraints:**

* + Email notifications are sent within 5 minutes of submission.

### **Dependencies:**

* + Notification system and email server must be operational.

### **Inputs** **and** **Outputs:**

* + **Inputs:** Ticket ID, user email.
  + **Outputs:** Confirmation email.

### **Business** **Rules:**

* + Confirmation must include ticket details for user reference.

### **Miscellaneous** **Information:**

* + Notification preferences determine the delivery channel.



## **Use** **Case** **10:** **Update** **Ticket** **Status**

### **Use** **Case** **Name:**

Update Ticket Status

### **Description:**

Support staff updates the status of a ticket as it progresses through different stages (e.g., Open, In Progress, Resolved).

### **Actors:**

* + **Primary:** Support Staff
  + **Secondary:** System

### **Basic** **Flow:**

1. Support staff logs into the system.
2. Support staff navigates to the assigned ticket list.
3. Support staff selects a ticket and clicks "Update Status."
4. Support staff chooses the new status from the dropdown menu.
5. System updates the status and logs the action in the ticket history.

### **Alternate** **Flow:**

* + **5a.** Support staff adds comments while updating the status:
    - System logs the comments along with the status change.

### **Exceptional** **Flow:**

* + **6a.** Attempt to update status fails due to a system error:
    - System displays an error message and prevents the update.

### **Pre-Conditions:**

* + Ticket must exist in the system.
  + Support staff must have appropriate permissions.

### **Post-Conditions:**

* + Ticket status is updated and logged in the history.

### **Assumptions:**

* + Support staff is trained on status workflows.

### **Constraints:**

* + Certain statuses (e.g., "Closed") can only be applied after manager approval.

### **Dependencies:**

* + Status workflow must be predefined in the system.

### **Inputs** **and** **Outputs:**

* + **Inputs:** Ticket ID, new status, optional comments.
  + **Outputs:** Updated ticket status, logged history entry.

### **Business** **Rules:**

* + Only authorized users can update ticket statuses.

### **Miscellaneous** **Information:**

* + Status changes trigger notifications to relevant users.



## **Use** **Case** **11:** **Assign** **a** **Ticket** **to** **a** **Support** **Team**

### **Use** **Case** **Name:**

Assign a Ticket to a Support Team

### **Description:**

The system or a support manager assigns a ticket to the appropriate support team for resolution.

### **Actors:**

* + **Primary:** Support Manager
  + **Secondary:** System

### **Basic** **Flow:**

1. Support manager logs into the system.
2. Manager navigates to unassigned tickets.
3. Manager selects a ticket and clicks "Assign."
4. Manager selects the appropriate support team from a dropdown menu.
5. System assigns the ticket to the selected team and notifies them.

### **Alternate** **Flow:**

* + **5a.** Ticket is automatically assigned by the system based on issue type.

### **Exceptional** **Flow:**

* + **6a.** No team is available for assignment:
    - System flags the ticket as "Unassigned" and notifies the manager.

### **Pre-Conditions:**

* + Ticket must exist in the system.

### **Post-Conditions:**

* + Ticket is assigned to a support team.
  + Notification is sent to the team.

### **Assumptions:**

* + Support teams are predefined in the system.

### **Constraints:**

* + Tickets can only be assigned to one team at a time.

### **Dependencies:**

* + System must have an updated list of available teams.

### **Inputs** **and** **Outputs:**

* + **Inputs:** Ticket ID, team selection.
  + **Outputs:** Notification of assignment.

### **Business** **Rules:**

* + High-priority tickets must be assigned within 1 hour.

### **Miscellaneous** **Information:**

* + Assignment logs are tracked for audit purposes.



## **Use** **Case** **12:** **Add** **Comments** **to** **a** **Ticket**

### **Use** **Case** **Name:**

Add Comments to a Ticket

### **Description:**

Support staff or users can add comments to a ticket to clarify issues or provide updates.

### **Actors:**

* + **Primary:** End-User, Support Staff
  + **Secondary:** System

### **Basic** **Flow:**

1. User logs into the system and navigates to a ticket.
2. User clicks "Add Comment."
3. User enters a comment in the text box.
4. System saves the comment and adds it to the ticket history.

### **Alternate** **Flow:**

* + **5a.** User attaches a file along with the comment.

### **Exceptional** **Flow:**

* + **6a.** System fails to save the comment due to a network error:
    - User is prompted to retry.

### **Pre-Conditions:**

* + Ticket must exist in the system.

### **Post-Conditions:**

* + Comment is added to the ticket.

### **Assumptions:**

* + Users have permissions to add comments.

### **Constraints:**

* + Comments are limited to 1,000 characters.

### **Dependencies:**

* + Database must store comment history.

### **Inputs** **and** **Outputs:**

* + **Inputs:** Text comment, optional attachment.
  + **Outputs:** Confirmation of comment addition.

### **Business** **Rules:**

* + Comments cannot be edited after submission.

### **Miscellaneous** **Information:**

* + Comments are timestamped for tracking.

## **Use** **Case** **13:** **Escalate** **a** **Ticket**

### **Use** **Case** **Name:**

Escalate a Ticket

### **Description:**

Support staff or users escalate a ticket when the resolution is delayed or inadequate.

### **Actors:**

* + **Primary:** End-User, Support Staff
  + **Secondary:** Manager, System

### **Basic** **Flow:**

1. User navigates to the ticket and selects "Escalate."
2. User provides a reason for escalation.
3. System flags the ticket as "Escalated" and notifies the manager.

### **Alternate** **Flow:**

* + **5a.** Escalation is automatically triggered if SLA is breached.

### **Exceptional** **Flow:**

* + **6a.** Escalation fails due to missing manager assignment:
    - System notifies the user of the error.

### **Pre-Conditions:**

* + Ticket must have an "Active" status.

### **Post-Conditions:**

* + Ticket is marked as "Escalated."

### **Assumptions:**

* + Users understand escalation policies.

### **Constraints:**

* + Escalation is limited to once per ticket.

### **Dependencies:**

* + Manager roles must be defined in the system.

### **Inputs** **and** **Outputs:**

* + **Inputs:** Reason for escalation.
  + **Outputs:** Escalation notification.

### **Business** **Rules:**

* + High-priority tickets are escalated automatically after 12 hours of inactivity.

### **Miscellaneous** **Information:**

* + Escalated tickets require immediate attention.



## **Use** **Case** **14:** **Generate** **Reports** **on** **Ticket** **Status**

### **Use** **Case** **Name:**

Generate Reports on Ticket Status

### **Description:**

Managers generate reports to analyze ticket statuses, including open, closed, and escalated tickets.

### **Actors:**

* + **Primary:** Manager
  + **Secondary:** System

### **Basic** **Flow:**

1. Manager logs into the system.
2. Manager navigates to the "Reports" section.
3. Manager selects a report type and timeframe.
4. System generates the report and displays it.

### **Alternate** **Flow:**

* + **5a.** Report is downloaded as a file instead of being displayed.

### **Exceptional** **Flow:**

* + **6a.** Report generation fails due to missing data:
    - System displays an error message.

### **Pre-Conditions:**

* + Manager must have reporting permissions.

### **Post-Conditions:**

* + Report is generated and available for viewing or download.

### **Assumptions:**

* + Required data exists in the system.

### **Constraints:**

* + Reports can only cover up to 1 year of data.

### **Dependencies:**

* + Reporting module must be functional.

### **Inputs** **and** **Outputs:**

* + **Inputs:** Report type, timeframe.
  + **Outputs:** Generated report.

### **Business** **Rules:**

* + Reports must be generated within 5 minutes.

### **Miscellaneous** **Information:**

* + Reports are exportable in multiple formats (PDF, Excel).

## **Use** **Case** **15:** **Assign** **a** **Ticket** **to** **a** **Specific** **Support** **Agent**

### **Use** **Case** **Name:**

Assign a Ticket to a Specific Support Agent

### **Description:**

Support managers assign tickets to specific agents based on their expertise and workload.

### **Actors:**

* + **Primary:** Support Manager
  + **Secondary:** Support Agent, System

### **Basic** **Flow:**

1. Manager logs into the system.
2. Manager navigates to unassigned tickets or reassigns an existing ticket.
3. Manager selects a ticket and clicks "Assign to Agent."
4. Manager selects an agent from a dropdown list.
5. System assigns the ticket to the selected agent and notifies them.

### **Alternate** **Flow:**

* + **5a.** Manager uses an auto-suggest feature to filter agents by expertise or workload.

### **Exceptional** **Flow:**

* + **6a.** Selected agent is unavailable:
    1. System notifies the manager to select another agent.

### **Pre-Conditions:**

* + Ticket exists in the system.
  + Manager and agents must have valid system accounts.

### **Post-Conditions:**

* + Ticket is assigned to the specified agent, and the agent is notified.

### **Assumptions:**

* + Manager is aware of agent availability and skills.

### **Constraints:**

* + A ticket can only have one assigned agent at a time.

### **Dependencies:**

* + Agent profiles and workload data must be up-to-date.

### **Inputs** **and** **Outputs:**

* + **Inputs:** Ticket ID, selected agent.
  + **Outputs:** Assignment confirmation and notification.

### **Business** **Rules:**

* + High-priority tickets must only be assigned to senior agents.

### **Miscellaneous** **Information:**

* + Assignment logs include timestamps and manager details.

## **Use** **Case** **16:** **Send** **Automated** **Ticket** **Reminders**

### **Use** **Case** **Name:**

Send Automated Ticket Reminders

### **Description:**

The system sends automated reminders for unresolved tickets approaching their SLA deadlines.

### **Actors:**

* + **Primary:** System
  + **Secondary:** Support Staff, Managers

### **Basic** **Flow:**

1. System periodically checks ticket statuses.
2. System identifies tickets nearing their SLA deadlines.
3. System sends reminder notifications to assigned staff and managers.

### **Alternate** **Flow:**

* + **5a.** User configures custom reminder intervals for specific tickets.

### **Exceptional** **Flow:**

* + **6a.** Notification fails to send:
    - System retries sending the notification later.

### **Pre-Conditions:**

* + Ticket SLA and reminder intervals are configured.

### **Post-Conditions:**

* + Reminder notifications are sent to relevant users.

### **Assumptions:**

* + Notification systems (email/SMS) are operational.

### **Constraints:**

* + Reminders cannot be disabled for high-priority tickets.

### **Dependencies:**

* + SLA tracking and notification modules must be functional.

### **Inputs** **and** **Outputs:**

* + **Inputs:** Ticket details, SLA data.
  + **Outputs:** Reminder notifications.

### **Business** **Rules:**

* + Reminders are sent 24 hours and 1 hour before SLA breaches.

### **Miscellaneous** **Information:**

* + Reminders are logged for audit purposes.



## **Use** **Case** **17:** **View** **Ticket** **History**

### **Use** **Case** **Name:**

View Ticket History

### **Description:**

Users and support staff can view the complete history of a ticket, including status changes, comments, and updates.

### **Actors:**

* + **Primary:** End-User, Support Staff
  + **Secondary:** System

### **Basic** **Flow:**

1. User logs into the system and navigates to a ticket.
2. User clicks "View History."
3. System displays a chronological list of all actions performed on the ticket.

### **Alternate** **Flow:**

* + **5a.** User filters the history by specific action types (e.g., comments, status updates).

### **Exceptional** **Flow:**

* + **6a.** History data fails to load due to a server error:
    - System displays an error message and prompts the user to retry.

### **Pre-Conditions:**

* + Ticket must exist in the system.

### **Post-Conditions:**

* + Ticket history is displayed successfully.

### **Assumptions:**

* + Users have appropriate permissions to view ticket history.

### **Constraints:**

* + History logs cannot be edited or deleted.

### **Dependencies:**

* + Database must store comprehensive ticket logs.

### **Inputs** **and** **Outputs:**

* + **Inputs:** Ticket ID, optional filters.
  + **Outputs:** Ticket history.

### **Business** **Rules:**

* + Sensitive comments are marked as "Restricted" and only visible to authorized users.

### **Miscellaneous** **Information:**

* + History includes timestamps for all actions.



## **Use** **Case** **18:** **Manage** **SLA** **Configurations**

### **Use** **Case** **Name:**

Manage SLA Configurations

### **Description:**

Managers define and update Service Level Agreements (SLAs) for different ticket types.

### **Actors:**

* + **Primary:** Manager
  + **Secondary:** System

### **Basic** **Flow:**

1. Manager logs into the system.
2. Manager navigates to the SLA configuration section.
3. Manager selects a ticket type and modifies the SLA settings (e.g., response time, resolution time).
4. System saves the updated SLA configuration.

### **Alternate** **Flow:**

* + **5a.** Manager creates a new SLA configuration for a custom ticket type.

### **Exceptional** **Flow:**

* + **6a.** SLA update fails due to validation errors:
    - System notifies the manager of the issue.

### **Pre-Conditions:**

* + SLA module must be enabled in the system.

### **Post-Conditions:**

* + SLA configurations are updated successfully.

### **Assumptions:**

* + Managers understand SLA policies and ticket workflows.

### **Constraints:**

* + SLA settings cannot conflict with existing policies.

### **Dependencies:**

* + Ticket types must be predefined in the system.

### **Inputs** **and** **Outputs:**

* + **Inputs:** SLA parameters, ticket type.
  + **Outputs:** Confirmation of SLA update.

### **Business** **Rules:**

* + Critical tickets must have a resolution time of under 4 hours.

### **Miscellaneous** **Information:**

* + SLA changes are logged for compliance audits.



## **Use** **Case** **19:** **View** **Dashboard** **Analytics**

### **Use** **Case** **Name:**

View Dashboard Analytics

### **Description:**

Managers and support staff view analytics on ticket trends, resolutions, and team performance.

### **Actors:**

* + **Primary:** Manager, Support Staff
  + **Secondary:** System

### **Basic** **Flow:**

1. User logs into the system and navigates to the dashboard.
2. System displays analytics, including charts and key performance indicators (KPIs).

### **Alternate** **Flow:**

* + **5a.** User customizes the dashboard to display specific metrics.

### **Exceptional** **Flow:**

* + **6a.** Dashboard fails to load due to a system error:
    - System displays an error message and suggests retrying later.

### **Pre-Conditions:**

* + Data must exist for the selected timeframe.

### **Post-Conditions:**

* + Dashboard is displayed with up-to-date analytics.

### **Assumptions:**

* + Users know how to interpret the analytics provided.

### **Constraints:**

* + Data refreshes occur every 15 minutes.

### **Dependencies:**

* + Analytics engine and database must be operational.

### **Inputs** **and** **Outputs:**

* + **Inputs:** Timeframe, metrics selection.
  + **Outputs:** Dashboard visualizations.

### **Business** **Rules:**

* + Only authorized users can access detailed team performance metrics.

### **Miscellaneous** **Information:**

* + Dashboard data is exportable as reports.

## **Use** **Case** **20:** **Close** **a** **Ticket**

### **Use** **Case** **Name:**

Close a Ticket

### **Description:**

A support agent or manager closes a ticket once the issue has been resolved and verified.

### **Actors:**

* + **Primary:** Support Agent, Support Manager
  + **Secondary:** System

### **Basic** **Flow:**

1. Support agent or manager logs into the system.
2. Support agent or manager navigates to the ticket and clicks "Close Ticket."
3. System prompts for confirmation of ticket closure.
4. Support agent or manager confirms the closure.
5. System updates the ticket status to "Closed" and logs the closure details.

### **Alternate** **Flow:**

* + **5a.** Support agent or manager adds a resolution note before closing the ticket.

### **Exceptional** **Flow:**

* + **6a.** Ticket cannot be closed due to incomplete information or unresolved issues:
    - System displays an error message and prevents the closure.

### **Pre-Conditions:**

* + Ticket status must be "Resolved" or similar.

### **Post-Conditions:**

* + Ticket is marked as "Closed" in the system.
  + Closure details are logged.

### **Assumptions:**

* + The ticket is fully resolved and ready for closure.

### **Constraints:**

* + Only agents with "Manager" or "Senior Agent" roles can close tickets.

### **Dependencies:**

* + The ticket must not have any open dependencies (e.g., unresolved escalations).

### **Inputs** **and** **Outputs:**

* + **Inputs:** Confirmation of ticket closure, optional resolution note.
  + **Outputs:** Updated ticket status and logged closure details.

### **Business** **Rules:**

* + Closed tickets cannot be reopened unless explicitly flagged for review.

### **Miscellaneous** **Information:**

* + Ticket closure triggers a feedback survey to be sent to the customer (if applicable).



## **Use** **Case** **21:** **Search** **Tickets** **by** **Criteria**

### **Use** **Case** **Name:**

Search Tickets by Criteria

### **Description:**

Users search for tickets in the system using various criteria such as status, priority, date, and agent.

### **Actors:**

* + **Primary:** End-User, Support Staff, Support Manager
  + **Secondary:** System

### **Basic** **Flow:**

1. User logs into the system.
2. User navigates to the "Search Tickets" page.
3. User enters search criteria (e.g., ticket status, priority, assigned agent).
4. System displays a list of tickets that match the criteria.

### **Alternate** **Flow:**

* + **5a.** User applies multiple filters to narrow down the search results.

### **Exceptional** **Flow:**

* + **6a.** Search results fail to load due to a database error:
    - System displays an error message and suggests retrying.

### **Pre-Conditions:**

* + User must be logged in with appropriate search permissions.

### **Post-Conditions:**

* + Search results are displayed, showing relevant tickets.

### **Assumptions:**

* + The system has a sufficiently large and well-maintained dataset of tickets.

### **Constraints:**

* + Search results may be limited to a maximum of 500 tickets.

### **Dependencies:**

* + The system must have a functional search engine and updated ticket data.

### **Inputs** **and** **Outputs:**

* + **Inputs:** Search criteria (e.g., ticket status, priority, agent).
  + **Outputs:** List of matching tickets.

### **Business** **Rules:**

* + Search results are sorted by ticket creation date by default.

### **Miscellaneous** **Information:**

* + User can save frequently used search queries for future use.



## **Use** **Case** **22:** **Reopen** **a** **Closed** **Ticket**

### **Use** **Case** **Name:**

Reopen a Closed Ticket

### **Description:**

A support agent or manager reopens a closed ticket if the issue is not fully resolved or if new information arises.

### **Actors:**

* + **Primary:** Support Agent, Support Manager
  + **Secondary:** System

### **Basic** **Flow:**

1. Support agent or manager logs into the system.
2. Support agent or manager navigates to the closed ticket.
3. Support agent or manager selects "Reopen Ticket."
4. System prompts for a reason to reopen the ticket.
5. Support agent or manager provides the reason and confirms the action.
6. System updates the ticket status to "Open" and logs the reason for reopening.

### **Alternate** **Flow:**

* + **5a.** Support agent adds comments or updates to the ticket before reopening.

### **Exceptional** **Flow:**

* + **6a.** The ticket cannot be reopened due to restrictions (e.g., closure was final):
    - System notifies the user that reopening is not allowed.

### **Pre-Conditions:**

* + Ticket must be in the "Closed" status.
  + User must have appropriate permissions to reopen the ticket.

### **Post-Conditions:**

* + Ticket status is changed back to "Open."

### **Assumptions:**

* + The issue is still unresolved or a new issue has been identified.

### **Constraints:**

* + Only tickets closed within the last 30 days can be reopened.

### **Dependencies:**

* + The system must track the ticket's closure date.

### **Inputs** **and** **Outputs:**

* + **Inputs:** Reason for reopening the ticket.
  + **Outputs:** Updated ticket status, history log.

### **Business** **Rules:**

* + Reopened tickets must be reviewed by a manager.

### **Miscellaneous** **Information:**

* + Reopening a ticket triggers a notification to the assigned agent.



## **Use** **Case** **23:** **Send** **Ticket** **Notifications**

### **Use** **Case** **Name:**

Send Ticket Notifications

### **Description:**

The system sends notifications (e.g., email, SMS) to users and support staff about ticket updates, status changes, or assigned actions.

### **Actors:**

* + **Primary:** System
  + **Secondary:** End-User, Support Staff, Support Manager

### **Basic** **Flow:**

1. The system detects a ticket status change, comment update, or other relevant event.
2. The system identifies the appropriate recipients (e.g., assignee, reporter).
3. The system sends notifications to the recipients.

### **Alternate** **Flow:**

* + **5a.** User customizes notification preferences to receive specific updates (e.g., only critical updates).

### **Exceptional** **Flow:**

* + **6a.** Notification fails to send due to server error:
    - System retries sending the notification after 30 minutes.

### **Pre-Conditions:**

* + The notification system must be configured and operational.

### **Post-Conditions:**

* + Recipients receive the appropriate notifications.

### **Assumptions:**

* + Users have valid contact details (email/SMS) configured in the system.

### **Constraints:**

* + Notifications are sent within 5 minutes of an event.

### **Dependencies:**

* + Email and SMS service providers must be integrated with the system.

### **Inputs** **and** **Outputs:**

* + **Inputs:** Ticket event (status change, comment update, etc.).
  + **Outputs:** Notification message.

### **Business** **Rules:**

* + High-priority tickets trigger immediate notifications to the assigned team and manager.

### **Miscellaneous** **Information:**

* + Notifications are logged in the system for audit purposes.



## **Use** **Case** **24:** **Merge** **Duplicate** **Tickets**

### **Use** **Case** **Name:**

Merge Duplicate Tickets

### **Description:**

Support agents or managers merge tickets that are identified as duplicates to prevent redundant work.

### **Actors:**

* + **Primary:** Support Agent, Support Manager
  + **Secondary:** System

### **Basic** **Flow:**

1. Support agent or manager identifies two tickets as duplicates.
2. Support agent or manager selects both tickets and clicks "Merge."
3. System prompts the user to confirm the merge.
4. Support agent or manager confirms the merge.
5. System merges the tickets, keeping the most relevant data and closing the duplicate ticket.

### **Alternate** **Flow:**

* + **5a.** Support agent adds comments to explain the reason for the merge.

### **Exceptional** **Flow:**

* + **6a.** Tickets cannot be merged due to missing or conflicting information:
    - System displays an error message and prevents the merge.

### **Pre-Conditions:**

* + Tickets to be merged must be open or unresolved.

### **Post-Conditions:**

* + Duplicate ticket is closed, and the information is merged into the primary ticket.

### **Assumptions:**

* + The system can accurately detect duplicate tickets based on certain criteria (e.g., issue type, description).

### **Constraints:**

* + Only tickets with the same issue type can be merged.

### **Dependencies:**

* + The system must be able to identify and compare ticket data.

### **Inputs** **and** **Outputs:**

* + **Inputs:** Selected duplicate tickets.
  + **Outputs:** Merged ticket details and status update.

### **Business** **Rules:**

* + Merged tickets retain the most recent updates.

### **Miscellaneous** **Information:**

* + Merged tickets are logged for auditing

## **Use** **Case** **25:** **Assign** **Priority** **to** **a** **Ticket**

### **Use** **Case** **Name:**

Assign Priority to a Ticket

### **Description:**

A support agent or manager assigns a priority level (e.g., Low, Medium, High, Critical) to a ticket based on its urgency and impact.

### **Actors:**

* + **Primary:** Support Agent, Support Manager
  + **Secondary:** System

### **Basic** **Flow:**

1. Support agent or manager logs into the system.
2. Support agent or manager navigates to a ticket.
3. Support agent or manager selects "Assign Priority."
4. System presents priority options (e.g., Low, Medium, High, Critical).
5. Support agent or manager selects the appropriate priority.
6. System updates the ticket with the selected priority and logs the change.

### **Alternate** **Flow:**

* + **5a.** Support agent or manager uses an auto-suggest feature to assign priority based on predefined criteria (e.g., ticket type, urgency).

### **Exceptional** **Flow:**

* + **6a.** Invalid priority selected:
    - System notifies the user and reverts to the last valid priority.

### **Pre-Conditions:**

* + The ticket exists and is in an unresolved status.

### **Post-Conditions:**

* + Ticket priority is updated successfully.

### **Assumptions:**

* + The support agent or manager has the knowledge to assess ticket priority.

### **Constraints:**

* + Only authorized users (e.g., managers) can assign "Critical" priority.

### **Dependencies:**

* + The ticket priority options must be predefined in the system.

### **Inputs** **and** **Outputs:**

* + **Inputs:** Priority level (Low, Medium, High, Critical).
  + **Outputs:** Updated ticket priority.

### **Business** **Rules:**

* + Critical tickets must be resolved within 4 hours.

### **Miscellaneous** **Information:**

* + Changes to ticket priority are logged for auditing purposes.

## **Use** **Case** **26:** **Send** **Ticket** **Escalation** **Notifications**

### **Use** **Case** **Name:**

Send Ticket Escalation Notifications

### **Description:**

The system sends automatic escalation notifications when a ticket exceeds predefined SLA limits or is not resolved within a specified time frame.

### **Actors:**

* + **Primary:** System
  + **Secondary:** Support Agent, Support Manager

### **Basic** **Flow:**

1. The system monitors ticket progress against SLA limits.
2. The system identifies tickets approaching or breaching their SLA limits.
3. The system sends escalation notifications to the assigned support agent and manager.

### **Alternate** **Flow:**

* + **5a.** User manually triggers an escalation for high-priority tickets.

### **Exceptional** **Flow:**

* + **6a.** Notification fails to send:
    - The system retries sending the notification after a set period.

### **Pre-Conditions:**

* + SLA limits and escalation rules are configured.

### **Post-Conditions:**

* + Escalation notifications are sent.

### **Assumptions:**

* + SLA rules are well-defined and accurately configured.

### **Constraints:**

* + Escalation notifications cannot be disabled for high-priority tickets.

### **Dependencies:**

* + The system must be integrated with a notification service (email/SMS).

### **Inputs** **and** **Outputs:**

* + **Inputs:** Ticket SLA, time exceeded.
  + **Outputs:** Escalation notification.

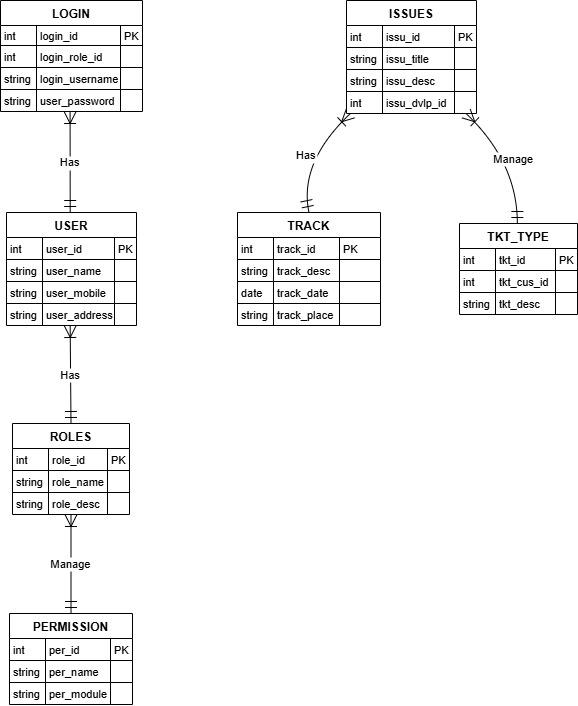
### **Business** **Rules:**

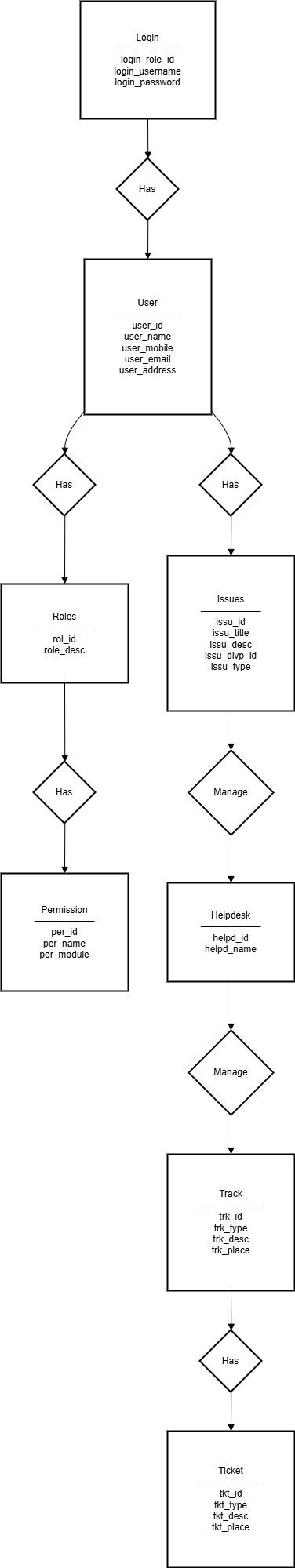
* + High-priority tickets must trigger an escalation after 2 hours if unresolved.

### **Miscellaneous** **Information:**

Escalation notification logs are stored for compliance purposes.

**3. Make an ERD of creating a support ticket/Ticketing life cycle**

****



# **4. User** **story** **of** **shopping** **from** **ecommerce.**

## **User** **Story** **1**

**Story** **No:** 1

**Task:** Allow users to browse products by category.

**Priority:** High

**Value** **Statement:** As a customer, I want to browse products by category so that I can quickly find items of interest.

**BV:** 9

**CP:** Customers find it difficult to locate specific products without categories.

### **Acceptance** **Criteria:**

* Categories are displayed on the homepage and the product listing page.
* Users can filter products within a selected category.

## **User** **Story** **2**

**Story** **No:** 2

**Task:** Enable a product search bar on the homepage.

**Priority:** High

**Value** **Statement:** As a customer, I want to search for products using a search bar so that I can find specific items quickly.

**BV:** 10

**CP:** Customers cannot search for specific products easily.

### **Acceptance** **Criteria:**

* The search bar is visible and functional on the homepage.
* Search results are displayed within 2 seconds after submission.

## **User** **Story** **3**

**Story** **No:** 3

**Task:** Provide product sorting options (e.g., price, popularity).

**Priority:** High

**Value** **Statement:** As a customer, I want to sort products based on price or popularity so that I can make an informed choice.

**BV:** 8

**CP:** Customers face difficulty comparing products without sorting options.

### **Acceptance** **Criteria:**

* Sorting options are available on product listing pages.
* Products are sorted correctly based on the selected criteria.

## **User** **Story** **4**

**Story** **No:** 4

**Task:** Implement a user-friendly product details page.

**Priority:** High

**Value** **Statement:** As a customer, I want to see detailed information about a product so that I can decide whether to buy it.

**BV:** 10

**CP:** Customers may abandon the purchase without clear product details.

### **Acceptance** **Criteria:**

* The product page includes images, price, description, and reviews.
* "Add to Cart" and "Buy Now" buttons are visible and functional.

## **User** **Story** **5**

**Story** **No:** 5

**Task:** Add a feature for customers to leave reviews and ratings.

**Priority:** Medium

**Value** **Statement:** As a customer, I want to leave a review for a product so that I can share my feedback with other users.

**BV:** 7

**CP:** Lack of reviews reduces trust in product quality.

### **Acceptance** **Criteria:**

* Customers can submit reviews and ratings after purchasing a product.
* Reviews are displayed on the product details page.

## **User** **Story** **6**

**Story** **No:** 6

**Task:** Enable customers to add items to a shopping cart.

**Priority:** High

**Value** **Statement:** As a customer, I want to add products to my shopping cart so that I can purchase multiple items at once.

**BV:** 10

**CP:** Customers cannot group their selections for checkout.

### **Acceptance** **Criteria:**

* Items are added to the cart with correct quantity and pricing.
* Users can view, update, or remove items from the cart.

## **User** **Story** **7**

**Story** **No:** 7

**Task:** Create a secure user authentication system.

**Priority:** High

**Value** **Statement:** As a customer, I want to log in securely so that my personal information is protected.

**BV:** 10

**CP:** Lack of secure login can lead to data breaches and loss of trust.

### **Acceptance** **Criteria:**

* Users can sign up, log in, and reset passwords securely.
* Passwords are encrypted, and two-factor authentication is available.

## **User** **Story** **8**

**Story** **No:** 8

**Task:** Develop a wishlist feature for saving favorite products.

**Priority:** Medium

**Value** **Statement:** As a customer, I want to save items to a wishlist so that I can purchase them later.

**BV:** 7

**CP:** Customers may forget to revisit products of interest.

### **Acceptance** **Criteria:**

* Users can add, view, and remove items from the wishlist.
* Wishlist items persist even after logout.

Let me know if you would like me to continue with the remaining user stories or refine these based on any specific requirements.

You said:

please continue

ChatGPT said:

ChatGPT

## **User** **Story** **9**

**Story** **No:** 9

**Task:** Implement a secure checkout process.

**Priority:** High

**Value** **Statement:** As a customer, I want a secure and easy checkout process so that I can complete my purchase confidently.

**BV:** 10

**CP:** Complex or insecure checkout processes deter customers from completing their purchase.

### **Acceptance** **Criteria:**

* Users can enter billing and shipping details securely.
* Payment is processed securely using industry standards.

## **User** **Story** **10**

**Story** **No:** 10

**Task:** Offer multiple payment methods (credit card, PayPal, etc.).

**Priority:** High

**Value** **Statement:** As a customer, I want to choose my preferred payment method so that I can complete my purchase conveniently.

**BV:** 9

**CP:** Limited payment options reduce customer satisfaction.

### **Acceptance** **Criteria:**

* Payment gateway supports credit card, PayPal, and digital wallets.
* Transactions are processed within 5 seconds.

## **User** **Story** **11**

**Story** **No:** 11

**Task:** Provide a product comparison feature.

**Priority:** Medium

**Value** **Statement:** As a customer, I want to compare products side-by-side so that I can choose the best option.

**BV:** 7

**CP:** Customers face difficulty evaluating similar products.

### **Acceptance** **Criteria:**

* Users can select up to three products to compare.
* Key attributes are displayed for easy comparison.

## **User** **Story** **12**

**Story** **No:** 12

**Task:** Enable guest checkout without account creation.

**Priority:** High

**Value** **Statement:** As a customer, I want to check out as a guest so that I can make a quick purchase without creating an account.

**BV:** 8

**CP:** Mandatory account creation leads to abandoned carts.

### **Acceptance** **Criteria:**

* Users can complete the checkout process without signing in.
* Guest users can track orders using email and order ID.

## **User** **Story** **13**

**Story** **No:** 13

**Task:** Develop an order tracking feature.

**Priority:** High

**Value** **Statement:** As a customer, I want to track my orders so that I can know when they will arrive.

**BV:** 9

**CP:** Uncertainty about delivery status leads to dissatisfaction.

### **Acceptance** **Criteria:**

* Users can view the status of their orders in real-time.
* Notifications are sent for key updates (e.g., shipped, out for delivery).

## **User** **Story** **14**

**Story** **No:** 14

**Task:** Display related products on product pages.

**Priority:** Medium

**Value** **Statement:** As a customer, I want to see related products so that I can discover complementary items.

**BV:** 7

**CP:** Customers may miss out on relevant products without recommendations.

### **Acceptance** **Criteria:**

* Related products are displayed dynamically based on user behavior.
* Clicking on a related product redirects to its details page.

## **User** **Story** **15**

**Story** **No:** 15

**Task:** Add an email and SMS notification system for orders.

**Priority:** Medium

**Value** **Statement:** As a customer, I want to receive notifications about my order status so that I stay informed.

**BV:** 8

**CP:** Lack of notifications leaves customers unsure about order updates.

### **Acceptance** **Criteria:**

* Notifications are sent for order confirmation, shipping, and delivery.
* Users can opt-in or opt-out of notifications.

## **User** **Story** **16**

**Story** **No:** 16

**Task:** Implement advanced search with filters (e.g., price range, brand).

**Priority:** Medium

**Value** **Statement:** As a customer, I want to filter my search results so that I can refine my product search efficiently.

**BV:** 8

**CP:** Broad search results make it hard for customers to find specific items.

### **Acceptance** **Criteria:**

* Filters for price range, brand, and ratings are available.
* Results update dynamically based on selected filters.

## **User** **Story** **17**

**Story** **No:** 17

**Task:** Allow users to view their order history.

**Priority:** Medium

**Value** **Statement:** As a customer, I want to view my past orders so that I can reorder items easily.

**BV:** 7

**CP:** Lack of order history creates inconvenience for repeat purchases.

### **Acceptance** **Criteria:**

* Users can view a list of their completed orders.
* Clicking on an order shows detailed information, including items and total cost.

## **User** **Story** **18**

**Story** **No:** 18

**Task:** Develop a loyalty rewards program.

**Priority:** Medium

**Value** **Statement:** As a customer, I want to earn rewards for my purchases so that I feel valued.

**BV:** 7

**CP:** Customers may shop elsewhere without loyalty incentives.

### **Acceptance** **Criteria:**

* Users earn points for each purchase.
* Points can be redeemed for discounts during checkout.

## **User** **Story** **19**

**Story** **No:** 19

**Task:** Support multi-language functionality.

**Priority:** Low

**Value** **Statement:** As a global customer, I want to view the site in my preferred language so that I can shop comfortably.

**BV:** 6

**CP:** Language barriers hinder accessibility for international customers.

### **Acceptance** **Criteria:**

* Users can select their preferred language from a dropdown menu.
* All text content updates dynamically based on the selected language.

Let me know if you’d like the rest to be completed, or if there are specific areas to focus on!

You said:

Kindly continue

ChatGPT said:

ChatGPT

## **User** **Story** **20**

**Story** **No:** 20

**Task:** Implement a discount and promo code feature.

**Priority:** High

**Value** **Statement:** As a customer, I want to apply promo codes during checkout so that I can save money.

**BV:** 9

**CP:** Lack of promo code support discourages customers from utilizing available discounts.

### **Acceptance** **Criteria:**

* Users can enter promo codes at checkout.
* Discounts are applied correctly, and the updated total is displayed.

## **User** **Story** **21**

**Story** **No:** 21

**Task:** Add a "frequently bought together" section on product pages.

**Priority:** Medium

**Value** **Statement:** As a customer, I want to see related items frequently purchased with the product so that I can bundle my purchase.

**BV:** 7

**CP:** Customers may miss opportunities to buy complementary products.

### **Acceptance** **Criteria:**

* Frequently bought together items are displayed dynamically on the product page.
* Users can add all items to the cart with one click.

## **User** **Story** **22**

**Story** **No:** 22

**Task:** Allow customers to schedule delivery times.

**Priority:** Medium

**Value** **Statement:** As a customer, I want to schedule a delivery time so that I can receive my order at a convenient time.

**BV:** 7

**CP:** Inflexible delivery times may inconvenience customers.

### **Acceptance** **Criteria:**

* Users can select preferred delivery dates and time slots during checkout.
* Delivery preferences are confirmed in the order summary.

## **User** **Story** **23**

**Story** **No:** 23

**Task:** Enable product availability notifications.

**Priority:** Medium

**Value** **Statement:** As a customer, I want to receive notifications when a product is back in stock so that I don’t miss out.

**BV:** 8

**CP:** Customers may abandon the platform if they miss updates about desired products.

### **Acceptance** **Criteria:**

* Users can subscribe to back-in-stock alerts.
* Notifications are sent via email or SMS when the product becomes available.

## **User** **Story** **24**

**Story** **No:** 24

**Task:** Create a user profile page with editable details.

**Priority:** Medium

**Value** **Statement:** As a customer, I want to update my personal information so that my profile is accurate.

**BV:** 7

**CP:** Users may face issues with outdated information during checkout.

### **Acceptance** **Criteria:**

* Users can update their name, address, and contact details.
* Changes are saved and reflected immediately.

## **User** **Story** **25**

**Story** **No:** 25

**Task:** Add a feature for users to track shipping costs.

**Priority:** Medium

**Value** **Statement:** As a customer, I want to see the shipping cost before completing my purchase so that I know the total expense.

**BV:** 8

**CP:** Unclear shipping costs can lead to cart abandonment.

### **Acceptance** **Criteria:**

* Shipping costs are calculated dynamically based on the delivery location.
* The total cost, including shipping, is displayed in the cart.

## **User** **Story** **26**

**Story** **No:** 26

**Task:** Provide support for multiple currencies.

**Priority:** Medium

**Value** **Statement:** As an international customer, I want to see prices in my local currency so that I can understand costs better.

**BV:** 6

**CP:** Limited currency support discourages international customers.

### **Acceptance** **Criteria:**

* Users can select their preferred currency from a dropdown menu.
* Prices and totals update dynamically based on the selected currency.

## **User** **Story** **27**

**Story** **No:** 27

**Task:** Add social media sharing for products.

**Priority:** Low

**Value** **Statement:** As a customer, I want to share products on social media so that I can recommend them to others.

**BV:** 6

**CP:** Lack of sharing options limits word-of-mouth promotion.

### **Acceptance** **Criteria:**

* Product pages have social media sharing buttons (e.g., Facebook, Twitter, Instagram).
* Clicking a button opens a pre-filled post with the product link.

## **User** **Story** **28**

**Story** **No:** 28

**Task:** Develop a referral program for customers.

**Priority:** Medium

**Value** **Statement:** As a customer, I want to refer my friends and earn rewards so that I feel incentivized to promote the site.

**BV:** 7

**CP:** Lack of referral incentives may hinder organic growth.

### **Acceptance** **Criteria:**

* Users receive unique referral codes.
* Referrals result in discounts or rewards for both parties.

## **User** **Story** **29**

**Story** **No:** 29

**Task:** Introduce AI-based personalized product recommendations.

**Priority:** Medium

**Value** **Statement:** As a customer, I want personalized recommendations so that I can discover products I like.

**BV:** 8

**CP:** Generic suggestions may not appeal to customers.

### **Acceptance** **Criteria:**

* Recommendations are displayed based on browsing and purchase history.
* Recommendations refresh dynamically as users interact with the site.

## **User** **Story** **30**

**Story** **No:** 30

**Task:** Add a blog or resource section for product guides and tips.

**Priority:** Low

**Value** **Statement:** As a customer, I want to read product-related guides so that I can make informed decisions.

**BV:** 6

**CP:** Lack of informational resources may deter new buyers.

### **Acceptance** **Criteria:**

* Blogs are categorized and accessible from the homepage.
* Users can search for specific topics within the blog section.

## **User** **Story** **31**

**Story** **No:** 31

**Task:** Enable bulk ordering for businesses or large customers.

**Priority:** Medium

**Value** **Statement:** As a bulk buyer, I want to order large quantities of items easily so that I can manage my purchases efficiently.

**BV:** 8

**CP:** Lack of bulk ordering options limits potential business customers.

### **Acceptance** **Criteria:**

* Users can specify bulk quantities for products.
* Discounts for bulk orders are applied automatically at checkout.

## **User** **Story** **32**

**Story** **No:** 32

**Task:** Add a real-time chat support feature.

**Priority:** Medium

**Value** **Statement:** As a customer, I want instant help through live chat so that I can resolve my queries quickly.

**BV:** 9

**CP:** Lack of quick support options reduces customer satisfaction.

### **Acceptance** **Criteria:**

* Live chat is accessible from the footer or help section.
* Responses are sent within 30 seconds of initiating the chat.

## **User** **Story** **33**

**Story** **No:** 33

**Task:** Implement a "recently viewed products" section.

**Priority:** Medium

**Value** **Statement:** As a customer, I want to revisit products I recently viewed so that I can make decisions more easily.

**BV:** 7

**CP:** Customers may forget or lose track of items they previously browsed.

### **Acceptance** **Criteria:**

* Recently viewed products are displayed dynamically on the homepage or product listing page.
* Items persist for the session or up to 24 hours.

## **User** **Story** **34**

**Story** **No:** 34

**Task:** Add a filter for eco-friendly or sustainable products.

**Priority:** Low

**Value** **Statement:** As a customer, I want to filter for eco-friendly products so that I can make environmentally conscious purchases.

**BV:** 6

**CP:** Growing demand for sustainable products is unmet without this filter.

### **Acceptance** **Criteria:**

* An "eco-friendly" filter is available in product search.
* Only products tagged as sustainable appear when the filter is applied.

## **User** **Story** **35**

**Story** **No:** 35

**Task:** Create an admin panel for managing inventory.

**Priority:** High

**Value** **Statement:** As an admin, I want to manage product inventory efficiently so that stock levels are accurate.

**BV:** 10

**CP:** Poor inventory management leads to stockouts or overselling.

### **Acceptance** **Criteria:**

* Admins can view, add, update, or remove products.
* Low-stock alerts are generated automatically.

## **User** **Story** **36**

**Story** **No:** 36

**Task:** Provide an option for gift wrapping and personalized messages.

**Priority:** Low

**Value** **Statement:** As a customer, I want to add gift-wrapping and a message to my order so that I can send personalized gifts.

**BV:** 6

**CP:** Lack of gifting options reduces appeal for gift shoppers.

### **Acceptance** **Criteria:**

* Users can select gift wrapping during checkout.
* Users can enter a personalized message up to 250 characters.

## **User** **Story** **37**

**Story** **No:** 37

**Task:** Add subscription-based purchasing for certain products.

**Priority:** Medium

**Value** **Statement:** As a customer, I want to subscribe to recurring purchases so that I don’t have to reorder frequently used items manually.

**BV:** 8

**CP:** Customers may abandon platforms that don’t offer convenience features like subscriptions.

### **Acceptance** **Criteria:**

* Users can select subscription options (e.g., weekly, monthly).
* Subscriptions can be paused, modified, or canceled at any time.

## **User** **Story** **38**

**Story** **No:** 38

**Task:** Integrate product recommendations based on geographic location.

**Priority:** Low

**Value** **Statement:** As a customer, I want location-specific product recommendations so that I

can discover items relevant to my area.

**BV:** 7

**CP:** Generic product recommendations may overlook regional preferences.

### **Acceptance** **Criteria:**

* Recommendations are tailored based on the user’s location.
* Location data is obtained with consent and is updateable.

## **User** **Story** **39**

**Story** **No:** 39

**Task:** Develop a feature to calculate estimated delivery times.

**Priority:** Medium

**Value** **Statement:** As a customer, I want to see an estimated delivery date so that I can plan accordingly.

**BV:** 9

**CP:** Lack of delivery timelines creates uncertainty and dissatisfaction.

### **Acceptance** **Criteria:**

* Delivery dates are displayed based on the shipping method and location.
* Estimates are updated dynamically for different delivery options.

## **User** **Story** **40**

**Story** **No:** 40

**Task:** Include accessibility features for differently-abled users.

**Priority:** High

**Value** **Statement:** As a customer with accessibility needs, I want to use an inclusive interface so that I can shop comfortably.

**BV:** 10

**CP:** Lack of accessibility options excludes a significant portion of the customer base.

### **Acceptance** **Criteria:**

* Features include screen reader support, high-contrast mode, and keyboard navig