

URL Barcode Creator Application for Efficient Product Tracking and Marketing Campaigns

Actors:

- **Users:** Marketers, business owners, and product managers generating URL-based barcodes for campaigns and product tracking.
- **System Admin:** Manages user accounts and oversees system performance.
- **Barcode Generation Engine:** Creates unique, scannable barcodes based on the provided URLs.

Preconditions:

- Users must register and create an account to access the barcode generation features.
- The system must access a reliable API for barcode generation and scanning.
- The barcode generation engine should support multiple formats (QR codes, UPC, EAN).

Postconditions:

- Users receive unique barcodes linked to URLs for product tracking or marketing campaigns.
- The system tracks the scanning activity and reports data back to users for campaign analysis.

Functional Requirements

1. User Authentication

- **Description:** Users can create accounts and log in to access the barcode generation features.
- **Details:**
 - Users must provide an email and password to register.
 - The system must validate user credentials and manage sessions securely.
 - User profiles must store previous barcode generation history and settings.

2. URL-Based Barcode Creation

- **Description:** Users can generate scannable barcodes based on URLs for product tracking or marketing purposes.
- **Details:**
 - The system should allow users to input URLs and generate barcodes.
 - Users can select from multiple barcode formats (QR, UPC, EAN).
 - The generated barcode must be scannable and lead to the specified URL.

3. Campaign Tracking

- **Description:** The system tracks how many times the generated barcodes are scanned and provides analytics to users.
- **Details:**
 - The system must record scanning events, including location and timestamp.
 - Users can view scan analytics on their dashboard for campaign performance.
 - Data should be downloadable for reporting purposes.

4. Product Tracking

- **Description:** Users can assign barcodes to products to track inventory and sales.
- **Details:**
 - Barcodes can be linked to specific product pages or inventory systems.
 - Users can monitor product movement and sales based on barcode scans.
 - Notifications can be sent when specific products are scanned or tracked.

5. Barcode Download and Sharing

- **Description:** Users can download and share the generated barcodes in different formats (PNG, SVG, PDF).
- **Details:**
 - The system should support downloading barcodes in various file formats.
 - Users can share barcodes via email, SMS, or directly embed them into websites and marketing materials.
 - Barcodes should retain high-quality resolution for printing and digital use.

6. Analytics Dashboard

- **Description:** Users can view an analytics dashboard showing the performance of their barcodes, including scan count, location, and device information.
- **Details:**
 - The dashboard should display key metrics such as total scans, scan locations, and user engagement.
 - Users can filter and sort data by campaign, product, or time range.
 - Visual representations such as graphs and charts should be available for better understanding.

7. User Preferences

- **Description:** Users can customize barcode format, size, and design preferences.
- **Details:**
 - Users can select from multiple barcode formats and adjust the size of the barcode.
 - The app allows users to customize the barcode's color and add a logo or brand name.
 - User preferences should be saved in their profiles for future use.

8. Feedback Mechanism

- **Description:** Users can provide feedback on the barcode creation and tracking system to improve future updates.
- **Details:**
 - Users can rate the barcode generation and tracking accuracy.
 - Feedback is analyzed to improve barcode generation algorithms and user experience.
 - Users receive acknowledgment for their feedback submissions.

Delivery Checkpoints

Total Duration: 36 hours

Delivery Checkpoints: Every 6 hours

1. Checkpoint 1 (Hours 0-6):

- Implement user authentication and registration.
- Test account creation and login functionalities.
- Set up the initial database for user profiles.

2. Checkpoint 2 (Hours 6-12):

- Develop the URL-based barcode generation engine.
- Test barcode creation using different formats.
- Display generated barcodes on the user dashboard.

3. Checkpoint 3 (Hours 12-18):

- Integrate barcode download and sharing features.
- Implement the ability to download barcodes in multiple formats.
- Test sharing functionalities via email and SMS.

4. Checkpoint 4 (Hours 18-24):

- Develop the analytics dashboard for tracking barcode scans.
- Implement data tracking for barcode scanning (location, time).
- Test the analytics dashboard for accuracy and functionality.

5. Checkpoint 5 (Hours 24-30):

- Implement product tracking linked to barcodes.
- Develop features for users to assign barcodes to products.
- Test notifications for product scans.

6. Checkpoint 6 (Hours 30-36):

- Build user preference settings and feedback mechanisms.
- Finalize testing, bug fixing, and prepare for deployment.