Group Worksheet: Neighborhood Watch Application

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**Instructions:**  
Each group member should answer the following questions in writing. The goal is to ensure that everyone has a shared understanding of the problem requirements.

# 1. Users and Roles

**1.1 Who are the three types of users of the system?**

Administrator, Security Officer and Security Watch member

1.2 What **platform(s)** does each user primarily use (web, mobile, both)?

* Administrator: Both
* Security Officer: Mobile App
* Neighborhood Watch Member: Mobile App

1.3 What are the **unique privileges** of each user?

* Administrator:  
  Can manage accounts, add delete or block users, add, remove suspend houses modify system configurations
* Security Officer:

Scan QR code and add contextual comments while on patrol

* Neighborhood Watch Member:

Post comments and engage with other users

# 2. Authentication & Registration

**2.1 How do administrators create and recover their accounts?**

Admins are created by other admins and use the forgot password

**2.2 How do security officers register and get approved?**

Self-register through the app and approve by the administrator.

**2.3 How do neighborhood members register and get approved?**

Self-register through the app and approve by the administrator

**2.4 What type of two-factor authentication is required for administrators?**

One time password sent to the email address of the administrator

# 3. Features by Role

**3.1 What actions can administrators perform?**  
They can approve self-registered accounts, delete or block users, and add/remove/suspend houses for monitoring. Additionally, they have developer-level access to modify system configurations and are responsible for overseeing system maintenance. They also handle officer suspensions and generate reports.

**3.2 What actions can security officers perform in the mobile app?**  
Self-register, log in, scan QR codes at gates, add contextual comments to scans, and view a complete history of their own patrols.

**3.3 What features are available to neighborhood watch members?**  
View security patrol statistics, post comments visible to all members (community interaction), raise emergency alarms, and make subscription payments.

**3.4 What happens if a member does not pay for their subscription for two months?**  
Their account is automatically suspended, and security officers are notified. Access is reinstated once payment is made.

# 4. Patrol & Monitoring Rules

**4.1 How do security officers log patrols?**  
By scanning the unique QR code assigned to each gate using the mobile application.

**4.2 What details are captured during a patrol scan?**  
The officer’s name, date, time, and other relevant details (e.g., gate ID). Officers can also add contextual comments.

**4.3 What happens if an officer scans fewer than X% of assigned QR codes?**  
The system provisionally suspends the officer. SMS and email alerts are sent to the administrator and members. The administrator investigates and can either revoke the suspension (if it was a QR code issue) or finalize the suspension (for misconduct).

**4.4 What automatic notifications are triggered for anomalies?**  
SMS and email notifications are sent to neighborhood watch members for inadequate patrols. SMS and email alerts are sent to both the administrator and members for low QR scan compliance.

# 5. Alerts & Community Features

**5.1 How can members raise emergency alerts?**  
Through a feature in the mobile application.

**5.2 What happens when an emergency alert is raised?**  
The alert is visible to all members and triggers an immediate, high-priority notification (like a phone call) to security officers.

**5.3 What community interaction features are available in the app?**  
Members can post comments visible to all other members, who can respond and engage in discussions.

# 6. Reporting

**6.1 What types of reports does the system generate?**  
Weekly reports (specific content not detailed). The system also generates patrol statistics for members to view.

**6.2 Who can access these reports?**  
Administrators access the weekly reports. Neighborhood watch members can access the patrol statistics for their area.

# 7. Security, Scalability & Performance

**7.1 Why must the system be secure?**  
To protect sensitive personal data, ensure the integrity of patrol logs for security oversight, and securely handle financial transactions for subscriptions.

**7.2 How should the system handle payments securely?**  
Payments must be made online using integrated, reputable payment gateways (e.g., mobile cards or other methods available in Botswana like stripe). The system should not store raw payment card details, relying on the payment processor's tokenization.

**7.3 What is the plan for scalability as more users join?**  
The backend should be designed with scalable cloud infrastructure (e.g., using load balancers, scalable databases) to handle increased load from more users, patrols, and notifications.

**7.4 What should the disaster recovery plan cover?**  
Regular automated backups of the database and critical system configuration. A documented procedure to restore service on backup infrastructure in case of a primary system failure.

**7.5 What performance requirements are important (e.g., handling high loads, avoiding crashes)?**  
The system must be reliable and available, especially the notification service for emergencies. The mobile app's sync process must be efficient to handle uploading batches of offline data without failure.

# 8. Mobile App Offline Functionality

**8.1 What should the mobile app be able to do offline?**  
It must be able to scan QR codes, capture all relevant data (time, comments), and store these patrol logs locally on the device.

**8.2 How does it synchronize data when internet becomes available?**  
It should automatically detect a connection and synchronize the locally stored patrol logs with the back-end server, sending all pending data.

# 9. Suspension & Deletion Rules

**9.1 Under what conditions is a member suspended?**  
If they fail to pay the monthly subscription fee for two consecutive months. They can also unsubscribe voluntarily.

**9.2 Under what conditions is a security officer suspended?**  
Provisionally suspended automatically for scanning fewer than X% of assigned QR codes. This suspension is then finalized by an administrator if the cause is confirmed to be misconduct.

**9.3 How can a suspended officer be reinstated?**  
An administrator can manually reinstate them after a 3-month suspension period.

**9.4 What happens when an officer is permanently deleted?**  
They are permanently barred from accessing the mobile application. This action is performed by an administrator based on company feedback.

# 10. Open Questions (for group discussion)

* What technology could be used for mobile apps (Flutter, React Native, etc.)?

Flutter.

* What backend stack could support security, scalability, and offline sync?

Spring boot

* How should SMS/email notifications be handled technically?

Using a messaging system.

* What Botswana-specific payment gateways should be integrated?

Stripe