**Offline Data Sync & Conflict Resolution Code — Robust Handling of Intermittent Connectivity**

**Objective:**  
Allow seamless use of MoHRIS mobile app in low-connectivity or offline environments, with intelligent syncing and conflict handling.

**Detailed Components:**

* **Offline Storage:**
  + Use of local **SQLite** or **NoSQL (e.g., Hive, Realm)** on-device databases.
  + Caching of user profiles, attendance logs, and pending leave requests.
* **Queueing of Offline Actions:**
  + All user actions while offline are stored in an **action queue**.
  + Background sync once connectivity is restored.
* **Conflict Detection & Resolution:**
  + Timestamp-based conflict resolution.
  + User-friendly conflict dialogs when needed (e.g., for leave approvals changed on web and mobile simultaneously).
* **Sync Engine Features:**
  + Sync retries with exponential backoff.
  + Network change listeners to auto-trigger sync.
  + Granular syncing (per module) for performance efficiency.