Multi-Level Referral and Earning System with Live Data Updates

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System Overview:
The system enables users to refer up to **8 people directly** and facilitates profit sharing based on a multi-level referral hierarchy. Earnings are tracked and distributed in real-time with live data updates for parent users whenever a leg user completes a purchase.

Profit Distribution Logic:

1. **Direct Earnings:**

   ○ The parent user earns **5% of the profit** from their **direct referrals** (Level 1 users).

2. **Indirect Earnings:**

   ○ The parent user earns **1% of the profit** made by their **direct referrals** from second-level users (Level 2).

3. **Profit Conditions:**

   ○ Earnings apply only when a **purchase exceeds 1000Rs**.
   ○ Profits are calculated and updated in real-time.

Key Responsibilities:

System Architecture:

● Design and implement a **multi-level referral hierarchy** with a limit of **8 direct referrals per user**.
● Develop scalable logic for profit distribution across multiple levels.

Profit Tracking and Distribution:

● **Calculate earnings for:**
   ○ Direct Referrals: 5% of profits from Level 1 users.
   ○ Indirect Referrals: 1% of profits from Level 2 transactions generated through Level 1 users.
● Exclude profits for purchases below the 1000Rs threshold.

Database Design:

1. **Users Database:**

   ○ Store user profiles, referral hierarchies, and levels.
   ○ Track relationships between users across multiple levels.
2. **Earnings Database:**

   ○ Record transactions, percentages, and detailed earnings breakdowns per user and referral.

Live Data Feed:

● Implement a **real-time notification system** to deliver live updates for earnings:
   ○ Parent users can see **live earnings updates** without refreshing the page or hitting the API.

Reports and Analytics:

● Build **APIs** to fetch detailed reports:
   ○ Real-time earnings reports for any user.
   ○ Breakdown of earnings across levels and referrals.
● Provide **visualizations** to display:
   ○ Referral-based earnings distribution.
   ○ Earning sources from each leg of the referral tree.

Additional Requirements:

1. **Purchase Validation:**

   ○ Validate purchases to ensure profit calculations are only applied when the purchase amount exceeds 1000 units.
2. **Edge Case Handling:**

   ○ Account for inactive users, invalid referrals, and scenarios where referral limits are exceeded.
3. **Data Privacy:**

   ○ Ensure secure handling of user data and compliance with relevant privacy regulations.

Bonus Features:

1. **Notifications:**
   - Notify users in real-time when they earn from direct or indirect referrals.

Expected Deliverables:

1. **Fully Functional Referral System:**

   - Direct and indirect profit distribution logic.
   - Real-time data updates via WebSockets or SSE for earnings notifications.
2. **Database Schemas:**

   - **Users:** Profile, hierarchy, and referral relationships.
   - **Earnings:** Transaction history and breakdown of referral-based earnings.
3. **APIs:**

   - Fetch profit reports and referral analytics.
4. **Documentation:**

   - Detailed setup, API usage, and system architecture explanation.