System Map

At a Glance

■ High-level architecture: client, API routes, Firebase Auth, Firestore, cron runner, and delivery channels.

■ Routing map for the main app surfaces.

■ Critical paths: Reminder → Queue → Cron → Push and Routine → Generation → Queue.

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1. High-Level Architecture Diagram

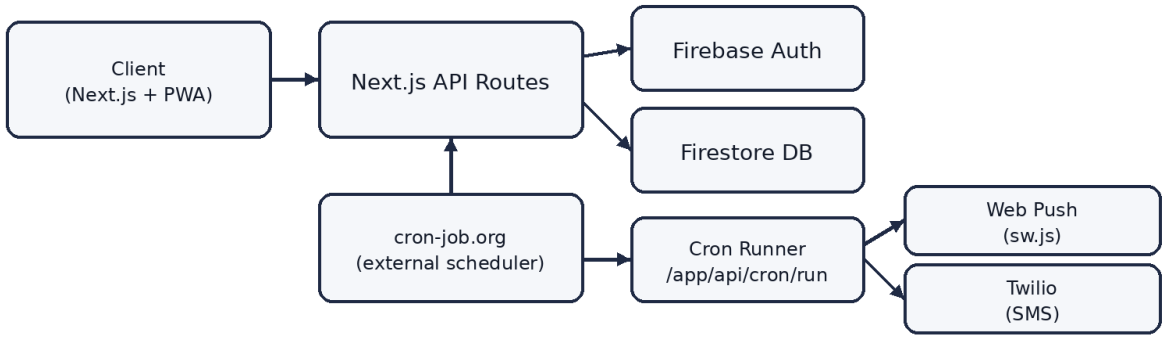

Figure: boxed flow diagram

2. Routing Map

Route	Purpose	Key Components
/login, /signup	Authentication flow	app/(auth)/* + Firebase Auth
/	Primary dashboard	ReminderList + calendar components
/calendar	Expanded grid view	components/calendar
/routines	Manage step-based routines	components/routines + enable toggle
/settings	Preferences + notification setup	Theme toggles + push enable

3. Data Flow Map

3.1 Reminder CRUD → Queue Sync → Cron Dispatch → Push

→ Create/Edit (lib/reminders.ts): ReminderForm saves to Firestore reminders subcollection.

→ Delta sync (lib/queueSync.ts): syncReminderQueue wipes/rebuilds queue items for that reminder.

→ Cron runner (app/api/cron/run/route.ts): queries notification_queue where sent=false in [now-2m, now].

→ Delivery: fetch push_subscriptions, build payload (title + truncated notes), send via Web Push; mark sent=true.

3.2 Routine Enable/Disable → Generation/Removal → Queue

→ Enable (app/api/routines/[id]/run): catch-up generation for the next 24h, inserting step reminders.

→ Deterministic IDs: SHA-256 hash of routineId:stepId:dateStr ensures idempotency.

→ Disable/Delete (lib/routines.ts): cascades to removeRoutineQueue() and deletes future routine-generated reminders.

4. Critical Paths

> 💡 **Key Insight: Reminder → Queue → Cron → Push**
>
> • Reminder edit triggers delta queue rebuild (fast, scoped).
> • Cron reads only precomputed queue items (cheap, predictable).
> • Dispatch path fans out per channel (push/SMS/email).

> 💡 **Key Insight: Routine → Generation → Queue**
>
> • Routines generate concrete reminder docs for the next 24h window.
> • Queue is built from these generated reminders the same way as normal reminders.