Push Notifications & Firebase

Mobile Dev Guide · Module 5 of 8 · CHERIEDU Dev Series

1. Why Push Notifications Matter

Push notifications are one of the most powerful engagement tools in mobile apps. CHERI SMS uses them to alert parents about fees, attendance, exam results, and school announcements.

2. Firebase Cloud Messaging (FCM) Setup

1. Create a Firebase project at console.firebase.google.com.
2. Add your Android and iOS apps to the project.
3. Download google-services.json (Android) and GoogleService-Info.plist (iOS).
4. Add firebase_messaging package to pubspec.yaml.
5. Initialize Firebase in your Flutter app main().
6. Request notification permission from the user.

3. Flutter FCM Code

```dart
import "package:firebase_messaging/firebase_messaging.dart";

class NotificationService {
  final _fcm = FirebaseMessaging.instance;

  Future<void> init() async {
    await _fcm.requestPermission();
    final token = await _fcm.getToken();
    await api.saveDeviceToken(token!);  // send to server

    FirebaseMessaging.onMessage.listen((msg) {
      showLocalNotification(msg.notification!);
    });
  }
}
```

4. Notification Types in CHERI SMS

Type	Trigger	Recipients
Fee Reminder	3 days before due date	Parents of unpaid students
Attendance Alert	Student absent 3+ days	Parent of that student
Exam Result	Results published	Student + Parent
Announcement	School admin posts	All parents/students
Emergency	Manual trigger by principal	All users immediately

5. Backend — Sending Notifications

```javascript
// Send from Node.js backend
const admin = require("firebase-admin");

async function sendFeeReminder(studentId) {
  const token = await getDeviceToken(studentId);
  await admin.messaging().send({
    token,
    notification: {
      title: "Fee Reminder",
      body: "Term 2 fee is due in 3 days. Pay now to avoid late charges.",
    },
    data: { screen: "fees", studentId: String(studentId) }
  });
}
```

PROJECT
Add FCM push notifications to your CHERI SMS app. Implement: save device token on login, receive fee reminder notification, click notification to open the fee payment screen directly.