API Integration for Mobile Apps

Mobile Dev Guide · Module 4 of 8 · CHERIEDU Dev Series

1. How Mobile Apps Talk to Servers

Mobile apps rarely store all their data locally. They communicate with a backend server via REST APIs — sending requests and receiving JSON responses. This is the backbone of every modern mobile app.

2. HTTP Client in Flutter (Dio)

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

class ApiService {
  final dio = Dio(BaseOptions(
    baseUrl: "https://api.cheriedu.com",
    headers: {"Content-Type": "application/json"},
  ));

  Future<List<Student>> getStudents(String token) async {
    dio.options.headers["Authorization"] = "Bearer $token";
    final response = await dio.get("/api/students");
    return (response.data as List)
      .map((s) => Student.fromJson(s)).toList();
  }
}
```

3. JSON Parsing — fromJson Pattern

```
class Student {
  final int id;
  final String name;
  final String grade;
  Student({required this.id, required this.name, required this.grade});

  factory Student.fromJson(Map<String, dynamic> json) {
    return Student(
      id: json["id"],
      name: json["name"],
      grade: json["grade"],
    );
  }
}
```

4. Handling Loading, Error, and Success States

```
enum Status { loading, success, error }
```

```
class StudentScreen extends StatefulWidget { ... }
```

```
class _State extends State<StudentScreen> {
```

```
Status status = Status.loading;
```

```
List<Student> students = [];
```

```
String error = "";
```

```
@override void initState() {
```

```
    super.initState();
```

```
    _loadStudents();
```

```
}
```

```
void _loadStudents() async {
```

```
try {
```

```
students = await api.getStudents(token);
```

```
setState(() => status = Status.success);
```

```
} catch (e) {
```

```
      setState(() { status = Status.error; error = e.toString(); });
```

```
}
```

```
}
```

```
}
```

PROJECT

Connect your Flutter student app to the Node.js backend you built in W06. Implement: login with JWT, load students, mark attendance, and submit fee payment — all via real API calls.