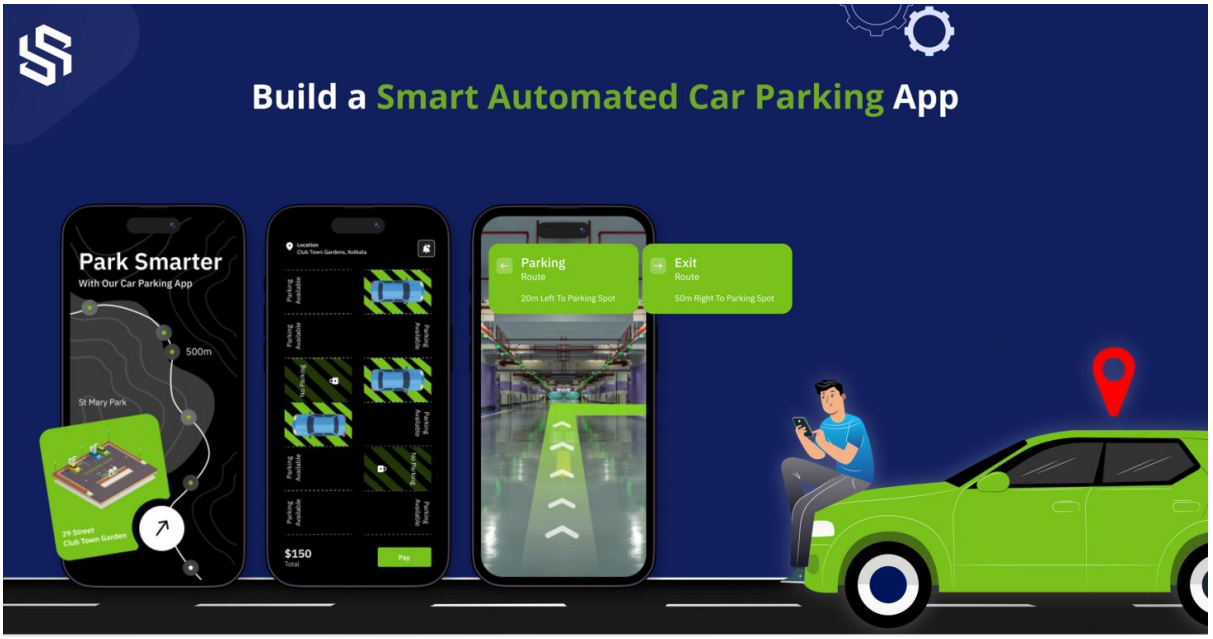
Phase 4 : Development Part 2

Smart Parking System

Components Required :

1:Development Machine
2:Mobile Devices
3:Raspberry Pi
4:Internet Connectivity

Set up your Development Environment :



Install Flutter and Dart on your development machine. Follow the official Flutter installation guide: https://flutter.dev/docs/get-started/install
Install an Integrated Development Environment (IDE) like Visual Studio Code or Android Studio with Flutter and Dart plugins.

Design the User Interface Using Python code :

```
import 'package:flutter/material.dart';

void main() {
  runApp(ParkingAvailabilityApp());
}

class ParkingAvailabilityApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      home: ParkingAvailabilityScreen(),
    );
  }
}

class ParkingAvailabilityScreen extends StatefulWidget {
  @override
  _ParkingAvailabilityScreenState createState() =>
_ParkingAvailabilityScreenState();
}

class _ParkingAvailabilityScreenState extends
State<ParkingAvailabilityScreen> {
  String availability = "Loading...";

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        title: Text("Parking Availability"),
      ),
      body: Center(
        child: Column(
          mainAxisAlignment: MainAxisAlignment.center,
          children: <Widget>[
            Text(
              "Parking Availability:",
              style: TextStyle(fontSize: 20),
```

```
            ),
            Text(
              availability,
              style: TextStyle(fontSize: 40, fontWeight: FontWeight.bold),
            ),
          ],
        ),
      ),
    );
  }
}
```

Fetch Display the Real Time Data :

To receive real-time parking availability data from your Raspberry Pi or server, you need to make HTTP requests to an API endpoint. You can use the http package to make HTTP requests in Flutter. Modify the _ParkingAvailabilityScreenState class as follows:

Python code To Display the Real Time Data :

```
import 'package:flutter/material.dart';
import 'package:http/http.dart as http';

void main() {
  runApp(ParkingAvailabilityApp());
}

class ParkingAvailabilityApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      home: ParkingAvailabilityScreen(),
    );
  }
}

class ParkingAvailabilityScreen extends StatefulWidget {
  @override
  _ParkingAvailabilityScreenState createState() =>
_ParkingAvailabilityScreenState();
}

class _ParkingAvailabilityScreenState extends
State<ParkingAvailabilityScreen> {
  String availability = "Loading...";

  @override
  void initState() {
    super.initState();
    fetchData();
  }

  Future<void> fetchData() async {
    final response = await
http.get(Uri.parse("http://your-raspberry-pi-url/data"));
    if (response.statusCode == 200) {
      setState(() {
        availability = response.body;
```

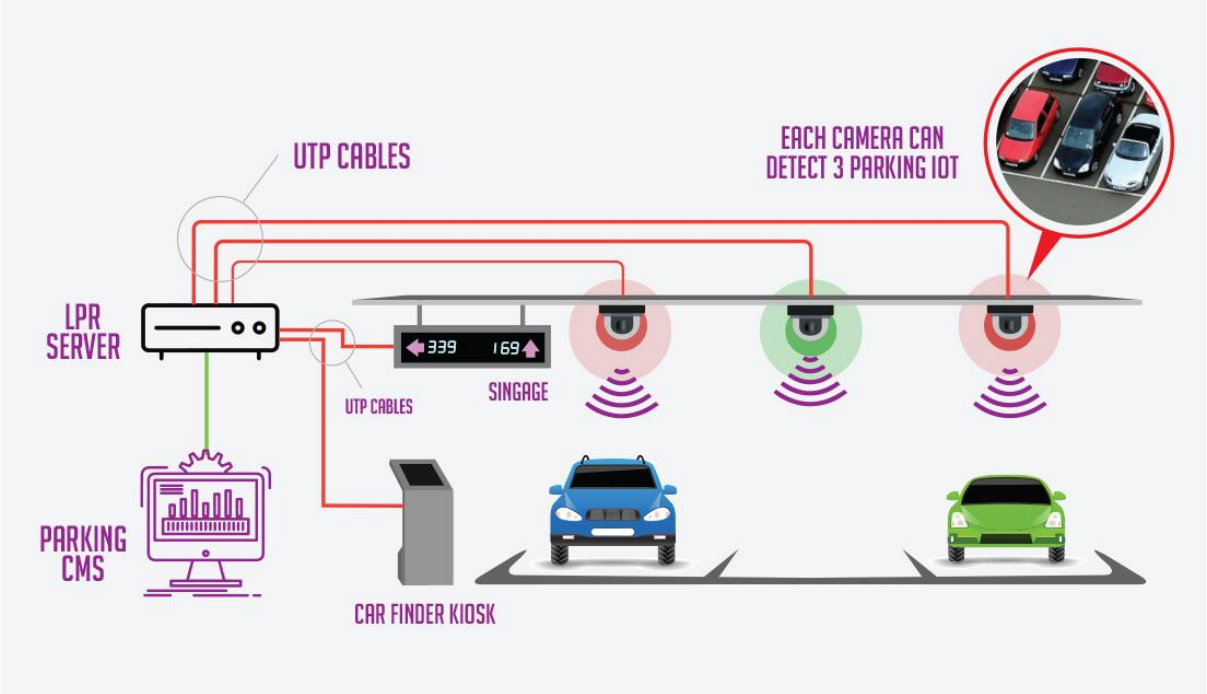
```
    });
  }
 }

 @override
 Widget build(BuildContext context) {
  return Scaffold(
   appBar: AppBar(
    title: Text("Parking Availability"),
   ),
   body: Center(
    child: Column(
     mainAxisAlignment: MainAxisAlignment.center,
     children: <Widget>[
      Text(
       "Parking Availability:",
       style: TextStyle(fontSize: 20),
      ),
      Text(
       availability,
       style: TextStyle(fontSize: 40, fontWeight: FontWeight.bold),
      ),
     ],
    ),
   ),
  );
 }
}
```

Run the App :

Run your Flutter app using the following command within your project directory:

flutter run
The app will start, and you can see the real-time parking availability data displayed.

Deployment :



To deploy your app on Android and iOS devices, follow the deployment guides for each platform provided by Flutter: https://flutter.dev/docs/deployment