



BITS Pilani
Pilani Campus

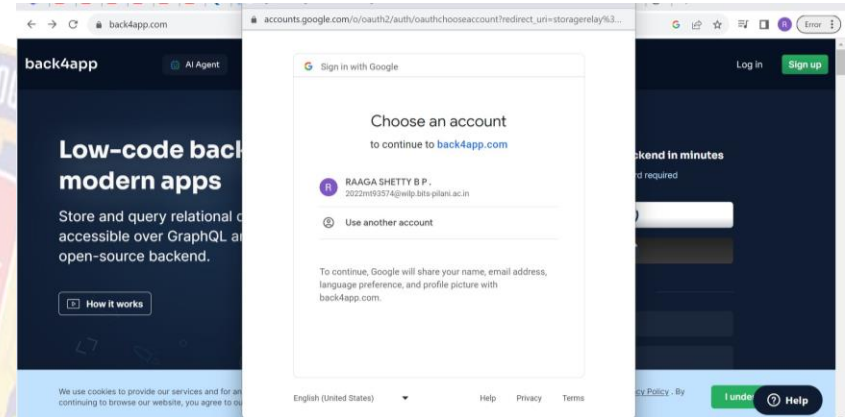
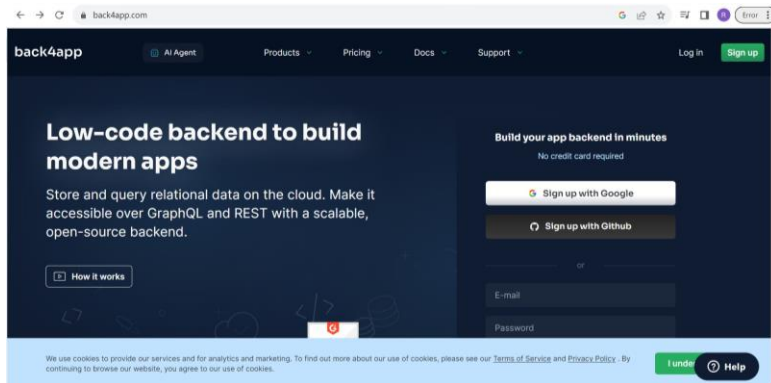


Cross Platform Application Development

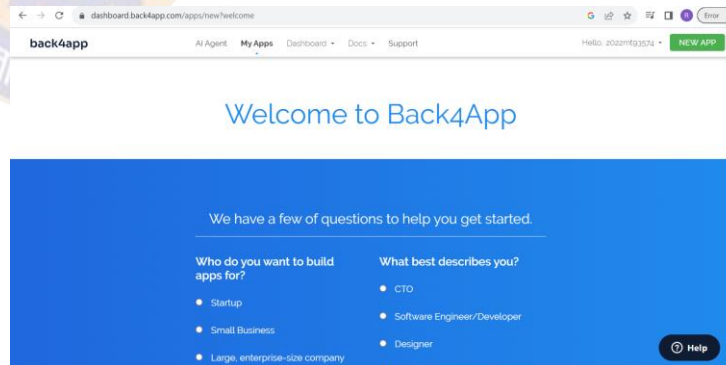
Back4App

Step 1: Set Up Back4App

- Sign Up for Back4App Account.



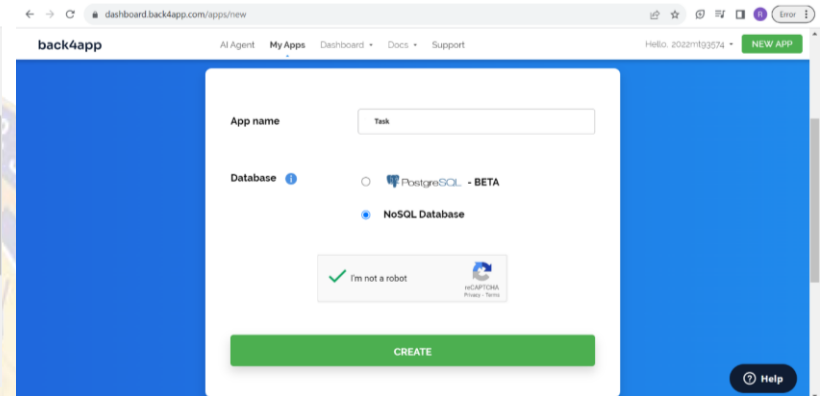
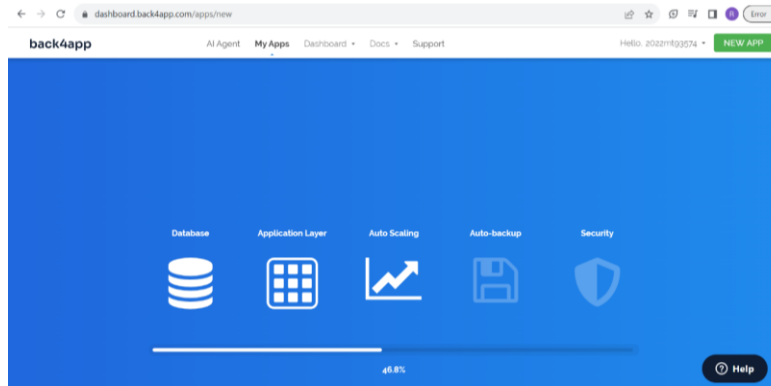
- Login to the Back4App account
- Create a new Back4App app.



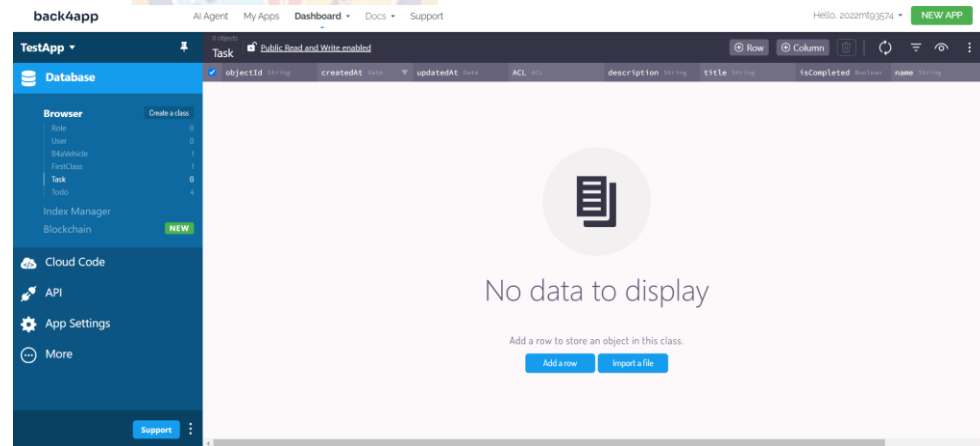
Back4App

Step 1: Set Up Back4App.

- Create a class in Back4App named Task with columns title (String) and description (String).



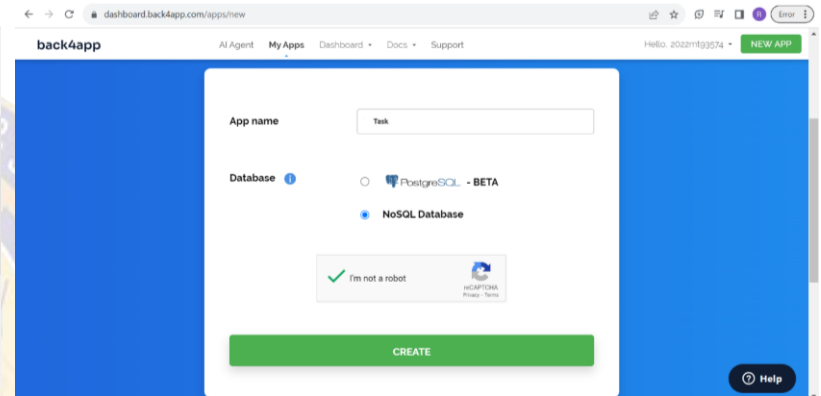
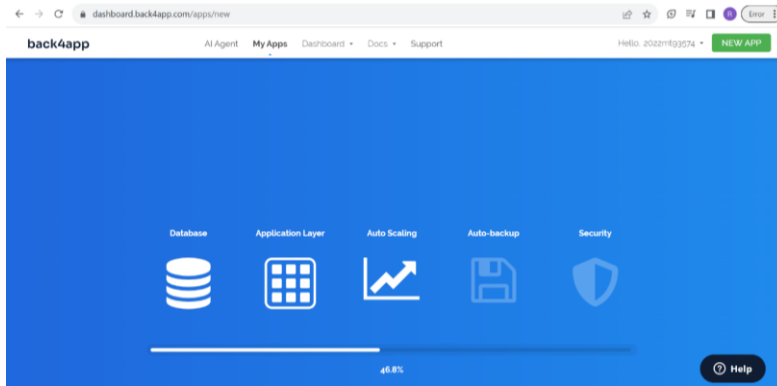
- Navigating on Back4App Dashboard



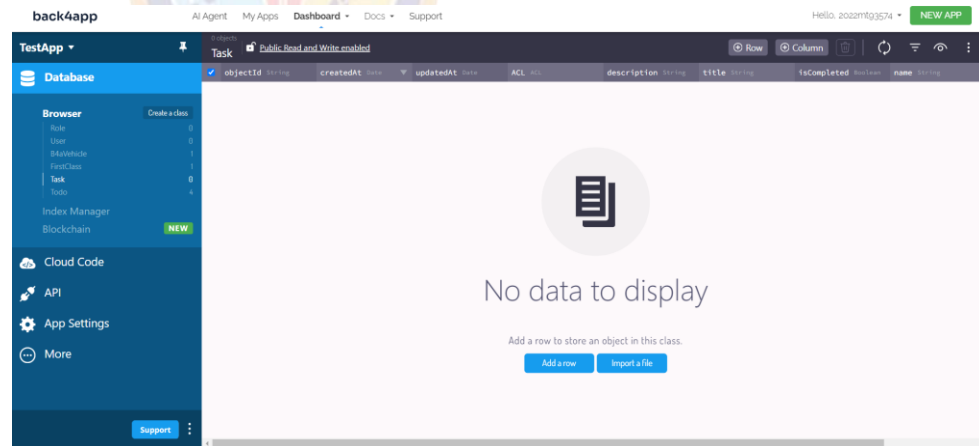
Back4App

Step 2: Connect to Back4App

- Create a class in Back4App named Task with columns title (String) and description (String).

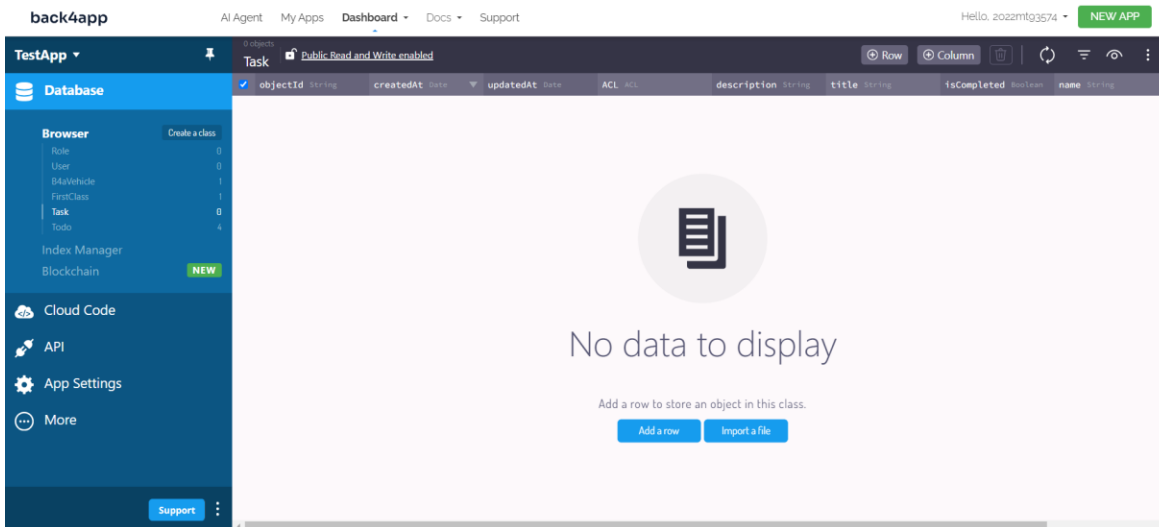
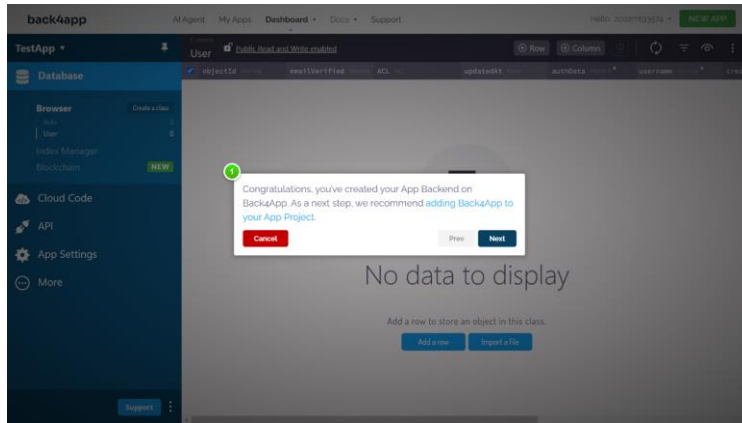


- Navigating on Back4App Dashboard



Back4App

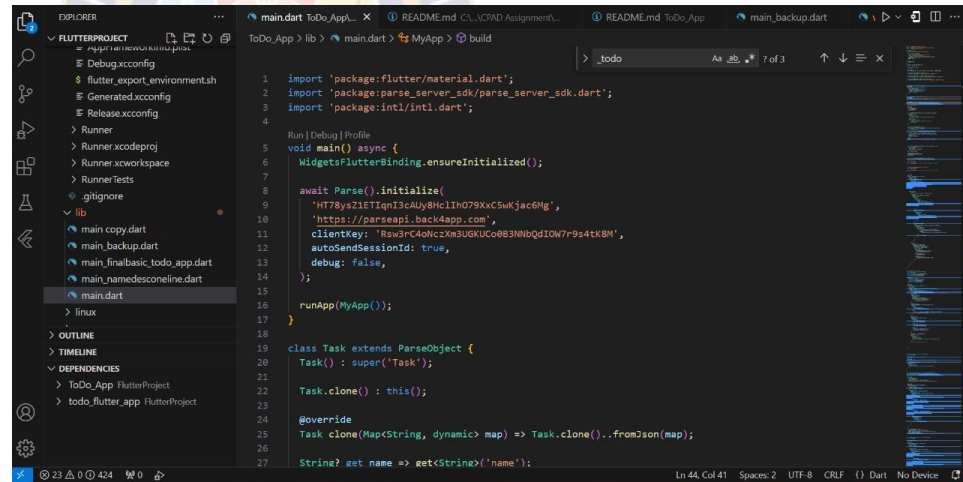
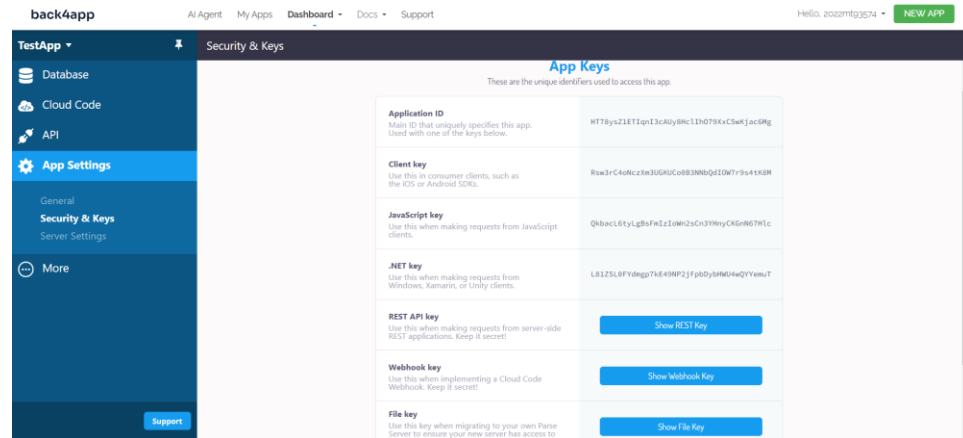
Navigating on Back4App Dashboard



Back4App

Connect App frontend to Back4App

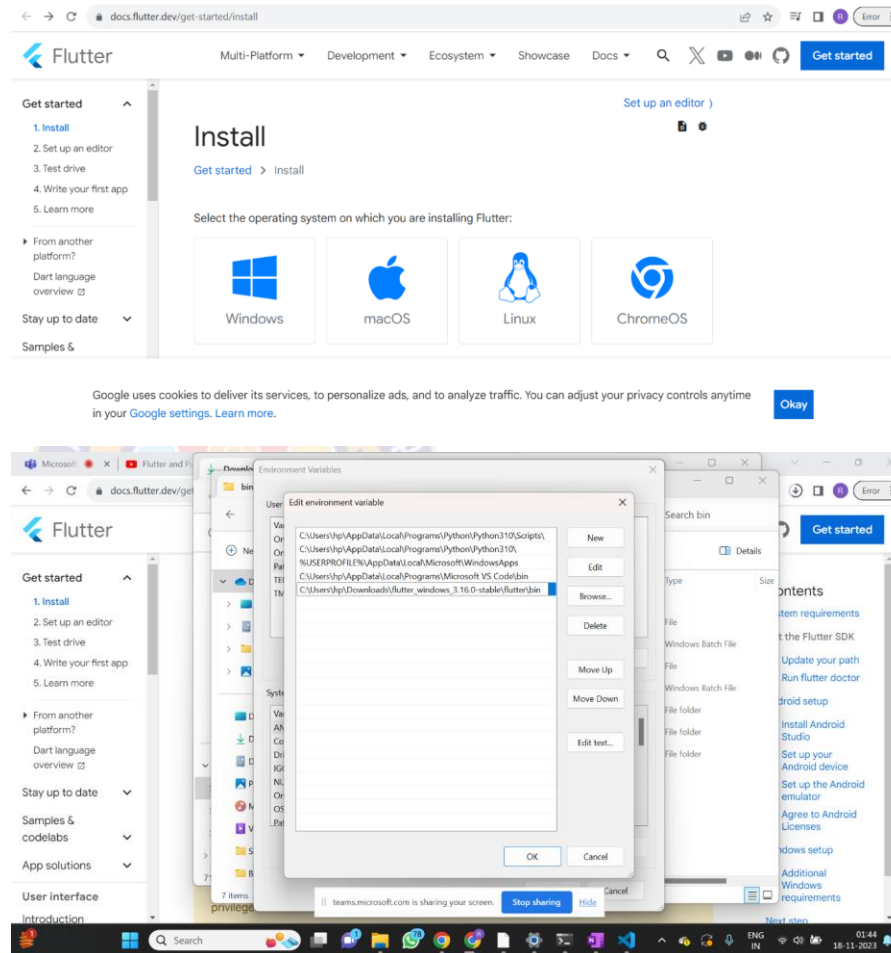
- Click on App Settings and copy the Application ID, and client key to check App Keys which will be necessary to connect your App frontend to Back4App.



Flutter

Flutter Setup

- Step 1: Install Flutter.
- Step 2: Add the path of flutter application to the environment variables.
- Step 3: Create a new Flutter project.
- Step 4: Add the required dependencies to your pubspec.yaml file.
- Step 5: Initialize the Parse SDK in your Flutter app.



Flutter

- Step 6: Install Parse SDK
- Step 7: Create a flutter project.

flutter create todo_flutter_app

- Step 8: Check if everything is OK running the application.

cd todo_flutter_app

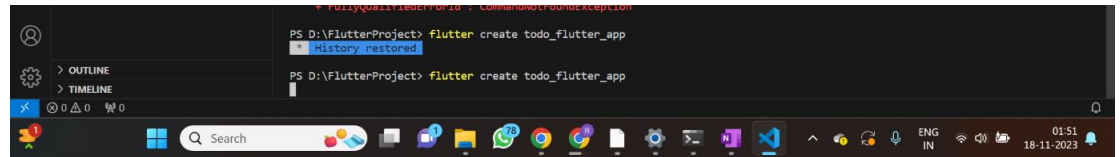
flutter run

- Step 9: Installing Flutter plugin for Parse Server
- Step 10: Go to pubspec.yaml and add the following:

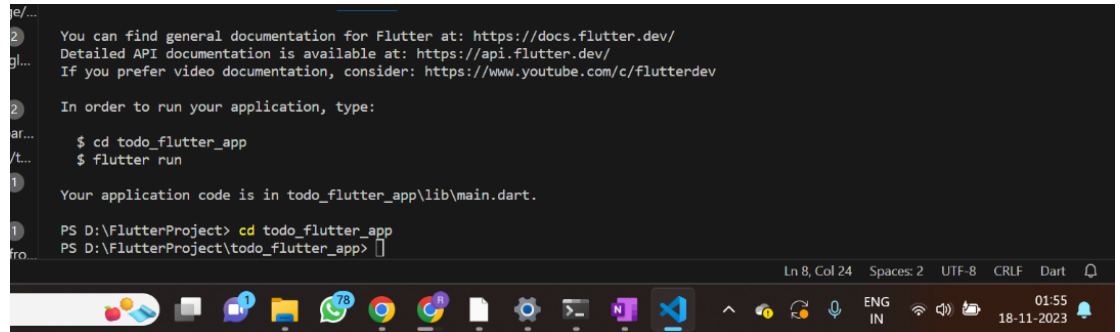
dependencies:

parse_server_sdk_flutter:

^latest_version



```
PS D:\FlutterProject> flutter create todo_flutter_app
History restored
PS D:\FlutterProject> flutter create todo_flutter_app
```



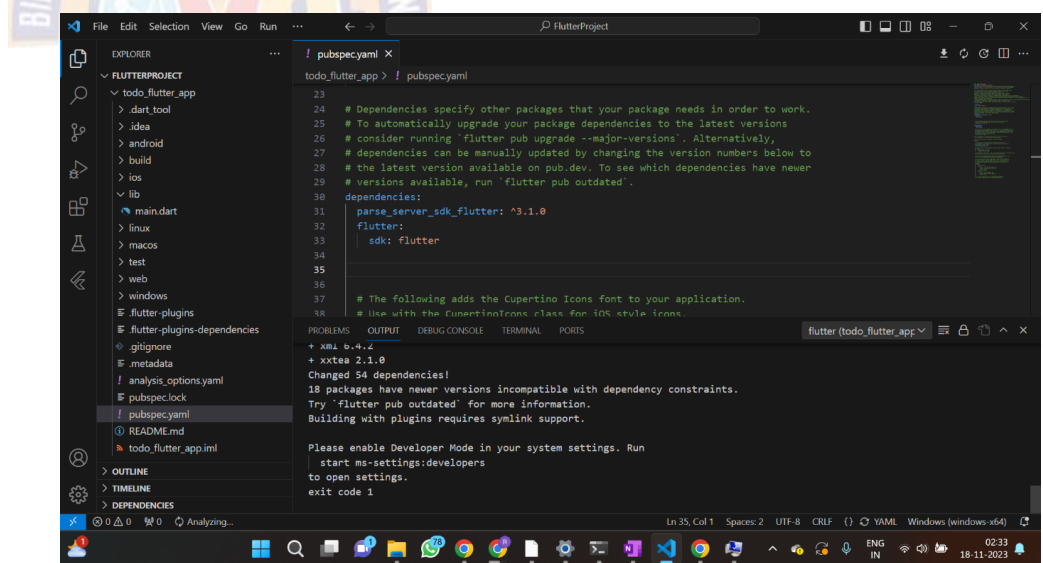
```
You can find general documentation for Flutter at: https://docs.flutter.dev/
Detailed API documentation is available at: https://api.flutter.dev/
If you prefer video documentation, consider: https://www.youtube.com/c/flutterdev

In order to run your application, type:

$ cd todo_flutter_app
$ flutter run

Your application code is in todo_flutter_app\lib\main.dart.

PS D:\FlutterProject> cd todo_flutter_app
PS D:\FlutterProject\todo_flutter_app>
```



```
pubspec.yaml
dependencies:
  parse_server_sdk_flutter: ^3.1.0
  flutter:
    sdk: flutter

# The following adds the Cupertino Icons font to your application.
# Use with the CupertinoIcons class for iOS style icons.

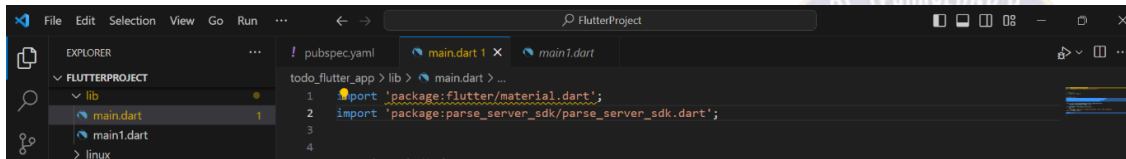
flutter (todo_flutter_app)
+ xlsx 0.4.2
+ xlsxio 2.1.0
Changed 54 dependencies!
18 packages have newer versions incompatible with dependency constraints.
Try 'flutter pub outdated' for more information.
Building with plugins requires symlink support.

Please enable Developer Mode in your system settings. Run
start ms-settings:developers
to open settings.
exit code 1
```

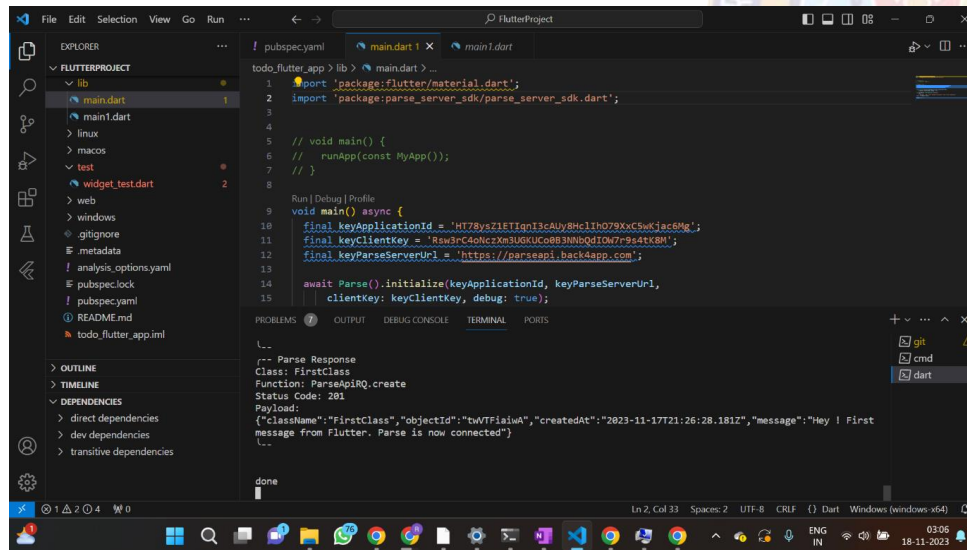

Flutter

Step 2: Flutter Setup

- Setting up Parse SDK: In main.dart code import the Parse SDK
`import 'package:flutter/material.dart';`
`import 'package:parse_server_sdk_flutter/parse_server_sdk.dart';`

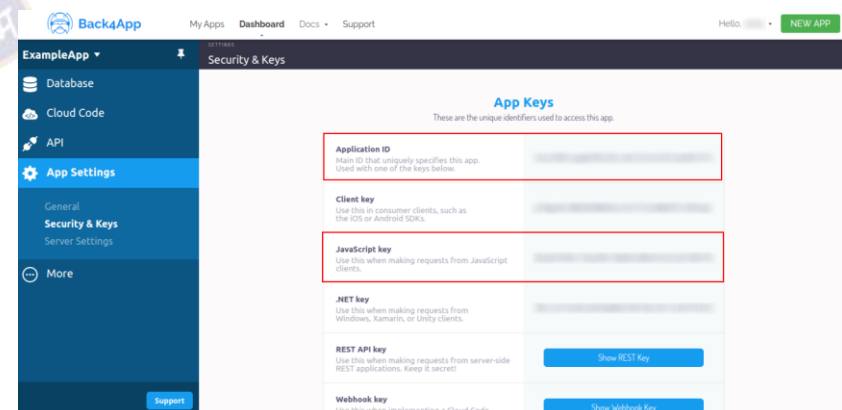


```
pubspec.yaml | main.dart | main1.dart
FlutterProject
EXPLORER
  FLUTTERPROJECT
    lib
      main.dart
      main1.dart
    linux
      ...
main.dart
1 import 'package:flutter/material.dart';
2 import 'package:parse_server_sdk_flutter/parse_server_sdk.dart';
3
4
```



```
pubspec.yaml | main.dart | main1.dart
FlutterProject
EXPLORER
  FLUTTERPROJECT
    lib
      main.dart
      main1.dart
    linux
      ...
    macos
      ...
    test
      widget_test.dart
    web
      ...
    windows
      ...
    gitignore
    metadata
    analysis_options.yaml
    pubspec.lock
    pubspec.yaml
    README.md
    todo_flutter_app.iml
  OUTLINE
  TIMELINE
  DEPENDENCIES
    direct dependencies
    dev dependencies
    transitive dependencies
main.dart
1 import 'package:flutter/material.dart';
2 import 'package:parse_server_sdk_flutter/parse_server_sdk.dart';
3
4 // void main() {
5 //   runApp(const MyApp());
6 // }
7
8 Run [Debug] Profile
9 void main() async {
10   final keyApplicationId = "MT78ysZ1ETIqN13cAUy8Hc1h079XvC5wKjac6Mg";
11   final keyClientKey = "Rsw3rC4oNczxm3UGKUCo8B3NNbQdION7r9s4tK8M";
12   final keyParseServerUrl = "https://parseapi.back4app.com";
13
14   await Parse().initialize(keyApplicationId, keyParseServerUrl,
15     clientKey: keyClientKey, debug: true);
16 }
17
18 PROBLEMS | OUTPUT | DEBUG CONSOLE | TERMINAL | PORTS
19
20 Parse Response
21 Class: FirstClass
22 Function: ParseApiRQ.create
23 Status Code: 201
24 Payload:
25 {"className": "FirstClass", "objectId": "twWTFiaIuA", "createdAt": "2023-11-17T21:26:28.181Z", "message": "Hey ! First message from Flutter. Parse is now connected"}
26
27 done
28
29 Ln 2, Col 33 | Spaces: 2 | UTF-8 | CRLF | Dart | Windows (windows-x64)
```

- Insert your Keys and initialize Parse SDK



Flutter

- Step 12: Save and Read your first Data Object

```
Future<void> _addTask(String name, String description) async {  
  final Task newTask = Task()  
  ..name = name  
  ..description = description;  
  
  await newTask.save();  
  
  _taskController.clear();  
  _descriptionController.clear();  
  _fetchTasks();  
}
```

- Step 5 - Go to Dashboard and check your Data

back4app

AI Agent My Apps Dashboard Docs Support

Hello, 2022mtg3574 NEW APP

TestApp

Database

Browser

Create a class

Role 0

User 0

B4aVehicle 1

FirstClass 1

Task 2

Todo 4

Index Manager

Blockchain NEW

Cloud Code

API

App Settings

More

Support

2 objects

Task Public Read and Write enabled

	objectId	String	createdAt	Date	updatedAt	Date	ACL	ACL	description	String	title	String	isCompleted	Boolean	name	String
<input type="checkbox"/>	t08b50SPIf		22 Nov 2023 at 07:...		22 Nov 2023 at 07:...		Public Read + Write		Assignment 2		(undefined)		(undefined)		Task 2	
<input type="checkbox"/>	e21bH0Gcpo		22 Nov 2023 at 07:...		22 Nov 2023 at 07:...		Public Read + Write		Assignment 1		(undefined)		(undefined)		Task 1	

Task List

Step 3: Task Creation

Create a screen for adding new tasks.

Implement functionality to create and save tasks to Back4App.

Verify that newly created tasks appear in the task list.

```
Future<void> _addTask(String name, String description) async {  
  final Task newTask = Task()  
    ..name = name  
    ..description = description;  
  
  await newTask.save();  
  
  _taskController.clear();  
  _descriptionController.clear();  
  _fetchTasks();  
}
```

back4app AI Agent My Apps Dashboard Docs Support Hello, 2022mtg3574 NEW APP

TestApp 2 objects Public Read and Write enabled

Database

Browser Create a class

- Role 0
- User 0
- B4aVehicle 1
- FirstClass 1
- Task 2
- Todo 4

Index Manager

Blockchain NEW

Cloud Code

API

App Settings

More

Support

objectId	createdAt	updatedAt	ACL	description	title	isCompleted	name
t08b565P1f	22 Nov 2023 at 07:...	22 Nov 2023 at 07:...	Public Read + Write	Assignment 2	(undefined)	(undefined)	Task 2
e21bm0Gcpc	22 Nov 2023 at 07:...	22 Nov 2023 at 07:...	Public Read + Write	Assignment 1	(undefined)	(undefined)	Task 1

Task List

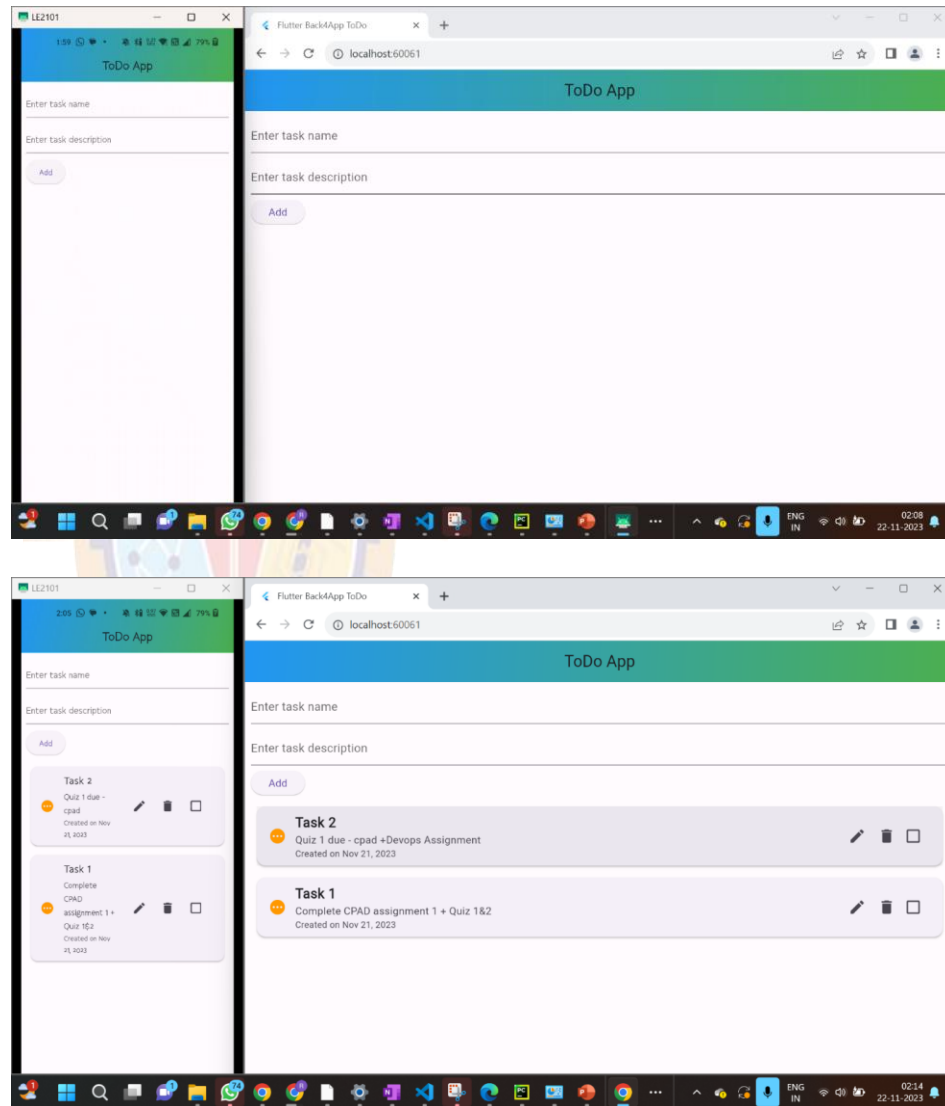
Step 3: Task Creation

Create a screen for adding new tasks.

Implement functionality to create and save tasks to Back4App.

Verify that newly created tasks appear in the task list.

- The image shows the page to add new tasks by adding the task name, task description and clicking on the **Add** button.
- The tasks created are updated both in the task details page and in Back4App



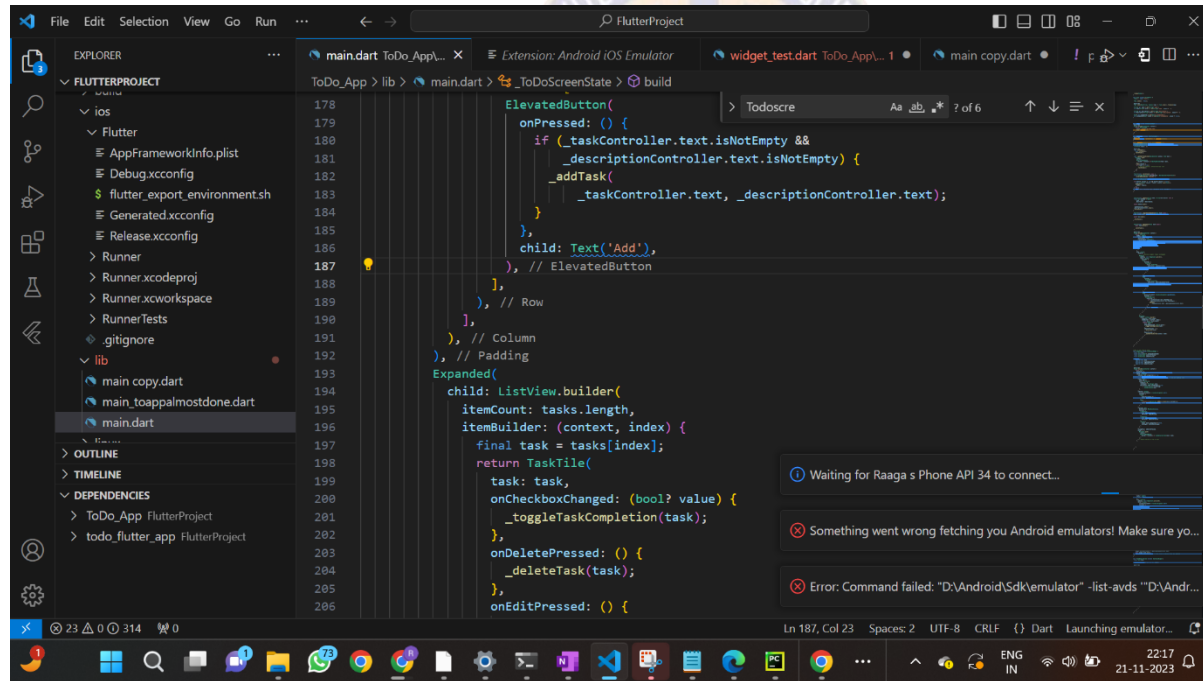
Task List

Step 4: Task List

Create a screen in your Flutter app to display a list of tasks.

Implement a function to fetch tasks from Back4App using the Back4App API.

Display the tasks in a list view with titles and descriptions.



The screenshot shows an IDE window with the following components:

- EXPLORER:** A sidebar on the left showing the project structure. The 'lib' directory is expanded, showing 'main.dart' as the active file.
- EDITOR:** The main area displays the code for 'main.dart'. The code is a Flutter widget that builds a screen with an 'Add' button and a list of tasks. The list is built using 'ListView.builder' and 'TaskTile' widgets. The code includes logic for adding, deleting, and editing tasks.
- STATUS BAR:** At the bottom, it shows 'Ln 187, Col 23', 'Spaces: 2', 'UTF-8', 'CRLF', and 'Dart'.
- CONSOLE:** On the right, there are three error messages:
 - 'Waiting for Raaga's Phone API 34 to connect...'
 - 'Something went wrong fetching you Android emulators! Make sure yo...'
 - 'Error: Command failed: "D:\Android\Sdk\emulator" -list-avds "D:\Andr...'

Task List

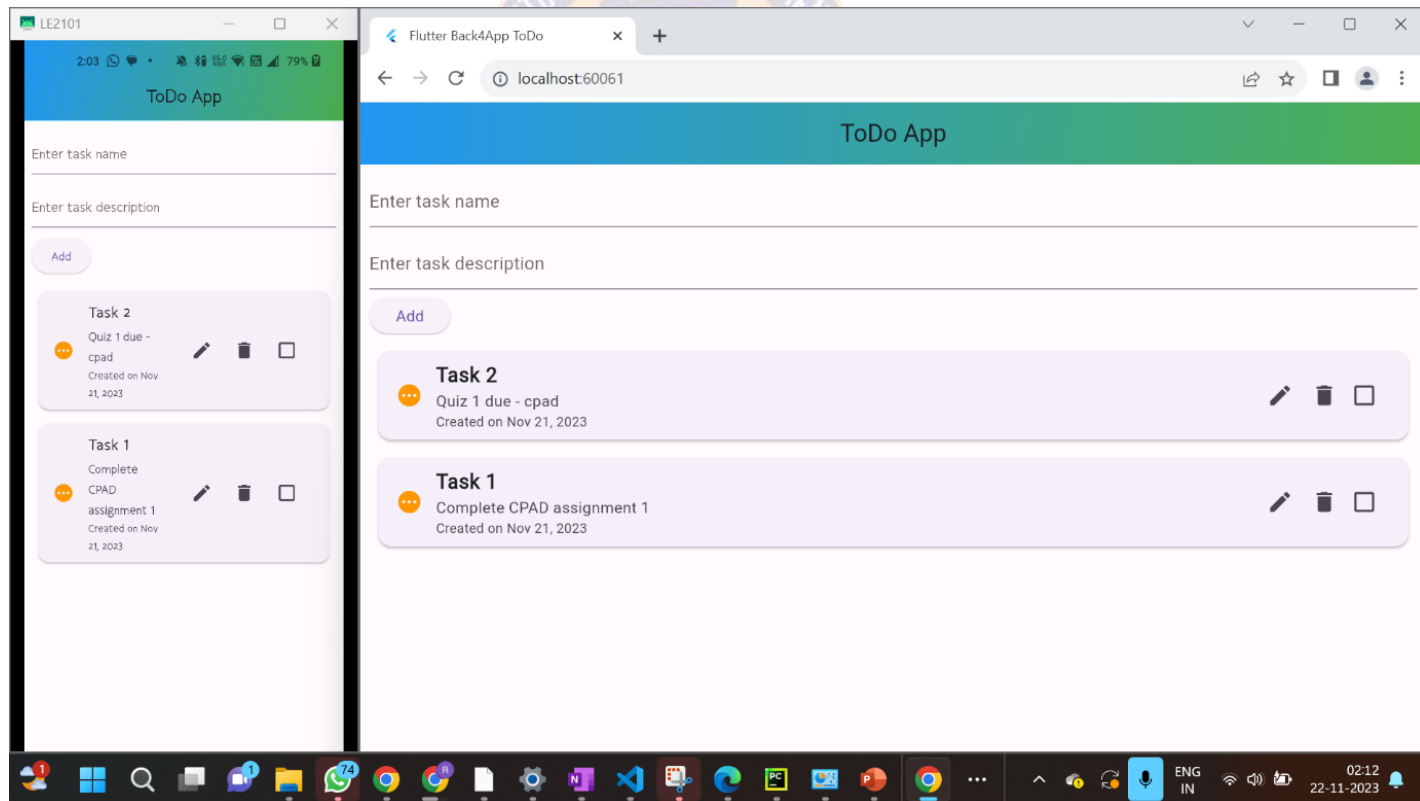
Step 4: Task List

Create a screen in your Flutter app to display a list of tasks.

Implement a function to fetch tasks from Back4App using the Back4App API.

Display the tasks in a list view with titles and descriptions.

- Once the tasks are added, the added tasks can be viewed in the task list in the form of tiles

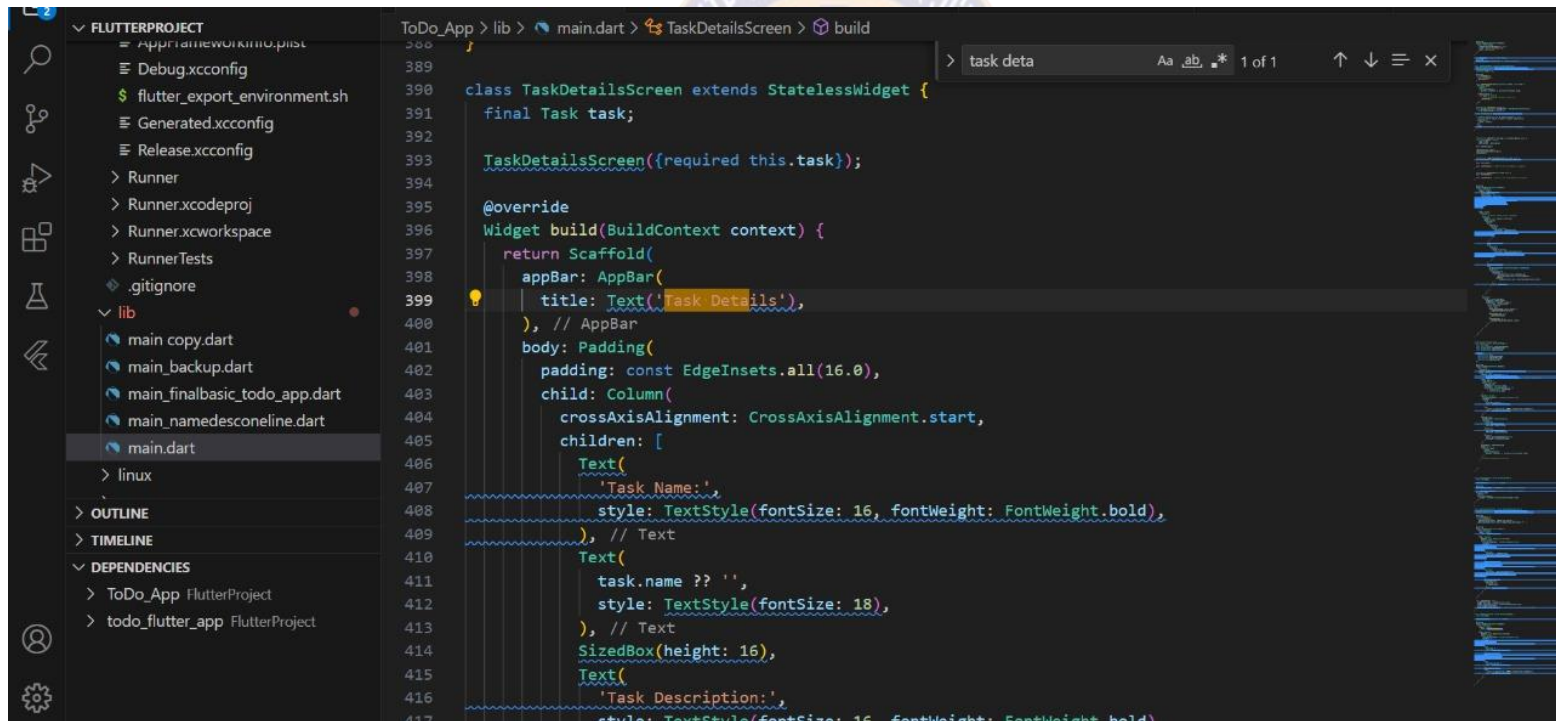


Task Details

Step 5: Task Details

Add a feature to view task details when a task is tapped in the task list.

Display the title and description of the selected task.



The screenshot shows an IDE with a project named 'FLUTTERPROJECT'. The file explorer on the left shows the project structure, including 'lib/main.dart' which is selected. The main editor displays the code for 'TaskDetailsScreen' in 'lib/main.dart'. The code defines a 'TaskDetailsScreen' class that extends 'StatelessWidget'. It has a 'final Task task;' property and a constructor 'TaskDetailsScreen({required this.task});'. The 'build' method returns a 'Scaffold' with an 'AppBar' titled 'Task Details' and a 'body' containing a 'Padding' widget. The 'padding' widget has 'EdgeInsets.all(16.0)' and contains a 'Column' widget. The 'Column' widget has 'crossAxisAlignment: CrossAxisAlignment.start' and contains three children: a 'Text' widget for 'Task Name' in bold font size 16, a 'Text' widget for the task name (task.name ?? '') in font size 18, and a 'Text' widget for 'Task Description' in font size 16. The code is as follows:

```
388  
389 class TaskDetailsScreen extends StatelessWidget {  
390   final Task task;  
391  
392   TaskDetailsScreen({required this.task});  
393  
394   @override  
395   Widget build(BuildContext context) {  
396     return Scaffold(  
397       appBar: AppBar(  
398         title: Text('Task Details'),  
399       ), // AppBar  
400       body: Padding(  
401         padding: const EdgeInsets.all(16.0),  
402         child: Column(  
403           crossAxisAlignment: CrossAxisAlignment.start,  
404           children: [  
405             Text(  
406               'Task Name:',  
407               style: TextStyle(fontSize: 16, fontWeight: FontWeight.bold),  
408             ), // Text  
409             Text(  
410               task.name ?? '',  
411               style: TextStyle(fontSize: 18),  
412             ), // Text  
413             SizedBox(height: 16),  
414             Text(  
415               'Task Description:',  
416               style: TextStyle(fontSize: 16, fontWeight: FontWeight.bold),  
417
```

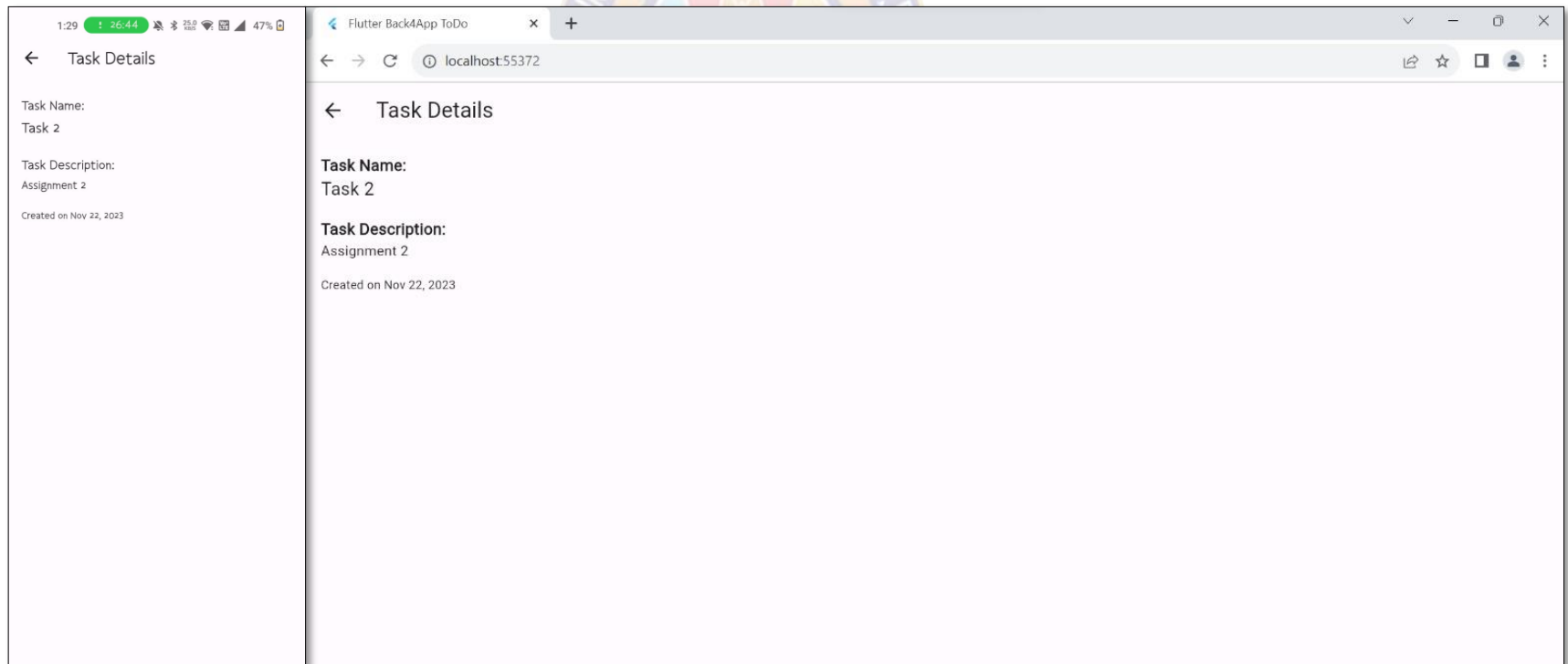
Task Details

Step 5: Task Details

Add a feature to view task details when a task is tapped in the task list.

Display the title and description of the selected task.

- This page is to view the task details. The task details can be viewed on tapping on the task tile.



Bonus Feature – Edit Task

Step 6: Bonus Features

Add a feature to edit and update existing tasks.

```
void _updateTask() async {  
  widget.task.name = _nameController.text;  
  widget.task.description = _descriptionController.text;  
  await widget.task.save();  
  Navigator.pop(context, true); // Pass true to indicate task was updated  
}
```

back4app AI Agent My Apps Dashboard Docs Support Hello, 2022mt93574 NEW APP

TestApp Task Public Read and Write enabled

objectid	String	createdAt	Date	updatedAt	Date	ACL	ACL	description	String	title	String	isCompleted	Boolean	name	String	
<input type="checkbox"/>	k0Bk585PIf	22 Nov 2023 at 07:1...		22 Nov 2023 at 08:1...		Public Read + Write		Assignment 2 - Cross Platform Application Development		(undefined)		(undefined)		Task 2		
<input type="checkbox"/>	w21BH0Gcpo	22 Nov 2023 at 07:1...		22 Nov 2023 at 07:1...		Public Read + Write		Assignment 1		(undefined)		(undefined)		Task 1		

Database Browser Create a class

- Role 0
- User 0
- Background 1
- FirstClass 1
- Task 2
- Todo 4

Index Manager Blockchain NEW

Cloud Code API App Settings More

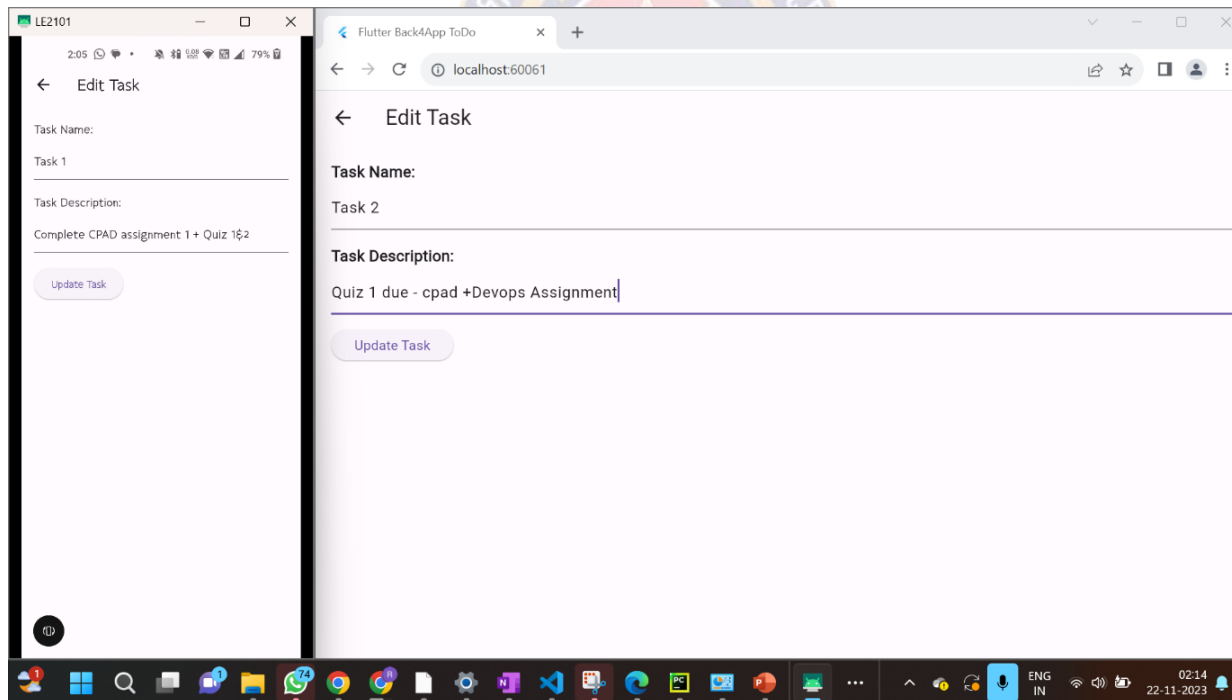
Support

Bonus Feature – Edit Task

Step 6: Bonus Features

Add a feature to edit and update existing tasks.

- In order to edit the task, click on the edit icon in the task tiles.
- Edit task page opens in which the task name and task description can be edited.
- This will be updated in both the task details page as well as in Back4App



Bonus Feature – Delete Task

Step 6: Bonus Features

Implement a feature for task deletion.

```
Future<void> _deleteTask(Task task) async {  
  await task.delete();  
  
  await _fetchTasks(); // Wait for the task deletion to complete  
}
```

back4app

AI Agent My Apps Dashboard Docs Support

Hello, 2022mtg3574 NEW APP

TestApp

Database

Browser

- Role
- User
- RoleVehicle
- FirstClass
- Task
- Todo

Index Manager

Blockchain

Cloud Code

API

App Settings

More

Support

Task

Public Read and Write enabled

objectId	string	createdAt	date	updatedAt	date	ACL	ACL	description	string	title	string	isCompleted	boolean	name	string
10B505PIf		22 Nov 2023 at 07:1...		22 Nov 2023 at 08:1...		Public Read + Write		Assignment 2 - Cross Platform Application Development		(undefined)		(undefined)		Task 2	

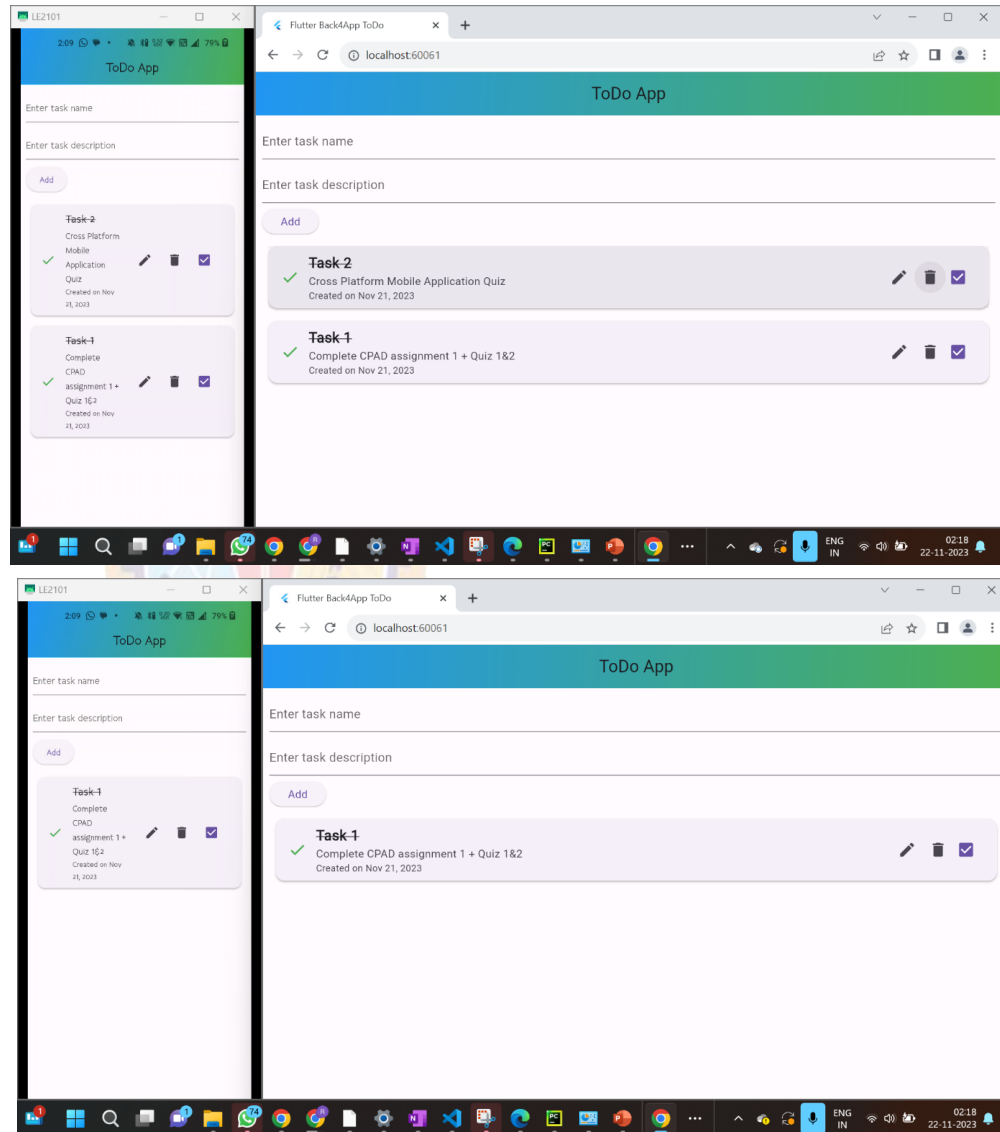
Add a new column

Bonus Feature – Delete Task

Step 6: Bonus Features

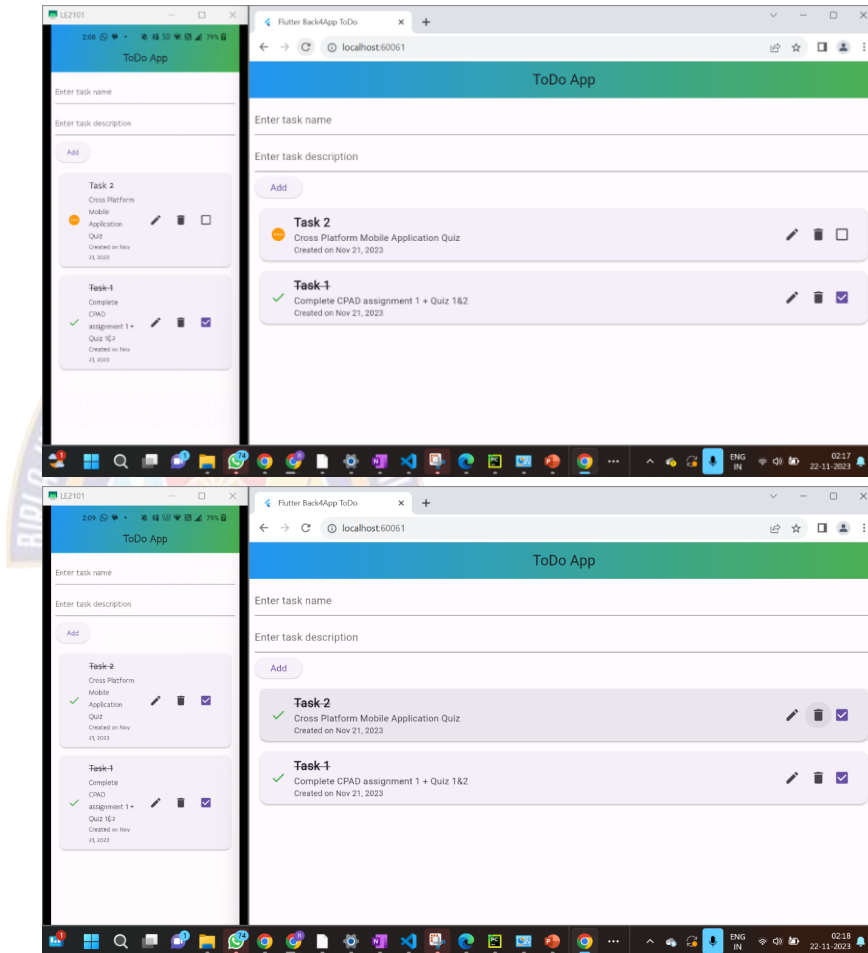
Implement a feature for task deletion.

- To delete the task click on the delete button in the task tiles. The task gets deleted from the task details as well as the Back4App.
- The task can also be deleted by long press on the task tiles in the task list.



Enhancements

1. Added an additional feature/enhancement to mark the tasks as completed. When a task is incomplete, a symbol is shown at the beginning of the task indicating that the task is incomplete. When the checkbox is checked, the task will be marked as complete indicated by green tick mark.
2. Also included an enhancement to display the date of creation of the task as **“Created on Nov 21, 2023”**



Enhancements

1. GitHub Link Of the ToDo Application with the code repository, README and the document of steps to create the ToDo App.

<https://github.com/raagashettybp/ToDo-App>



Thank You!

