

# **Cross Platform Application Development**

## **Assignment 1 - Flutter App with Back4App Integration**

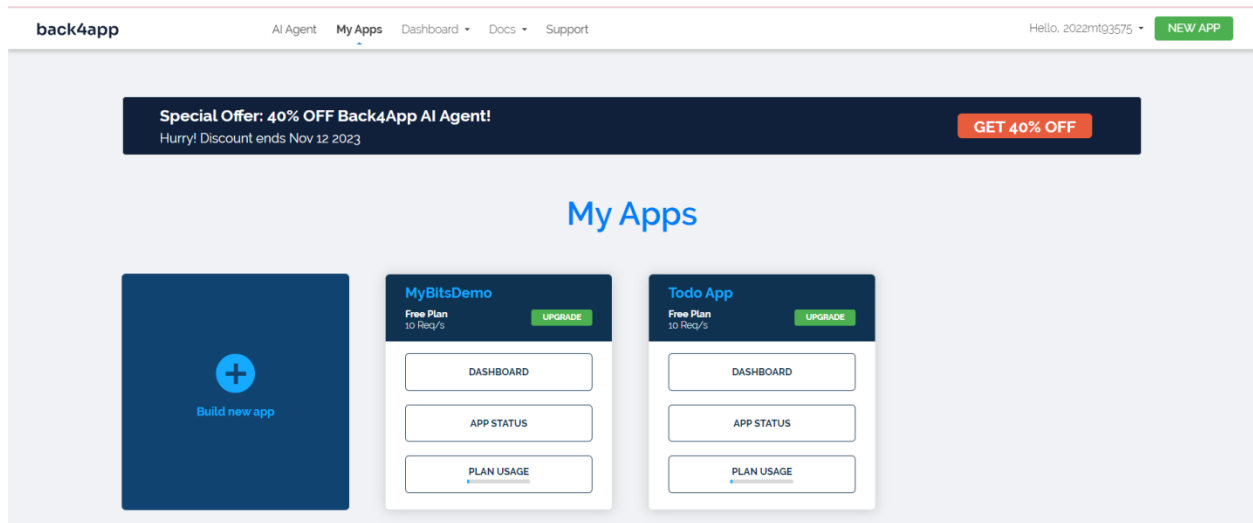
**Name : G. Sai Teja**

**BITS ID : 2022MT93575**

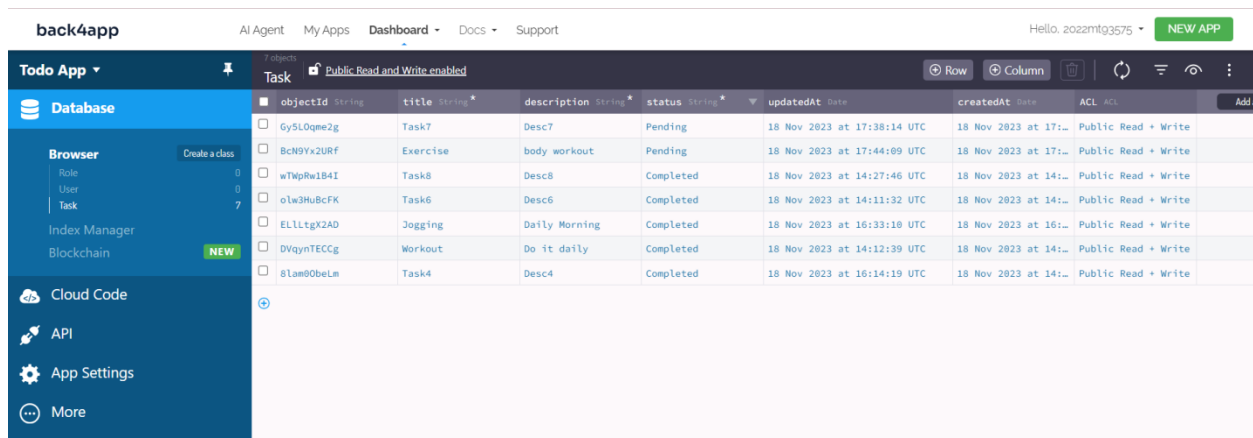
## Assignment Steps:

### Step 1: Set Up Back4App

#### New app – ‘Todo App’



Created a new class ‘Task’ with columns title, description, status



## App Keys

Security & Keys

### App Keys

These are the unique identifiers used to access this app.

<b>Application ID</b> Main ID that uniquely specifies this app. Used with one of the keys below.	A18AZwjSoNURQ87jeiFi4cqTCGv2ePdS5fszplHR
<b>Client key</b> Use this in consumer clients, such as the iOS or Android SDKs.	fKUiKQNisEqfEkKuD0VLJkAYcgb6AG3UxQnArr7

## Step 2: Flutter Setup

Created new flutter project 'todoapp'

```
WINDOWS@DESKTOP-KGKI498 MINGW64 /D/flutter_back4app_assignment/todoapp
$ pwd
/D/flutter_back4app_assignment/todoapp

WINDOWS@DESKTOP-KGKI498 MINGW64 /D/flutter_back4app_assignment/todoapp
$ ls -lrth
total 37K
-rw-r--r-- 1 WINDOWS 197609 566 Nov 18 16:34 README.md
drwxr-xr-x 1 WINDOWS 197609 0 Nov 18 16:34 test/
-rw-r--r-- 1 WINDOWS 197609 1.5K Nov 18 16:34 analysis_options.yaml
drwxr-xr-x 1 WINDOWS 197609 0 Nov 18 16:34 ios/
drwxr-xr-x 1 WINDOWS 197609 0 Nov 18 16:34 linux/
drwxr-xr-x 1 WINDOWS 197609 0 Nov 18 16:34 macos/
-rw-r--r-- 1 WINDOWS 197609 859 Nov 18 16:34 todoapp.iml
drwxr-xr-x 1 WINDOWS 197609 0 Nov 18 16:34 web/
drwxr-xr-x 1 WINDOWS 197609 0 Nov 18 16:34 windows/
-rw-r--r-- 1 WINDOWS 197609 3.9K Nov 18 17:10 pubspec.yaml
-rw-r--r-- 1 WINDOWS 197609 9.0K Nov 18 21:49 pubspec.lock
drwxr-xr-x 1 WINDOWS 197609 0 Nov 18 21:50 android/
drwxr-xr-x 1 WINDOWS 197609 0 Nov 18 22:01 build/
drwxr-xr-x 1 WINDOWS 197609 0 Nov 18 23:14 lib/
```

```
WINDOWS@DESKTOP-KGKI498 MINGW64 /D/flutter_back4app_assignment/todoapp
$ flutter doctor
```

```
A new version of Flutter is available!
```

```
To update to the latest version, run "flutter upgrade".
```

```
Doctor summary (to see all details, run flutter doctor -v):
```

```
[✓] Flutter (Channel stable, 3.13.9, on Microsoft Windows [Version 10.0.19045.3570], locale en-IN)
[✓] Windows Version (Installed version of Windows is version 10 or higher)
[✓] Android toolchain - develop for Android devices (Android SDK version 34.0.0)
[✓] Chrome - develop for the web
[✓] Visual Studio - develop Windows apps (Visual Studio Build Tools 2022 17.8.0)
[✓] Android Studio (version 2022.3)
[✓] VS Code (version 1.84.0)
[✓] Connected device (3 available)
[✓] Network resources
```

```
• No issues found!
```

Added dependency 'parse\_server\_sdk' in pubspec.yaml

```
dependencies:
  flutter:
    sdk: flutter
  parse_server_sdk: ^6.2.0
```

Updated keyApplicationId, keyClientKey, keyParseServerUrl in main.dart file

```
main.dart x ! pubspec.yaml
todoapp > lib > main.dart
1 import 'dart:async';
2
3 import 'package:flutter/material.dart';
4 import 'package:parse_server_sdk/parse_server_sdk.dart';
5
6 void main() async {
7   WidgetsFlutterBinding.ensureInitialized();
8
9   final keyApplicationId = 'A18AZwjSoNURQ87jeiFi4cqTCGv2ePdS5fszplHR';
10  final keyClientKey = 'fKuikQNisEeqfEkKuD0VlJkAYcgb6AG3UxQnArr7';
11  final keyParseServerUrl = 'https://parseapi.back4app.com';
12
13  await Parse().initialize(keyApplicationId, keyParseServerUrl,
14    clientKey: keyClientKey, debug: true);
15
16  runApp(MaterialApp(
17    home: Home(),
18    routes: {
19      '/taskdetails': (context) => TaskDetailsScreen(),
20    }
21  ));
22 }
23
```

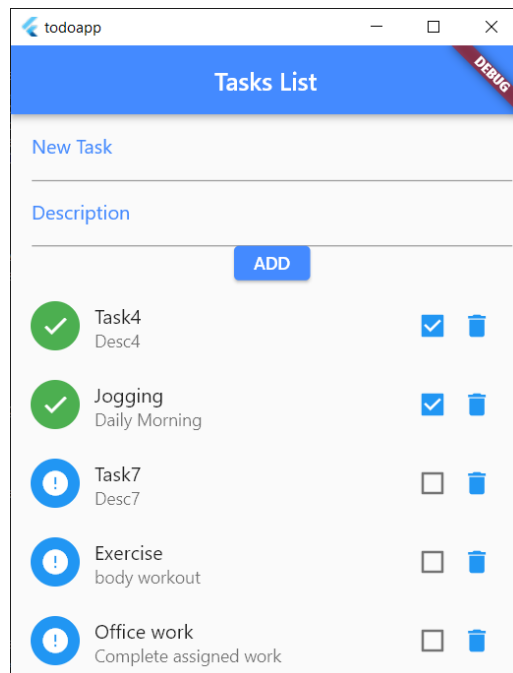
## Step 3: Task List

Executing code by running flutter run command

```
WINDOWS@DESKTOP-KGKI498 MINGW64 /D/flutter_back4app_assignment/todoapp
$ flutter run -d windows
Launching lib\main.dart on Windows in debug mode...
Building Windows application... 62.5s
✓ Built build\windows\runner\Debug\todoapp.exe.
Syncing files to device Windows...
flutter: ⚙ Parse Request
flutter: curl -X GET -H 'user-agent: Flutter Parse SDK 6.3.0' -H 'X-Parse-Application
eapi.back4app.com/classes/Task?where=%7B%7D

https://parseapi.back4app.com/classes/Task?where={}
flutter: ⚙
Syncing files to device Windows... 1,113ms

Flutter run key commands.
r Hot reload.
R Hot restart.
h List all available interactive commands.
d Detach (terminate "flutter run" but leave application running).
c Clear the screen
q Quit (terminate the application on the device).
```



## Get query in logs

```
Flutter: --- Parse Request
Flutter: curl -X GET -H 'user-agent: Flutter Parse SDK 6.3.0' -H 'X-Parse-Application-Id: A18A2wJSouURQ87jeF14cTCGv2ePd5SfzplHR' -H 'X-Parse-Client-Key: fkuIkQnIsEqfeku0VlJkAYcgb6AG3UxQnArr?' https://parseapi.back4app.com/classes/Task?where=%7B%7D
Flutter: ---
Flutter: --- Parse Response
Class: Task
Function: ParseApiReq.query
Status Code: 200
Payload: [{"className":"Task","objectId":"0lw3Hu8CFK","createdAt":"2023-11-18T14:00:59.835Z","updatedAt":"2023-11-18T14:11:32.913Z","title":"Task6","description":"Desc6","status":"Completed"}, {"className":"Task","objectId":"8wmp08181","createdAt":"2023-11-18T14:05:13.496Z","updatedAt":"2023-11-18T14:27:46.779Z","title":"Task8","description":"Desc8","status":"Completed"}, {"className":"Task","objectId":"DvqynIECCo","createdAt":"2023-11-18T14:12:13.709Z","updatedAt":"2023-11-18T14:12:13.709Z","title":"Task7","description":"Desc7","status":"Pending"}, {"className":"Task","objectId":"81aw00bels","createdAt":"2023-11-18T14:27:06.002Z","updatedAt":"2023-11-18T16:14:19.906Z","title":"Task4","description":"Desc4","status":"Completed"}, {"className":"Task","objectId":"tLlIgx2AD","createdAt":"2023-11-18T16:32:13.264Z","updatedAt":"2023-11-18T16:33:10.917Z","title":"Jogging","description":"Daily Morning","status":"Completed"}, {"className":"Task","objectId":"Gy3LOqme2g","createdAt":"2023-11-18T17:38:14.868Z","updatedAt":"2023-11-18T17:38:14.868Z","title":"Task5","description":"Desc5","status":"Pending"}, {"className":"Task","objectId":"hcnVpaz2uR","createdAt":"2023-11-18T17:44:09.210Z","updatedAt":"2023-11-18T17:44:09.210Z","title":"Exercise","description":"body workout","status":"Pending"}, {"className":"Task","objectId":"etkpxsta7j","createdAt":"2023-11-18T18:16:19.177Z","updatedAt":"2023-11-18T18:16:19.177Z","title":"Office work","description":"Complete assigned work","status":"Pending"}]
```

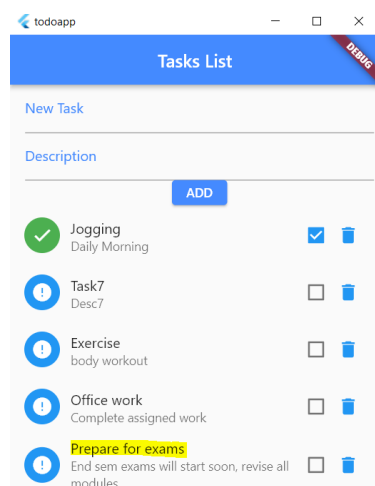
## Implemented getToDo() function to retrieve tasks list

```
Future<List<ParseObject>> getToDo() async {
  QueryBuilder<ParseObject> queryTodo =
    QueryBuilder<ParseObject>(ParseObject('Task'));
  final ParseResponse apiResponse = await queryTodo.query();

  if (apiResponse.success && apiResponse.results != null) {
    return apiResponse.results as List<ParseObject>;
  } else {
    return [];
  }
}
```

## Step 4: Task Creation

### Created new task 'Prepare for exams'



## Post query in logs

```
Flutter: -- Parse Request
Flutter: curl -X POST -H 'content-type: application/json; charset=utf-8' -H 'user-agent: Flutter Parse SDK 6.3.0' -H 'X-Parse-Application-Id: A18AZwjSONURQ87jeIF4cqTCGv2ePdS5fszplHR' -H 'X-Parse-Client-Key: fkUikQNiSeEqfEKkuD0V1JkAYCgB6AG3UXQnArr7' -d '{"title": "Prepare for exams", "description": "End sem exams will start soon, revise all modules"}' https://parseapi.back4app.com/classes/Task
Flutter: -- Parse Response
Flutter: -- Parse Response
Class: Task
Function: ParseApiRQ.create
Status Code: 201
Payload: [{"className": "Task", "objectId": "4E3Iei741N", "createdAt": "2023-11-18T18:23:02.562Z", "title": "Prepare for exams", "description": "End sem exams will start soon, revise all modules", "status": "Pending"}]
```

back4app AI Agent My Apps Dashboard Docs Support Hello, 2022mtg3575 NEW APP

Todo App

Database

Browser

Cloud Code

API

App Settings

More

Task

Public Read and Write enabled

objectId	String	title	String *	description	String *	status	String *	updatedAt	Date	createdAt	Date	ACL	ACL	Add
<input type="checkbox"/>	4E3Iei741N	Prepare for exams		End sem exams will		Pending		18 Nov 2023 at 18:23:02 UTC		18 Nov 2023 at 18:23:02 UTC		Public Read + Write		
<input type="checkbox"/>	eTKpxsta7j	Office work		Complete assigned w		Pending		18 Nov 2023 at 18:16:19 UTC		18 Nov 2023 at 18:16:19 UTC		Public Read + Write		
<input type="checkbox"/>	BCN9v2URF	Exercise		body workout		Pending		18 Nov 2023 at 17:44:09 UTC		18 Nov 2023 at 17:44:09 UTC		Public Read + Write		
<input type="checkbox"/>	Gy5lDqne2g	Task7		Desc7		Pending		18 Nov 2023 at 17:38:14 UTC		18 Nov 2023 at 17:38:14 UTC		Public Read + Write		
<input type="checkbox"/>	ELlLtqX2AD	Jogging		Daily Morning		Completed		18 Nov 2023 at 16:33:10 UTC		18 Nov 2023 at 16:33:10 UTC		Public Read + Write		
<input type="checkbox"/>	8Lam80BeLm	Task4		Desc4		Completed		18 Nov 2023 at 16:14:19 UTC		18 Nov 2023 at 16:14:19 UTC		Public Read + Write		
<input type="checkbox"/>	wTWpRw184I	Task8		Desc8		Completed		18 Nov 2023 at 14:27:46 UTC		18 Nov 2023 at 14:27:46 UTC		Public Read + Write		
<input type="checkbox"/>	DVqynTECCg	Workout		Do it daily		Completed		18 Nov 2023 at 14:12:39 UTC		18 Nov 2023 at 14:12:39 UTC		Public Read + Write		
<input type="checkbox"/>	oLw3HuBcFK	Task6		Desc6		Completed		18 Nov 2023 at 14:11:32 UTC		18 Nov 2023 at 14:11:32 UTC		Public Read + Write		

## Implemented addToDo() function to add new tasks

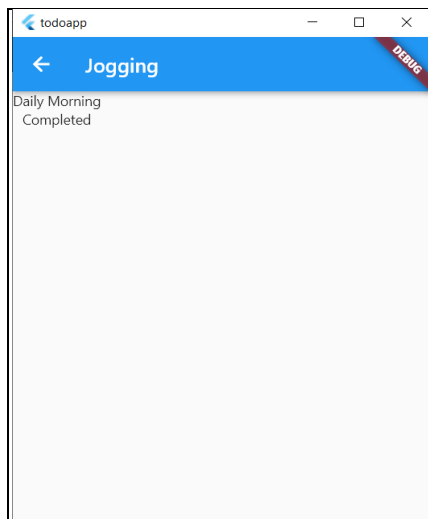
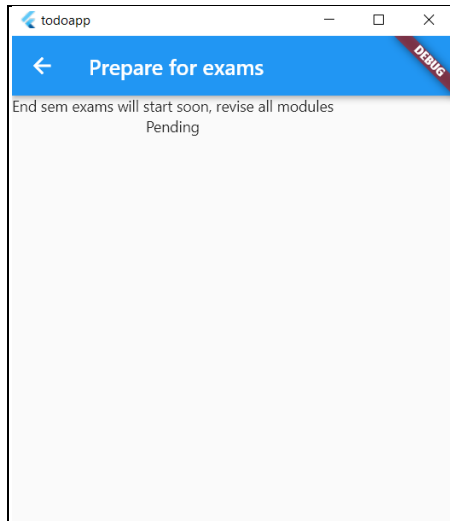
```
void addToDo() async {
  if (titleController.text.trim().isEmpty || descriptionController.text.trim().isEmpty) {
    ScaffoldMessenger.of(context).showSnackBar(SnackBar(
      content: Text("Empty title"),
      duration: Duration(seconds: 2),
    ));
    return;
  }
  await saveToDo(titleController.text, descriptionController.text);
  setState(() {
    titleController.clear();
    descriptionController.clear();
  });
}
```

```
Future<void> saveToDo(String title, String description) async {
  final todo = ParseObject('Task')..set('title', title)..set('description', description);
  await todo.save();
}
```

## Step 5: Task Details

Task details will be displayed whenever a task is tapped

Details include title, description and status of that task

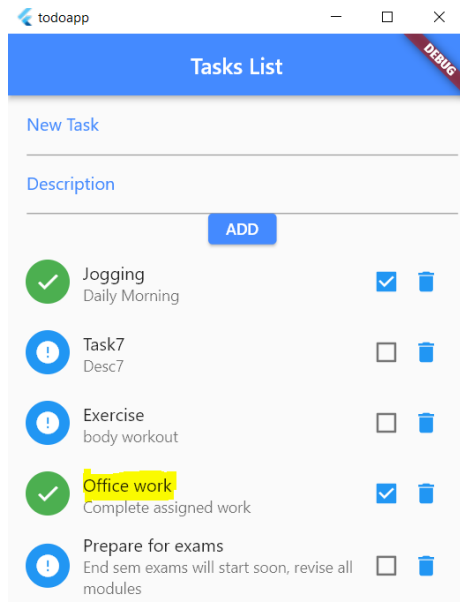


## Step 6: Bonus Features

Added functionality for updating and deleting existing tasks

Updated task 'Office work' to Completed





## Put query in logs

```
Flutter: --- Parse Request
Flutter: curl -X PUT -H 'content-type: application/json; charset=utf-8' -H 'user-agent: Flutter Parse SDK 6.3.0' -H 'X-Parse-Application-Id: A1BA2wJ5oNURQ87jeIfi4cqTC6v2ePdS5fszplHR' -H 'X-Parse-Client-Key: fKUikQV1SeoTEkku00V13AYcgb6AG3UXdnArr7' -d '{"status":"Completed"}' https://parseapi1.back4app.com/classes/task/etkpxsta7j
Flutter: ---
Flutter: https://parseapi1.back4app.com/classes/Task/etkpxsta7j
Flutter: ---
Flutter: --- Parse Response
Flutter: ---
Flutter: class: Task
Flutter: function: ParseApiRQ.save
Flutter: status code: 200
Flutter: Payload: {"className":"Task","objectId":"etkpxsta7j","updatedAt":"2023-11-18T19:00:44.647Z","status":"Completed"}
Flutter: ---
```

back4app AI Agent My Apps Dashboard Docs Support Hello, 2022mt03575 NEW APP

Todo App 8 objects Task Public Read and Write enabled

Database

Browser Create a class

Role 0

User 0

Task 8

Index Manager

Blockchain NEW

Cloud Code

API

App Settings

More

objectId	title	description	status	updatedAt	createdAt	ACL
etkpxsta7j	Office work	Complete assigned work	Completed	18 Nov 2023 at 19:09:44 UTC	18 Nov 2023 at 18:...	Public Read + Write
4EJie1741N	Prepare for exams	End sem exams will...	Pending	18 Nov 2023 at 18:23:02 UTC	18 Nov 2023 at 18:...	Public Read + Write
BCN9Yx2URF	Exercise	body workout	Pending	18 Nov 2023 at 17:44:09 UTC	18 Nov 2023 at 17:...	Public Read + Write
Gy5LOqme2g	Task7	Desc7	Pending	18 Nov 2023 at 17:38:14 UTC	18 Nov 2023 at 17:...	Public Read + Write
ELlItgX2AD	Jogging	Daily Morning	Completed	18 Nov 2023 at 16:33:10 UTC	18 Nov 2023 at 16:...	Public Read + Write
8Lam90beLm	Task4	Desc4	Completed	18 Nov 2023 at 16:14:19 UTC	18 Nov 2023 at 14:...	Public Read + Write
wTwpRw184I	Task8	Desc8	Completed	18 Nov 2023 at 14:27:46 UTC	18 Nov 2023 at 14:...	Public Read + Write
DVqynTECCg	Workout	Do it daily	Completed	18 Nov 2023 at 14:12:39 UTC	18 Nov 2023 at 14:...	Public Read + Write
oLw3MuBcFK	Task6	Desc6	Completed	18 Nov 2023 at 14:11:32 UTC	18 Nov 2023 at 14:...	Public Read + Write

```
Future<void> updateTodo(String id, bool done) async {
  var todo = ParseObject('Task')
    ..objectId = id
    ..set('status', 'Completed');
  await todo.save();
}
```

## Deleted task 'Jogging'

## Delete query in logs

```
Flutter: --- Parse Request
Flutter: curl -X DELETE -H 'user-agent: Flutter Parse SDK 6.3.0' -H 'X-Parse-Application-Id: A18AZwjSONURQ87jeFf4cqTCGv2ePd5Sfszp1HR' -H 'X-Parse-Client-Key: fKu1kQNisEeqfEkuD0V1JkAYcgb6AG3uxqnArr7' https://p
arseapi.back4app.com/classes/Task/EL1ltgX2AD
Flutter: --- Parse Response
Flutter: ---
Class: Task
Function: ParseApiRQ.delete
Status Code: 200
Payload: [{"className":"Task","objectId":"EL1ltgX2AD"}]
```

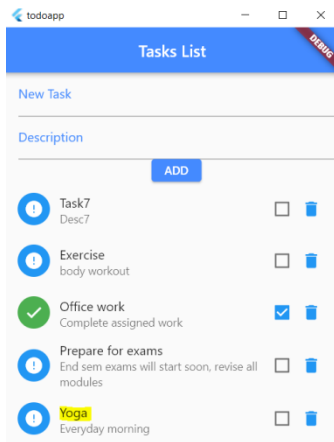
```
Future<void> deleteTodo(String id) async {
  var todo = ParseObject('Task')..objectId = id;
  await todo.delete();
}
```

## Add, Update, Deletion of tasks in Back4App will get reflected in Flutter Todo app

## New task 'Yoga'

objectId	String	title	String *	description	String *	status	String *	updatedAt	Date	createdAt	Date	ACL	ACL
<input type="checkbox"/>	(auto)	Yoga		Everyday morning		(undefined)		(auto)		(auto)		Public Read + Write	
<button>Add</button> <button>Cancel</button>													

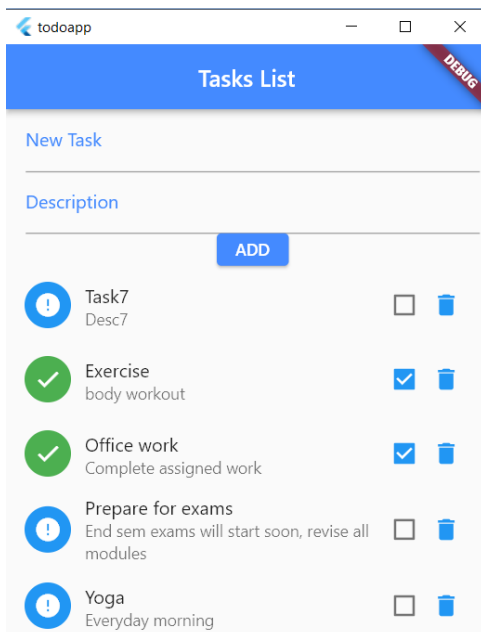
9 objects													
Task <span>Public Read and Write enabled</span> <span>+ Row</span> <span>+ Column</span> <span>🗑</span> <span>🔄</span> <span>≡</span> <span>🔍</span>													
objectId	String	title	String *	description	String *	status	String *	updatedAt	Date	createdAt	Date	ACL	ACL
<input type="checkbox"/>	AxBqCgtHx8	Yoga		Everyday morning		Pending		18 Nov 2023 at 19:16:30 UTC		18 Nov 2023 at 19:...		Public Read + Write	
<input type="checkbox"/>	etKpxsta7j	Office work		Complete assigned ...		Completed		18 Nov 2023 at 19:00:44 UTC		18 Nov 2023 at 18:...		Public Read + Write	
<input type="checkbox"/>	4EJIei741N	Prepare for exams		End sem exams will...		Pending		18 Nov 2023 at 18:23:02 UTC		18 Nov 2023 at 18:...		Public Read + Write	
<input type="checkbox"/>	BcN9Yx2URf	Exercise		body workout		Pending		18 Nov 2023 at 17:44:09 UTC		18 Nov 2023 at 17:...		Public Read + Write	
<input type="checkbox"/>	Gy5LQme2g	Task7		Desc7		Pending		18 Nov 2023 at 17:38:14 UTC		18 Nov 2023 at 17:...		Public Read + Write	



## Update task 'Exercise' to Completed

<input type="checkbox"/>	BcN9Yx2URf	Exercise	body workout	Pending	18 Nov 2023 at 17:44:09 UTC	18 Nov 2023 at 17:...	Public Read + Write
--------------------------	------------	----------	--------------	---------	-----------------------------	-----------------------	---------------------

9 objects							
Public Read and Write enabled							
Task							
+ Row + Column							
<input type="checkbox"/>	objectId String	title String *	description String *	status String *	updatedAt Date	createdAt Date	ACL ACL
<input type="checkbox"/>	BcN9Yx2URf	Exercise	body workout	Completed	18 Nov 2023 at 19:20:30 UTC	18 Nov 2023 at 17:...	Public Read + Write
<input type="checkbox"/>	AxBqCgtHxB	Yoga	Everyday morning	Pending	18 Nov 2023 at 19:16:30 UTC	18 Nov 2023 at 19:...	Public Read + Write
<input type="checkbox"/>	etKpxsta7j	Office work	Complete assigned ...	Completed	18 Nov 2023 at 19:00:44 UTC	18 Nov 2023 at 18:...	Public Read + Write
<input type="checkbox"/>	4EJiei741N	Prepare for exams	End sem exams will...	Pending	18 Nov 2023 at 18:23:02 UTC	18 Nov 2023 at 18:...	Public Read + Write



## Delete task 'Workout'

<input type="checkbox"/>	DVqynTECCg	Workout	Do it daily	Completed	18 Nov 2023 at 14:12:39 UTC	18 Nov 2023 at 14:...	Public Read + Write
--------------------------	------------	---------	-------------	-----------	-----------------------------	-----------------------	---------------------

8 objects

Task Public Read and Write enabled

+ Row + Column 🗑️ 🔄 ☰ 🔍

<input type="checkbox"/>	objectId String	title String *	description String *	status String *	updatedAt Date	createdAt Date	ACL ACL
<input type="checkbox"/>	BcN9Yx2URf	Exercise	body workout	Completed	18 Nov 2023 at 19:20:30 UTC	18 Nov 2023 at 17:...	Public Read + Write
<input type="checkbox"/>	AxBqCgTHx8	Yoga	Everyday morning	Pending	18 Nov 2023 at 19:16:30 UTC	18 Nov 2023 at 19:...	Public Read + Write
<input type="checkbox"/>	etKpxsta7j	Office work	Complete assigned ...	Completed	18 Nov 2023 at 19:00:44 UTC	18 Nov 2023 at 18:...	Public Read + Write
<input type="checkbox"/>	4E3Jie1741N	Prepare for exams	End sem exams will...	Pending	18 Nov 2023 at 18:23:02 UTC	18 Nov 2023 at 18:...	Public Read + Write
<input type="checkbox"/>	Gy5LQme2g	Task7	Desc7	Pending	18 Nov 2023 at 17:38:14 UTC	18 Nov 2023 at 17:...	Public Read + Write
<input type="checkbox"/>	8lam00beLm	Task4	Desc4	Completed	18 Nov 2023 at 16:14:19 UTC	18 Nov 2023 at 14:...	Public Read + Write
<input type="checkbox"/>	wTWpRw1B4I	Task8	Desc8	Completed	18 Nov 2023 at 14:27:46 UTC	18 Nov 2023 at 14:...	Public Read + Write
<input type="checkbox"/>	o1w3HuBcFK	Task6	Desc6	Completed	18 Nov 2023 at 14:11:32 UTC	18 Nov 2023 at 14:...	Public Read + Write

+

todoapp

Tasks List DEBUG

New Task

Description

ADD

- ! Task7  
Desc7 ☐ 🗑️
- ✓ Exercise  
body workout ☒ 🗑️
- ✓ Office work  
Complete assigned work ☒ 🗑️
- ! Prepare for exams  
End sem exams will start soon, revise all modules ☐ 🗑️
- ! Yoga  
Everyday morning ☐ 🗑️

Git Hub Repository Link: <https://github.com/saiteja-gaddam/Flutter-App-with-Back4App-Integration>