

BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI
WORK INTEGRATED LEARNING PROGRAMMES

Course Title: Cross Platform Application Development

Course No(s): SEZG585/SSZG585

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Assignment – I

Assignment Title:

Flutter App with Back4App Integration

Assignment Description:

In this assignment, you will create a Flutter app that connects to Back4App, a Backend-as-a-Service (BaaS) platform, to manage tasks. You will be responsible for setting up the Back4App backend, creating the Flutter app, and implementing the necessary functionality to interact with the backend.

GitHub URL:

<https://github.com/2022mt93226/Assignmet-Flutter-App-with-Back4App-Integration>

Assignment Steps:

Step 1: Set Up Back4App

Sign up for a Back4App account (if not already done).

Create a new Back4App app.

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

>> Opened a new Back4App Account with my email ID

>> I've created a new app on Back4App named "Flutter App" and defined a class called "Task" within it. This "Task" class is designed with columns for "title" (string type) and "description" (string type).

The screenshot displays the Back4App dashboard for a user named 'tejasgowda1970'. The 'Flutter App' is selected, and the 'Task' class is viewed. The database table view shows two objects: 'Task2' and 'Task1'.

| objectId | String | createdAt | Date | updatedAt | Date | ACL | ACL | title | String | description | String | done | Boolean |
|------------|--------|-----------------------|------|-----------------------|------|---------------------|-----|-------|--------|-------------|--------|-------|---------|
| 9UhbAjcyo5 | | 26 Nov 2023 at 14:... | | 26 Nov 2023 at 14:... | | Public Read + Write | | Task2 | | Testing | | False | |
| a2uKoCBpTg | | 26 Nov 2023 at 14:... | | 26 Nov 2023 at 14:... | | Public Read + Write | | Task1 | | Test | | False | |

Step 2: Flutter Setup

Create a new Flutter project.

Add the required dependencies to your pubspec.yaml file.

Initialize the Parse SDK in your Flutter app.

>> created a new flutter project by name – flutter_project

flutter create <project_name>

```
C:\BPM_Repo>flutter create flutter_project
Creating project flutter_project...
Resolving dependencies in flutter_project... (1.1s)
Got dependencies in flutter_project.
Wrote 129 files.

All done!
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 flutter_project
$ flutter run

Your application code is in flutter_project\lib\main.dart.
```

>> Added the required dependencies in pubspec.yaml file

```

1  name: flutter_project
2  description: "A new Flutter project."
3  # The following line prevents the package from being accidentally published to
4  # pub.dev using 'flutter pub publish'. This is preferred for private packages.
5  publish_to: 'none' # Remove this line if you wish to publish to pub.dev
6
7  # The following defines the version and build number for your application.
8  # A version number is three numbers separated by dots, like 1.2.43
9  # followed by an optional build number separated by a +.
10 # Both the version and the build number may be overridden in flutter
11 # build by specifying --build-name and --build-number, respectively.
12 # In Android, build-name is used as versionName while build-number used as versionCode.
13 # Read more about Android versioning at https://developer.android.com/studio/publish/versioning
14 # In iOS, build-name is used as CFBundleShortVersionString while build-number is used as CFBundleVersion.
15 # Read more about iOS versioning at
16 # https://developer.apple.com/library/archive/documentation/General/Reference/InfoPlistKeyReference/Articles/CoreFoundationKeys.html
17 # In Windows, build-name is used as the major, minor, and patch parts
18 # of the product and file versions while build-number is used as the build suffix.
19 version: 1.0.0+1
20
21 environment:
22   sdk: '>=3.2.0 <4.0.0'
23
24 # Dependencies specify other packages that your package needs in order to work.
25 # To automatically upgrade your package dependencies to the latest versions
26 # consider running 'flutter pub upgrade --major-versions'. Alternatively,
27 # dependencies can be manually updated by changing the version numbers below to
28 # the latest version available on pub.dev. To see which dependencies have newer
29 # versions available, run 'flutter pub outdated'.
30 dependencies:
31   parse_server_sdk: ^3.1.1
32   flutter:
33     sdk: flutter
34

```

>> Ensured the system has the necessary tools and dependencies to run Flutter apps by running the below command

flutter doctor

```

C:\BPM_Repo>flutter doctor
Doctor summary (to see all details, run flutter doctor -v):
[✓] Flutter (Channel stable, 3.16.0, on Microsoft Windows [Version 10.0.19045.3570], locale en-GB)
[✓] 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 Community 2022 17.8.1)
[✓] Android Studio (version 2022.3)
[✓] VS Code (version 1.82.1)
[✓] Connected device (3 available)
[✓] Network resources

• No issues found!

```

>> Installed dependencies listed in the pubsec.yaml file by running the below command

flutter pub get

```

C:\BPM_Repo\flutter_project>flutter pub get
Resolving dependencies...
dio 4.0.6 (5.3.4 available)
flutter_lints 2.0.3 (3.0.1 available)
http 0.13.6 (1.1.1 available)
lints 2.1.1 (3.0.0 available)
material_color_utilities 0.5.0 (0.8.0 available)
meta 1.10.0 (1.11.0 available)
parse_server_sdk 3.1.15 (6.3.0 available)
uuid 3.0.7 (4.2.1 available)
web 0.3.0 (0.4.0 available)
Got dependencies!

```

>> Started the Parse SDK by running the below command

flutter run

```
C:\BPM_Repo\flutter_project>flutter run
Connected devices:
Windows (desktop) • windows • windows-x64 • Microsoft Windows [Version 10.0.19045.3570]
Chrome (web) • chrome • web-javascript • Google Chrome 118.0.5993.71
Edge (web) • edge • web-javascript • Microsoft Edge 119.0.2151.72
[1]: Windows (windows)
[2]: Chrome (chrome)
[3]: Edge (edge)
Please choose one (or "q" to quit): 1
Launching lib\main.dart on Windows in debug mode...
Building Windows application... 18.5s
✓ Built build\windows\x64\runner\Debug\flutter_project.exe.
```

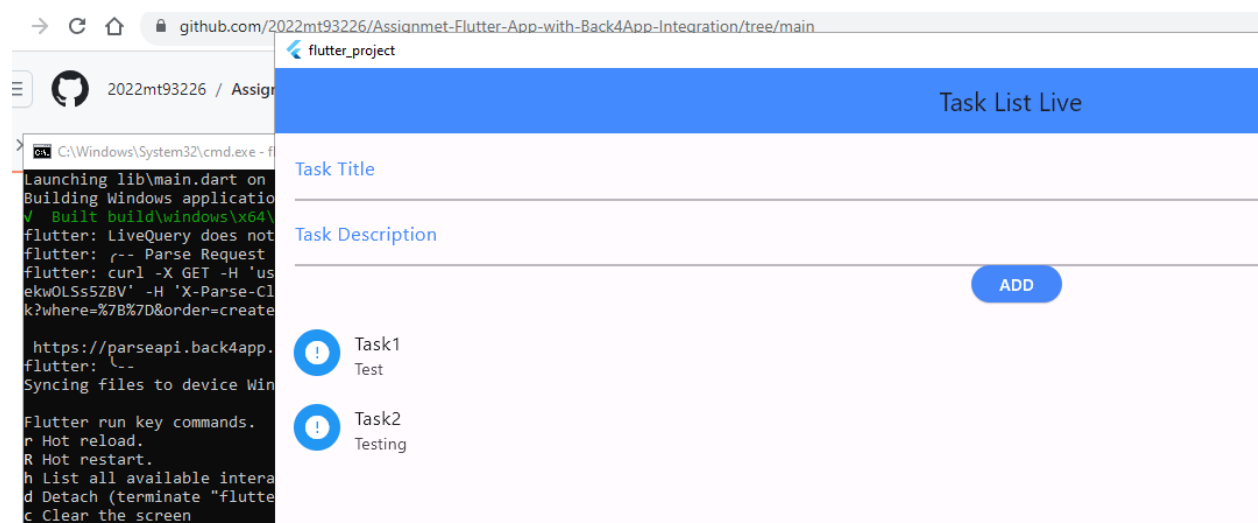
Step 3: Task List

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.

>> Created a screen to display the list of tasks



>> Function to fetch tasks from Back4App

```

94
95 void getTaskList() async {
96   final ParseResponse apiResponse = await queryTask.query();
97
98   if (apiResponse.success && apiResponse.results != null) {
99     taskList.addAll(apiResponse.results as List<ParseObject>);
100    streamController.add(apiResponse.results as List<ParseObject>);
101  } else {
102    taskList.clear();
103    streamController.add([]);
104  }
105 }

```

>>Tasks in a list view with titles and descriptions

← → ↺ ⌂ parse-dashboard.back4app.com/apps/185af1da-e834-4294-a9dd-28e913fcf4d1/browser/Task

back4app AI Agent My Apps Dashboard Docs Support Hello, tejasgowda1970 NEW APP

Flutter App Database

Browser Create a class

- Role 0
- User 0
- FirstClass 1
- Task 2
- Index Manager
- Blockchain NEW

2 objects Task Public Read and Write enabled

| | objectId String | createdAt Date | updatedAt Date | ACL ACL | title String | description String | done Boolean |
|--------------------------|-----------------|-----------------------|-----------------------|---------------------|--------------|--------------------|--------------|
| <input type="checkbox"/> | 9UhbAjcyo5 | 26 Nov 2023 at 14:... | 26 Nov 2023 at 14:... | Public Read + Write | Task2 | Testing | False |
| <input type="checkbox"/> | a2uKoCBpTg | 26 Nov 2023 at 14:... | 26 Nov 2023 at 14:... | Public Read + Write | Task1 | Test | False |

Cloud Code

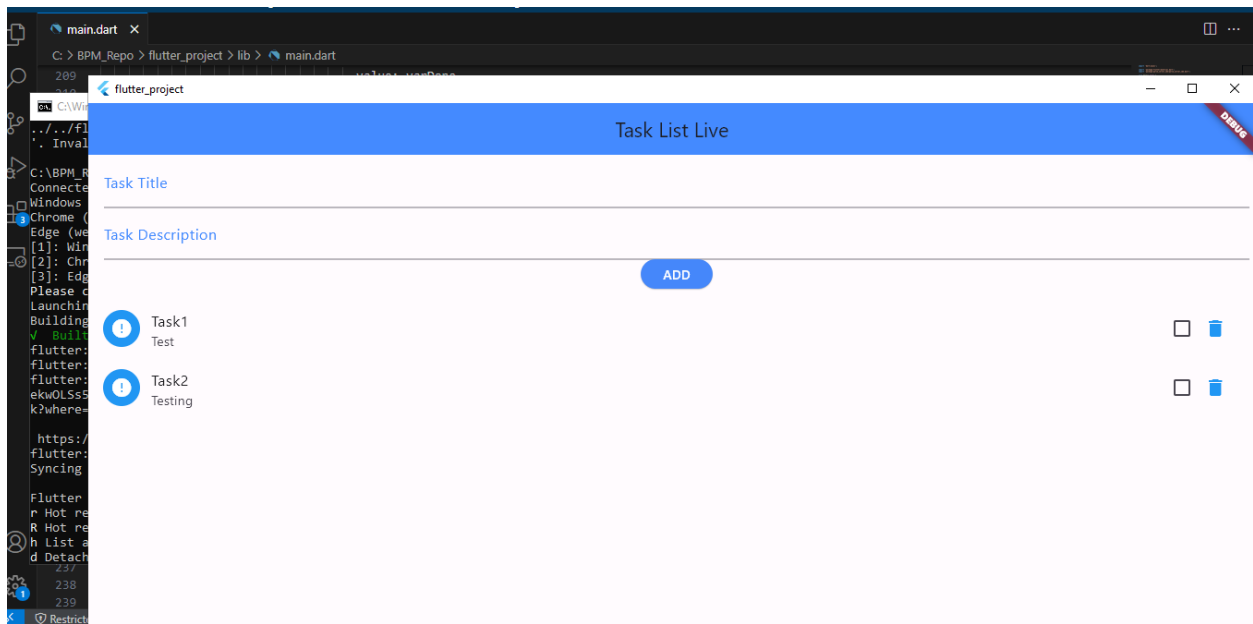
Step 4: Task Creation (10 points)

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.

>> Created a screen for adding new tasks



>> Function to create and save tasks

```

Future<void> saveTask(String title, String description) async {
  final task = ParseObject('Task')
    ..set('title', title)
    ..set('description', description)
    ..set('done', false);
  await task.save();
}

void getTaskList() async {
  final ParseResponse apiResponse = await queryTask.query();

  if (apiResponse.success && apiResponse.results != null) {
    taskList.addAll(apiResponse.results as List<ParseObject>);
    streamController.add(apiResponse.results as List<ParseObject>);
  } else {
    taskList.clear();
    streamController.add([]);
  }
}

Future<void> updateTask(String id, bool done) async {
  var task = ParseObject('Task')
    ..objectId = id
    ..set('done', done);
  await task.save();
}

```

>> Verified adding of task 3 into the task list

back4app AI Agent My Apps Dashboard Docs Support Hello, tejasgowda1970 NEW APP

Flutter App 3 objects Task Public Read and Write enabled

| objectid | String | createdAt | Date | updatedAt | Date | ACL | ACL | title | String | description | String |
|--------------------------|------------|-----------------------|------|-----------------------|------|---------------------|-----|-------|--------|------------------------------------|--------|
| <input type="checkbox"/> | Xdg4E3E516 | 26 Nov 2023 at 15:... | | 26 Nov 2023 at 15:... | | Public Read + Write | | Task3 | | for step4 testing and verification | |

flutter_project

Task List Live

Task Title

Task Description

ADD

- Task1
Test
- Task2
Testing
- Task3
for step4 testing and verification

Support

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.

```
C: > BPM_Repo > flutter_project > lib > main.dart
51
52 @override
53 void initState() {
54   super.initState();
55   getTaskList();
56   startLiveQuery();
57 }
58
59 void startLiveQuery() async {
60   subscription = await liveQuery.client.subscribe(queryTask);
61
62   subscription.on(LiveQueryEvent.create, (value) {
63     debugPrint('*** CREATE ***: $value ');
64     taskList.add(value);
65     streamController.add(taskList);
66   });
67
68   subscription.on(LiveQueryEvent.update, (value) {
69     debugPrint('*** UPDATE ***: $value ');
70     taskList[taskList
71       .indexOfWhere((element) => element.objectId == value.objectId)] = value;
72     streamController.add(taskList);
73   });
74
75   subscription.on(LiveQueryEvent.delete, (value) {
76     debugPrint('*** DELETE ***: $value ');
77     taskList.removeWhere((element) => element.objectId == value.objectId);
78     streamController.add(taskList);
79   });
80 }
81
```

Task3
for step4 testing and verification



Step 6: Bonus Features

Add a feature to edit and update existing tasks.

Implement a feature for task deletion.

Add any additional features or enhancements you like.

>> Function to update tasks

```
6
7     Future<void> updateTask(String id, bool done) async {
8         var task = ParseObject('Task')
9             ..objectId = id
10            ..set('done', done);
11        await task.save();
12    }
```

>> Function to delete tasks

```
113
114     Future<void> deleteTask(String id) async {
115         var task = ParseObject('Task')..objectId = id;
116         await task.delete();
117     }
118
```

>> Additional Features

```
flutter: /-- Parse Request
flutter: curl -X PUT -H 'content-type: application/json; charset=utf-8' -H 'user-agent: Flutter Parse SDK 3.1.15' -H 'X-Parse-Application-Id: L8Z3Tg7HVRms2Cr4ghziuePiY
f6MekwOL5s5ZBV' -H 'X-Parse-Client-Key: z35A397rwVcKl2X6y2mRd7hZjmhXLYOLzgpZjNbJ' -d '{"done":true}' https://parseapi.back4app.com/classes/Task/Xdg4E3E5i6
https://parseapi.back4app.com/classes/Task/Xdg4E3E5i6
flutter: /--
flutter: /-- Parse Response
Class: Task
Function: ParseApiRQ.save
Status Code: 200
Payload: {"className":"Task","objectId":"Xdg4E3E5i6","updatedAt":"2023-11-26T15:49:44.305Z","done":true}
flutter: /--
```

```
59   void startLiveQuery() async {
60     subscription = await liveQuery.client.subscribe(queryTask);
61
62     subscription.on(LiveQueryEvent.create, (value) {
63       debugPrint('*** CREATE ***: $value ');
64       taskList.add(value);
65       streamController.add(taskList);
66     });
67
68     subscription.on(LiveQueryEvent.update, (value) {
69       debugPrint('*** UPDATE ***: $value ');
70       taskList[taskList
71         .indexWhere((element) => element.objectId == value.objectId)] = value;
72       streamController.add(taskList);
73     });
74
75     subscription.on(LiveQueryEvent.delete, (value) {
76       debugPrint('*** DELETE ***: $value ');
77       taskList.removeWhere((element) => element.objectId == value.objectId);
78       streamController.add(taskList);
79     });
80   }
81
82
83   void cancelliveQuery() async {
84     liveQuery.client.unsubscribe(subscription);
85   }
```