

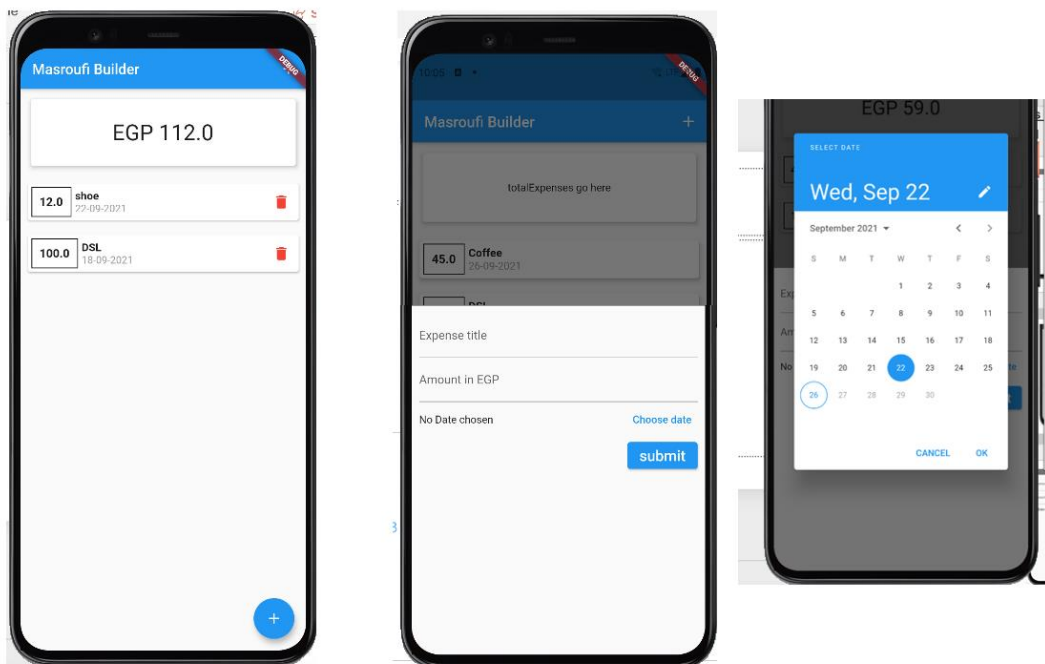
CSEN 1114: Mobile Application development Winter 2022

Lab 2

The goal of this lab is to develop an expense diary app called Masroufi, that keeps track of user expenses and shows the total. The user can add any expense using a title, an amount and the date. The user can also delete an expense.

The concepts in this lab are:

- Listview
- Bottom sheet
- Floating buttons and Action buttons
- More widgets and styling
- User input
- Date picker



Step 1

Create a new project called Masroufi, in your terminal.

Step 2

Replace the main. Dart with the following code.

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

//main
void main() { runApp(MyApp()); }

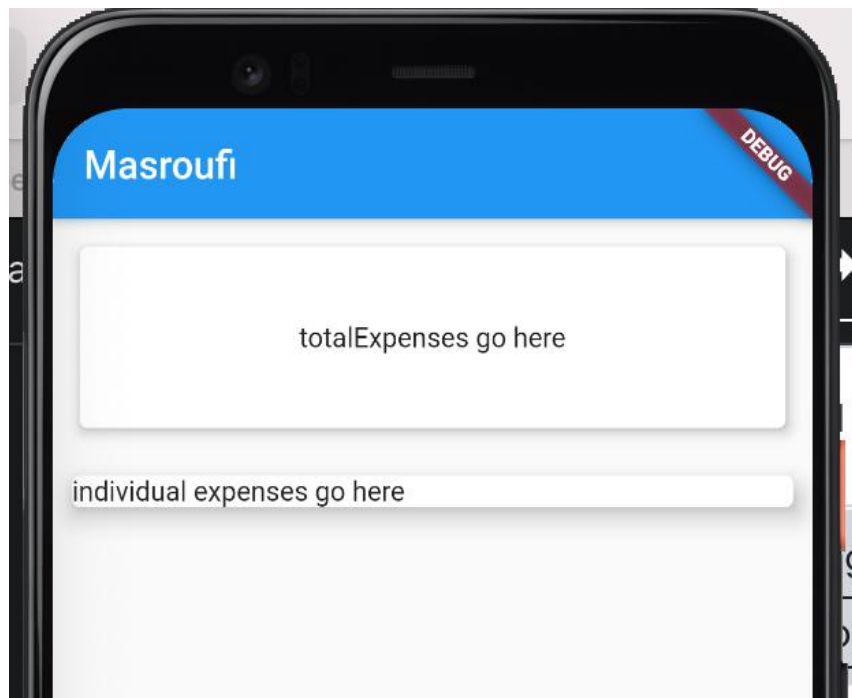
//root widget
class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      title: 'Masroufi',
      theme: ThemeData(primarySwatch: Colors.blue,),
      home: MyHomePage(),);
  }
}

// home widget
class MyHomePage extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(title: Text("Masroufi")),
      body: Center(child: Text("Hello!")),
    );}
}
```

Step 3

Replace the scaffold body of the main.dart with this

```
body: Column(  
  children: [  
    Container(  
      width: double.infinity,  
      height: 100,  
      margin: EdgeInsets.all(10),  
      child: // write your code here  
    ),  
    Container(  
      width: double.infinity,  
      child: Card(  
        elevation: 10,  
        margin: EdgeInsets.all(10),  
        child: Text('individual expenses go here'),  
      ),  
    ),  
  ],  
)
```



Step 4

Create a new class called `expense.dart` that includes the `id(string)`, `title(string)`, `amount(double)`, and `date(DateTime)`.

Note: Don't forget to create a constructor

```
class Expense {  
  String id;  
  String title;  
  double amount;  
  DateTime date;  
  
  Expense(  
    { : // write your code here  
  });  
}
```

Step 5

Add the following variable in your homepage class in `main.dart`

Create a list of all expenses (name it `allexpenses`).

Example: coffee, bagel, and juice...

Let the value of `date` to be `DateTime.now()`.

Step 6

Replace your individual expenses container with this

```
Column(children:  
  allexpenses.map(  
  
    (ex) { return Card(child: Text(ex.title));}  
  ).toList())));
```

Step 7

Update the card of part 6 to this card.



```
Card(  
  margin: EdgeInsets.all(10),  
  elevation: 15,  
  child: Row(  
    children: [  
      // 1st child of the row is the amount  
      Container(  
        margin: EdgeInsets.all(5),  
        decoration: BoxDecoration(border: Border.all(),),  
        padding: EdgeInsets.all(10),  
        child:  
          // write your code here  
          style: TextStyle( fontSize: 20,  
                           fontWeight: FontWeight.bold,)),),  
  
      // 2nd child of the row is a column containing children itself.  
      Column( crossAxisAlignment: CrossAxisAlignment.start ,  
        children: [  
          // col child 1 is title  
          // write your code here  
  
          //col child 2 is the date  
          : // write your code here  
        ],),  
    ],),  
);
```

Step 8

Update your pubspec.yaml file by adding the intl library and save. This should download automatically. Make sure the spacings are correct.

dependencies:

flutter:

 sdk: flutter

intl: ^0.17.0

Step 9

Update the date format inside your card in your code to this

```
Text(DateFormat('dd-MM-yyyy').format(ex.date))
```

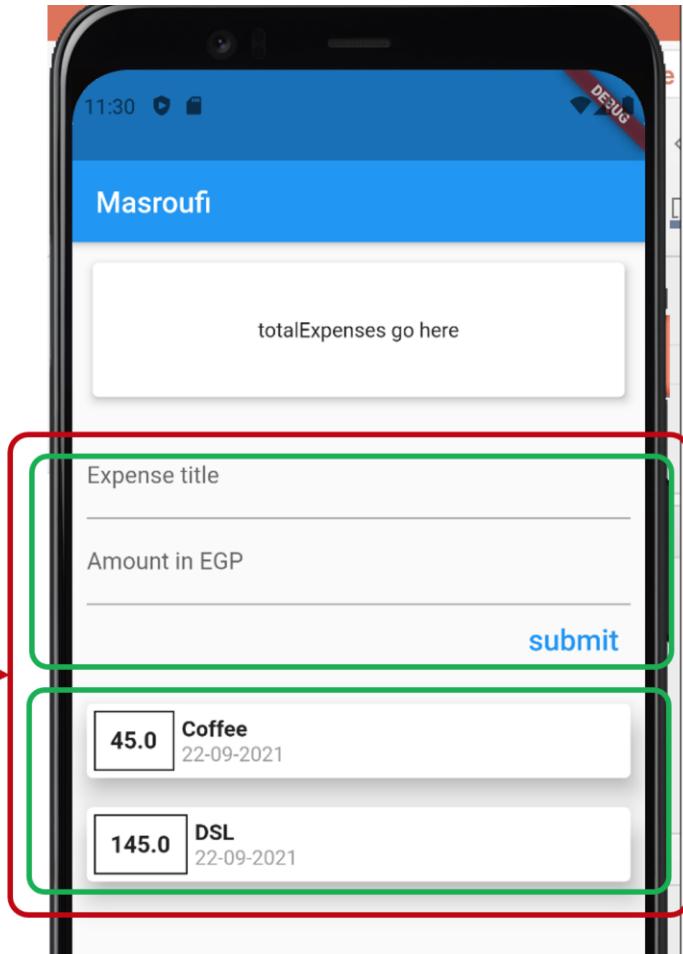
Part 2

We want to build this

Structure
(stateful)

NewExWidget
(stateless)

ExListWidget
(stateless)



Step 2.1
Create a new class called structure. (stateful)

```

class Structure extends StatefulWidget{
  State<StatefulWidget> createState() {
    return StructureState();}
}

class StructureState extends State<Structure> {

  final List<Expense> expenseList = [];

  Widget build(BuildContext context) {
    return Column(children: [ NewExWidget(callbackFunc:addNewExpense),
    ExListWidget(expenseList)],);
  }

  void addNewExpense({required String t, required double a}){

    setState(() {
      Expense e = Expense(title: t, amount: a, date: DateTime.now(), id:
      DateTime.now().toString());
      expenseList.add(e);
    });
  }
}

```

It's ok if you get errors since you didn't create NewExWidget or ExListWidget yet.

Step 2.2

Create the NewExWidget class.

```
class NewExWidget extends
StatelessWidget{

  final titleValue = TextEditingController();
  final amountValue = TextEditingController();

  final Function callBackFunc;

  NewExWidget(
    {required this.callBackFunc});

  Widget build(BuildContext context) {
    return Container(margin: EdgeInsets.all(10),
      child:
        Column(
          crossAxisAlignment: CrossAxisAlignment.end,
          children: [
            TextField(
              decoration: InputDecoration(labelText: 'Expense title'), controller: titleValue,),
            TextField(
              decoration: InputDecoration(labelText: 'Amount in EGP'), controller: amountValue),
            TextButton(
              onPressed:(){
                callBackFunc(t:titleValue.text, a: double.parse(amountValue.text));},
              child: Text("submit", style: TextStyle(fontSize: 20),),),),),),)}}}
```

Step 2.3

Create the `exListWidget` class. Note that you might have written some codes from before. Just copy them.

```
class ExListWidget extends StatelessWidget{

  List<Expense> _ex =[];

  ExListWidget(List<Expense> l) {

    this._ex = l;
  }
  @override
  Widget build(BuildContext context) {

    return Column(
      children:
        _ex.map(
          (ex) {
            return Card(
              margin: EdgeInsets.all(10), elevation: 15, child:
              Row(
                children: [
                  Container(
                    margin: EdgeInsets.all(5), decoration: BoxDecoration(
                      border: Border.all(), ),
                    padding: EdgeInsets.all(10), child: Center( child:
                      Text(ex.amount.toString(),style: TextStyle(
                        fontSize: 16, fontWeight: FontWeight.bold,),),),),
                  Column( crossAxisAlignment: CrossAxisAlignment.start,
                    children: [
                      Text(ex.title, style: TextStyle( fontSize: 15, fontWeight: FontWeight.bold)),
                      Text(DateFormat('dd-MM-yyyy').format(ex.date),
                        style: TextStyle(color: Colors.grey)),],),),),
                ).toList();}}
}
```

Step 2.4

Update your main to include the structure.

The part below is only the body of the scaffold.

```
body: Column(  
  children: [  
    // total  
    Container(  
      width: double.infinity,  
      height: 100,  
      margin: EdgeInsets.all(10),  
      child: Card( elevation: 5,  
      child: Center(child:  
        Text('totalExpenses go here')),  
      ),),  
  
    // create a new structure instance  
  ],
```

Step 2.5

Try to add several items. Your column will get full and not scroll. To fix this, wrap your column in the main scaffold with a scrollview by using refactor, wrap with widget.

```
return Scaffold(  
  appBar: AppBar(title: Text("Masroufi")),  
  body: // write your code here  
  
  child:  
    Column( children: [  
      // Chart  
      Container(  
        width: double.infinity,  
        height: 100,  
        margin: EdgeInsets.all(10),  
        child: Card(  
          elevation: 5,
```

```

        child: Center(child:
          Text('totalExpenses go here')),
        ),),
        // structure
        Structure(),],),));

```

Step 2.6

The scrollview with colum works but it's better to have a listView with a builder for long lists. Update your ExListWidget class build method to return a listView using a builder rather than a column of cards.

- Changes are highlighted in red.

```

Widget build(BuildContext context)
{ return Container(
height:200,
child: ListView.builder(
itemBuilder: (ctx, index) {
return Card(margin: EdgeInsets.all(10), elevation: 5,
  child: Row( children: [
    Container(margin: EdgeInsets.all(5),decoration: BoxDecoration(border: Border.all(),),
    padding: EdgeInsets.all(10),
    child: Center( child: Text(I_ex[index].amount.toString()),
    style: TextStyle(fontSize: 16,fontWeight: FontWeight.bold,),),),
    Column( crossAxisAlignment: CrossAxisAlignment.start, children: [
      Text(I_ex[index].title, style: TextStyle( fontSize: 15, fontWeight: FontWeight.bold)),

      Text(DateFormat('dd-MM-yyyy').format(I_ex[index].date), style: TextStyle(color:
      Colors.grey)),],),),});
itemCount: I_ex.length,);}}

```