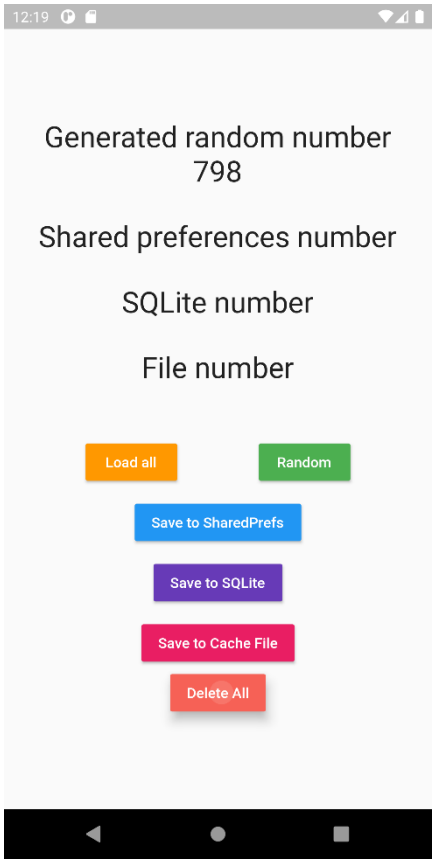
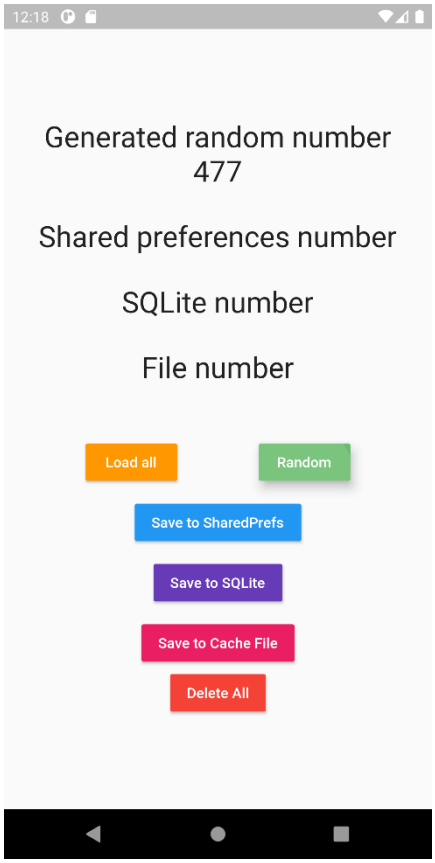
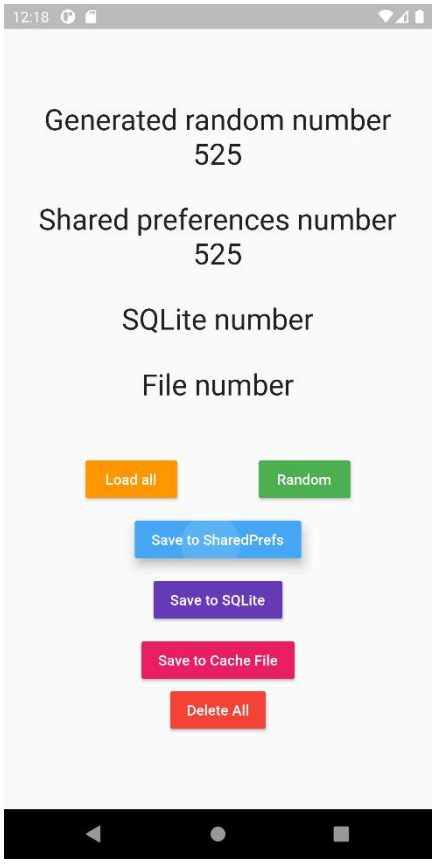
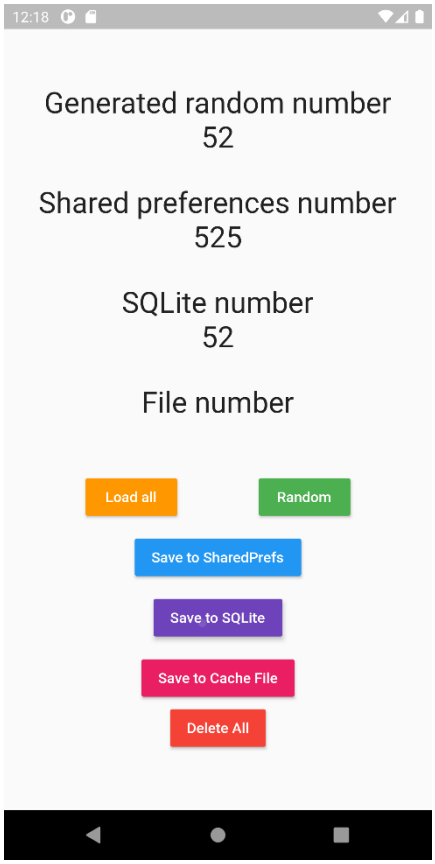
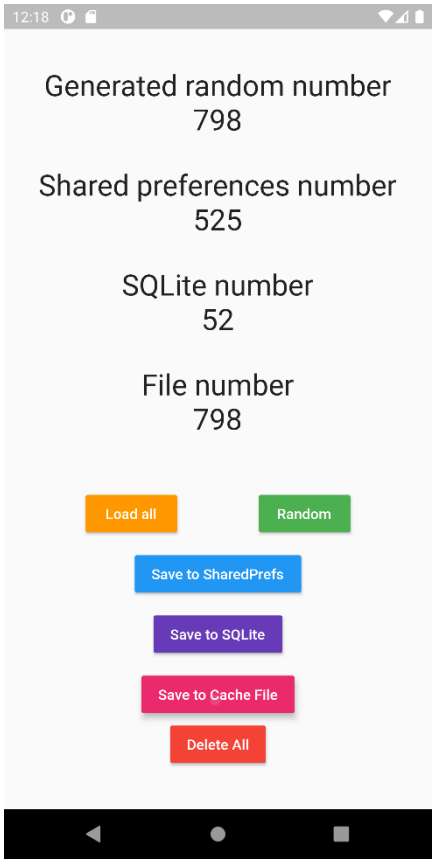

12:19
Generated random number
798
Shared preferences number
SQLite number
File number
Load all
Random
Save to SharedPrefs
Save to SQLite
Save to Cache File
Delete All


12:18
Generated random number
477
Shared preferences number
SQLite number
File number
Load all
Random
Save to SharedPrefs
Save to SQLite
Save to Cache File
Delete All


12:18
Generated random number
525
Shared preferences number
525
SQLite number
File number
Load all
Random
Save to SharedPrefs
Save to SQLite
Save to Cache File
Delete All


12:18
Generated random number
52
Shared preferences number
525
SQLite number
52
File number
Load all
Random
Save to SharedPrefs
Save to SQLite
Save to Cache File
Delete All


12:18
Generated random number
798
Shared preferences number
525
SQLite number
52
File number
798
Load all
Random
Save to SharedPrefs
Save to SQLite
Save to Cache File
Delete All

Code

Main.dart

```dart
import 'dart:math';
import 'package:flutter/material.dart';
import 'package:madlab12/controllers/fileController.dart';
import 'package:madlab12/controllers/sqfliteController.dart';
import 'package:shared_preferences/shared_preferences.dart';

import 'models/RandomNumber.dart';

void main() async {
  WidgetsFlutterBinding.ensureInitialized();
  await sqfliteController.initialize();
  runApp(MyApp());
}

class MyApp extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return MaterialApp(
      debugShowCheckedModeBanner: false,
      home: MyHomePage(),
    );
  }
}

Future<int> getSharedPrefsInt() async{
  final prefs = await SharedPreferences.getInstance();
  return prefs.getInt("integerValue");
}

Future removeSharedPrefsInt() async {
  final prefs = await SharedPreferences.getInstance();
  await prefs.remove("integerValue");
}

Future saveSharedPrefsInt(int newInt) async {
  final prefs = await SharedPreferences.getInstance();
  await prefs.setInt("integerValue", newInt);
}

class MyHomePage extends StatefulWidget {
  @override
  _MyHomePageState createState() => _MyHomePageState();
}
class _MyHomePageState extends State<MyHomePage> {
  int randomNumber;

  @override
  void initState() {
    super.initState();
    randomNumber = Random().nextInt(1000);
  }

  @override
  Widget build(BuildContext context) {
```

```
    return Scaffold(
      body: SafeArea(
        child: Center(
          child: SingleChildScrollView(
            child: Column(
              crossAxisAlignment: CrossAxisAlignment.center,
              mainAxisAlignment: MainAxisAlignment.center,
              children: [
                Text("Generated random number", style: TextStyle(fontSize: 28),),
                Text(randomNumber.toString(), style: TextStyle(fontSize: 28),),
                SizedBox(height: 30,),
                Text("Shared preferences number", style: TextStyle(fontSize:
28),),
                FutureBuilder(
                  future: getSharedPrefsInt(),
                  builder: (context, snapshot){
                    if (snapshot.hasData){
                      return Text(snapshot.data.toString(), style:
TextStyle(fontSize: 28),);
                    }
                    else {
                      if (snapshot.hasError) print(snapshot.error);
                      return SizedBox.shrink();
                    }
                  },
                ),
                SizedBox(height: 30,),
                Text("SQLite number", style: TextStyle(fontSize: 28),),
                FutureBuilder(
                  future: sqfliteController.getRandomNumbers(),
                  builder: (context, snapshot){
                    if (snapshot.hasData && snapshot.data.isNotEmpty){
                      return Text(snapshot.data.last.value.toString(), style:
TextStyle(fontSize: 28),);
                    }
                    else {
                      if (snapshot.hasError) print(snapshot.error);
                      return SizedBox.shrink();
                    }
                  },
                ),
                SizedBox(height: 30,),
                Text("File number", style: TextStyle(fontSize: 28),),
                FutureBuilder(
                  future: fileController.readFromFile(),
                  builder: (context, snapshot){
                    if (snapshot.hasData && snapshot.data != -1){
                      return Text(snapshot.data.toString(), style:
TextStyle(fontSize: 28),);
                    }
                    else {
                      if (snapshot.hasError) print(snapshot.error);
                      return SizedBox.shrink();
                    }
                  },
                ),
                SizedBox(height: 50,),
                Row(
                  mainAxisAlignment: MainAxisAlignment.spaceEvenly,
```

```
                  children: [
                    RaisedButton(
                      color: Colors.orange,
                      textColor: Colors.white,
                      child: Text("Load all"),
                      onPressed: (){setState(() {});},
                    ),
                    RaisedButton(
                      color: Colors.green,
                      textColor: Colors.white,
                      child: Text("Random"),
                      onPressed: (){setState(() {randomNumber =
Random().nextInt(1000);});},
                    ),
                  ],
                ),
                SizedBox(height: 10,),
                RaisedButton(
                  color: Colors.blue,
                  textColor: Colors.white,
                  child: Text("Save to SharedPrefs"),
                  onPressed: () async {
                    await saveSharedPrefsInt(randomNumber);},
                ),
                SizedBox(height: 10,),
                RaisedButton(
                  color: Colors.deepPurple,
                  textColor: Colors.white,
                  child: Text("Save to SQLite"),
                  onPressed: () async {
                    await
sqfliteController.insertInDB(RandomNumber(randomNumber));},
                ),
                SizedBox(height: 10,),
                RaisedButton(
                  color: Colors.pink,
                  textColor: Colors.white,
                  child: Text("Save to Cache File"),
                  onPressed: () async {
                    await fileController.saveToFile(randomNumber);},
                ),
                RaisedButton(
                  color: Colors.red,
                  textColor: Colors.white,
                  child: Text("Delete All"),
                  onPressed: () async {
                    await fileController.deleteFileValue();
                    await sqfliteController.deleteAllRows();
                    await removeSharedPrefsInt();
                    setState(() {

                    });
                  },
                ),
              ],
            ),
          ),
        ),
      ), // This trailing comma makes auto-formatting nicer for build methods.
```

```
    );
  }
}
```

Model

```
class RandomNumber{
  int id;
  int value;
  DateTime timestamp;

  RandomNumber(this.value){this.timestamp = DateTime.now();}

  RandomNumber.fromMap(Map<String,dynamic> map){
    id = map['id'];
    value = map['value'];
    timestamp = DateTime.fromMillisecondsSinceEpoch(map['timestamp']);
  }

  Map<String,dynamic> toMap(){
    return {
      'id' : this.id,
      "value" : this.value,
      "timestamp" : this.timestamp.millisecondsSinceEpoch
    };
  }

  @override
  String toString(){
    return 'Random Number {id: $id, value: $value, timestamp:
${timestamp.toString()}';
  }
}
```

SQFLite Controller

```
import 'package:madlab12/models/RandomNumber.dart';
import 'package:path/path.dart';
import 'package:sqflite/sqflite.dart';

class sqfliteController{
  static Database database;

  static Future initialize() async {
    database = await openDatabase(
        join(await getDatabasesPath(), 'random_number.db'),
        onCreate: (db, version) {
        return db.execute('CREATE TABLE randomNumber(id INTEGER PRIMARY KEY, value
INTEGER, timestamp INTEGER)',);
      },
      version: 1,
    );
  }

  static Future<void> insertInDB(RandomNumber randomNumber) async {
    await database.insert('randomNumber', randomNumber.toMap(), conflictAlgorithm:
ConflictAlgorithm.replace);
  }
```

```
  static Future<List<RandomNumber>> getRandomNumbers() async{
    final List<Map<String, dynamic>> randomNumbersMaps = await
database.query('randomNumber');
    return List.generate(randomNumbersMaps.length, (index) =>
RandomNumber.fromMap(randomNumbersMaps[index]));
  }

  static Future<void> updateDB(RandomNumber randomNumber) async {
    // '?' are arguments for where clause
    await database.update('randomNumber', randomNumber.toMap(), where: "id = ?",
whereArgs: [randomNumber.id], conflictAlgorithm: ConflictAlgorithm.replace);
  }

  static Future<void> deleteFromDB(int id) async {
    await database.delete('randomNumber', where: "id = ?", whereArgs: [id]);
  }

  static Future<void> deleteAllRows() async {
    await database.delete('randomNumber');
  }

  static Future<void> closeDB() async {
    await database.close();
  }
}
```

File Controller

```
import 'dart:io';
import 'package:madlab12/models/RandomNumber.dart';
import 'package:path_provider/path_provider.dart';

class fileController{
  static Future<int> readFromFile() async {
    var directory = await getTemporaryDirectory();
    File file = File(directory.path + "/randomNumbers.txt");

    if (file.existsSync()){ return int.parse(file.readAsStringSync().trim()); }
    else{
      return -1;
    }
  }

  static Future<void> saveToFile(int randomNumber) async {
    var directory = await getTemporaryDirectory();
    File file = File(directory.path + "/randomNumbers.txt");
    file.writeAsStringSync(randomNumber.toString(), flush: true, mode:
FileMode.write);
  }

  static Future<void> deleteFileValue() async{
    var directory = await getTemporaryDirectory();
    File file = File(directory.path + "/randomNumbers.txt");
    if (file.existsSync())
      file.deleteSync();
  }
}
```