Banco de Dados no Mobile: Do JavaME ao Flutter

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TcheLinux Porto Alegre 2019

Agenda

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- ➔ Quem eu sou?
- ➔ Java ME
  - ◆ Record Management System
- ➔ Android e iOS
  - ◆ SQLite
  - ◆ Arquivos
  - ◆ Chave-Valor
  - ◆ ORM
  - ◆ Realtime

Quem sou?

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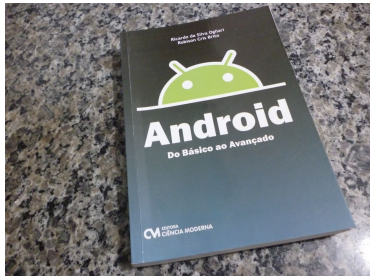
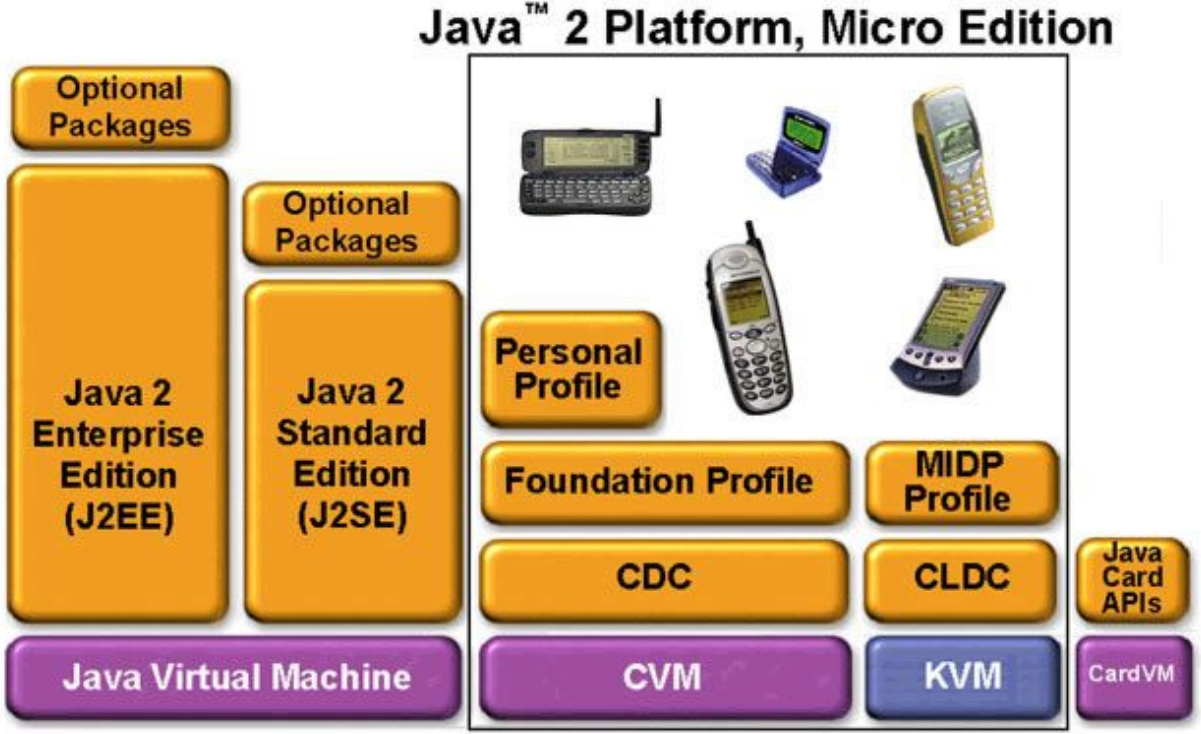


- ➔ Ricardo da Silva Ogliari.
- ➔ Ciência da Computação UPF.
- ➔ Pós Web Senac SP.
- ➔ MBA em Desenvolvimento de Apps e Jogos Móveis FIAP.
- ➔ Desenvolvedor Flutter na Bradootech.
- ➔ Co-autor do livro Android: do Básico ao Avançado.
- ➔ Autor do livro Internet das Coisas para Desenvolvedores.
- ➔ Mobile desde 2002.

Java ME - RMS

Java Micro Edition



https://bcc.ime.usp.br/tccs/2004/givanildo/imagens/j2me_arquitetura.jpg

Java Micro Edition

Java Micro Edition - RMS

Record ID	Data
1	Array of bytes
2	Array of bytes
3	Array of bytes
...	...

https://electrofriends.com/articles/record-management-midp/

Set Record

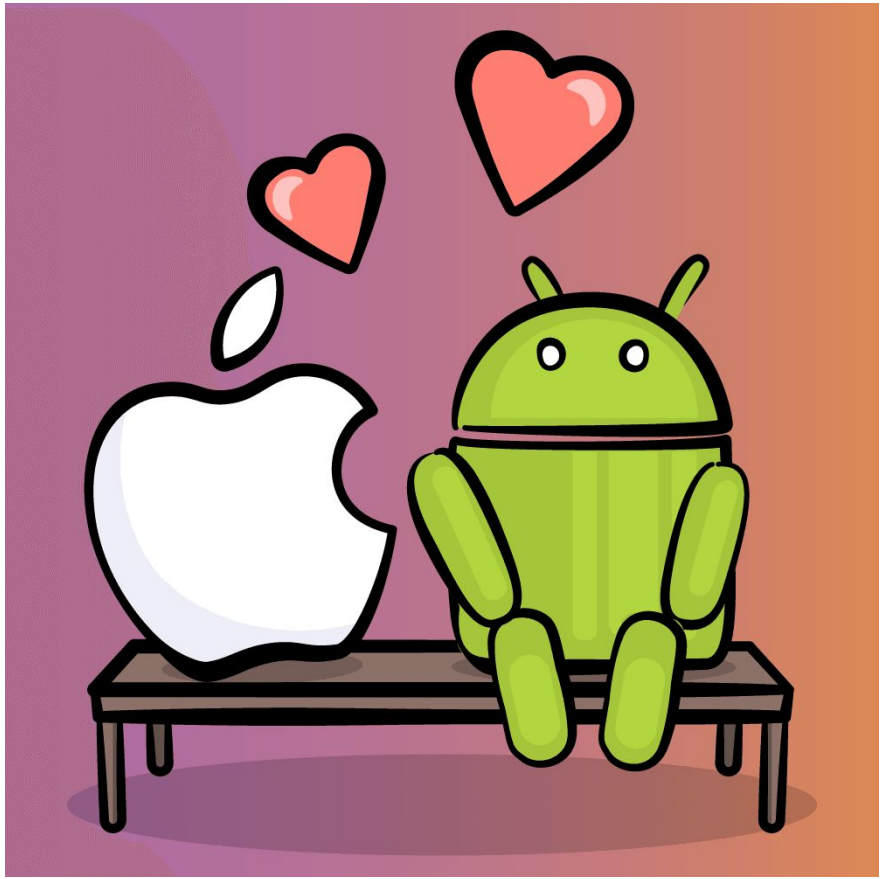
```
try{
      Byte[] data = “rmsdata”.getBytes();
      rs.setRecord(1, data,0, data.length);
}catch(Exception ex){
}
```

https://developer.samsung.com/java/technical-docs/Java-ME-Record-Management-System

Read Record

```
byte[] getData;
try {
    for (int i = 1; i <= rs.getNumRecords(); i++) {
      getData = new byte[rs.getRecordSize(i)];
      rs.getRecord(i, getData, 0);
      System.out.println(new String(getData));
    }
} catch (Exception exe) {}
```

https://developer.samsung.com/java/technical-docs/Java-ME-Record-Management-System



https://www.raywenderlich.com/1022411-kotlin-multiplatform-project-for-android-and-ios-getting-started

SQLite

- ➔ Único banco de dados relacional no mobile
- ➔ API para uso de linguagem de alto nível
- ➔ Plataformas híbridas, cross-platform, também tem suporte

SQLite

```
// Gets the data repository in write mode
val db = dbHelper.writableDatabase

// Create a new map of values, where column names are the keys
val values = ContentValues().apply {
        put(FeedEntry.COLUMN_NAME_TITLE, title)
        put(FeedEntry.COLUMN_NAME_SUBTITLE, subtitle)
}

// Insert the new row, returning the primary key value of the new row
val newRowId = db?.insert(FeedEntry.TABLE_NAME, null, values)
```

https://developer.android.com/training/data-storage/sqlite

Arquivos

- ➔ Bibliotecas de I/O de alto nível.
- ➔ Pode parecer simples, mas, no Java ME tinha o conceito de Sandbox.

Chave-Valor

- ➔ Feature para salvar um dado associado a uma chave. Ex: fase de um jogo, som habilitado ou desabilitado, logado ou deslogado...
- ➔ Android e iOS tem APIs bem semelhantes pra isso, muda só o nome.
- ➔ Android - SharedPreferences
- ➔ iOS - UserDefaults

Chave-Valor

```
val sharedPref = activity?.getPreferences(Context.MODE_PRIVATE) ?: return
    with (sharedPref.edit()) {
        putInt(getString(R.string.saved_high_score_key), newHighScore)
        commit()
    }

val sharedPref = activity?.getPreferences(Context.MODE_PRIVATE) ?: return
val highScore = sharedPref.getInt(getString(R.string.saved_high_score_key),
defaultValue)
```

ORM

- ➔ Object Relational Mapping.
- ➔ Diversas opções.
- ➔ Realm, Room, Floor.. Etc e etc e etc

ORM

https://realm.io/

ORM - Realm

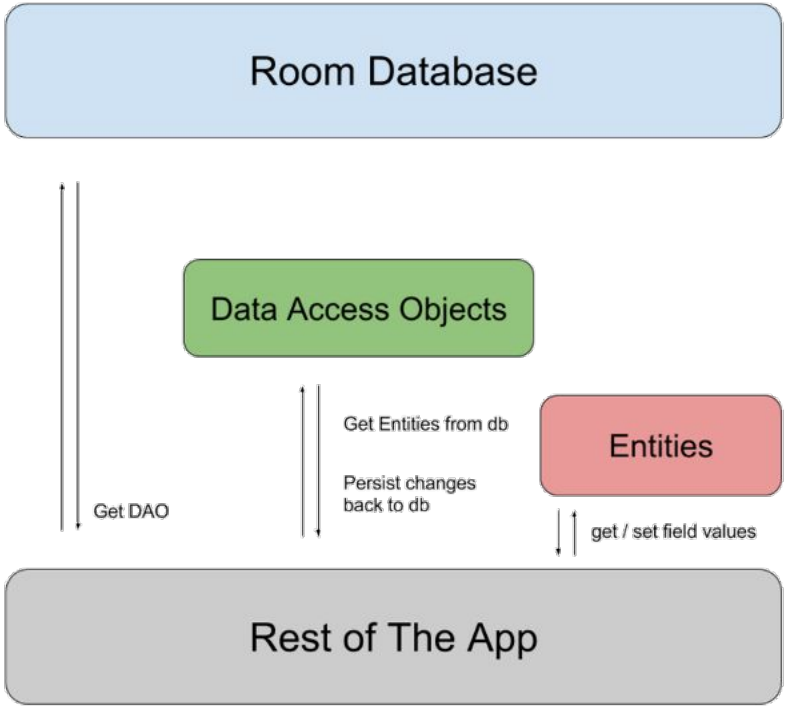
```
public class Dog extends RealmObject {
  public String name;
  public int age;
}

Dog dog = new Dog();
dog.name = "Rex";
dog.age = 1;

Realm realm = Realm.getDefaultInstance();
realm.beginTransaction();
realm.copyToRealm(dog);
realm.commitTransaction();

RealmResults<Dog> r = realm.where(Dog.class).lessThan("age", 2).findAll();
```

ORM - Room



https://medium.com/collabcode/android-archtecture-components-com-kotlin-persistindo-dados-com-room-f8c9eba58854

ORM - Room

```
@Entity
    data class User(
        @PrimaryKey val uid: Int,
        @ColumnInfo(name = "first_name") val firstName: String?,
        @ColumnInfo(name = "last_name") val lastName: String?
    )
```

https://developer.android.com/training/data-storage/room

ORM - Room

```
@Dao
interface UserDao {
    @Query("SELECT * FROM user") fun getAll(): List<User>

    @Query("SELECT * FROM user WHERE uid IN (:userIds)")
    fun loadAllByIds(userIds: IntArray): List<User>

    @Query("SELECT * FROM user WHERE first_name LIKE :first LIMIT 1")
    fun findByName(first: String): User

    @Insert fun insertAll(vararg users: User)

    @Delete fun delete(user: User)
}
```

https://developer.android.com/training/data-storage/room

ORM - Room

```
@Database(entities = arrayOf(User::class), version = 1)
abstract class AppDatabase : RoomDatabase() {
    abstract fun userDao(): UserDao
}
```

https://developer.android.com/training/data-storage/room

ORM - Room

```
val db = Room.databaseBuilder(
    applicationContext,
    AppDatabase::class.java,
    "database-name"
).build()
```

https://developer.android.com/training/data-storage/room

ORM - Room

https://codelabs.developers.google.com/codelabs/android-room-with-a-view-kotlin/

ORM - Room - Floor

https://pub.dev/packages/floor

Firebase

https://medium.com/@dezembro/firebase-como-quando-e-porque-utilizar-esse-banco-de-dados-do-google-f65ab5ae182a
https://www.embarcados.com.br/envio-dados-ldr-firebase-esp8266/

Firebase

```
var database: FirebaseDatabase = FirebaseDatabase.getInstance()
var myRef: DatabaseReference = database.getReference("finalizado");

myRef.setValue(false);
myRef.setValue(true);
```

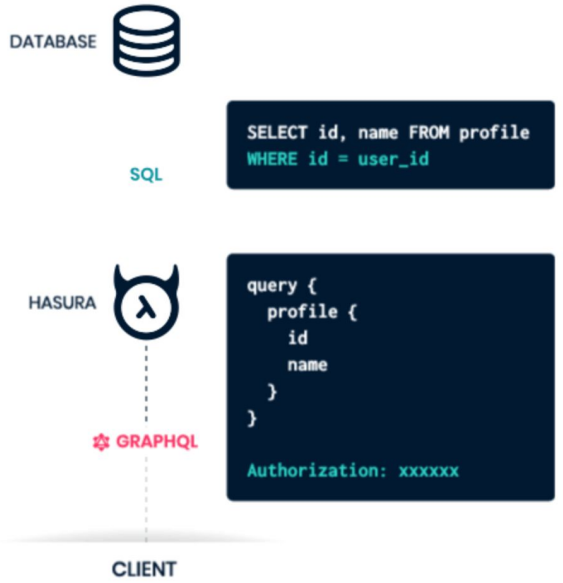
Firebase

```
var firebase = require('firebase');
var config = {
 apiKey: "AIzaSyBJ...
};
firebase.initializeApp(config);

var rootRef = firebase.database().ref("finalizado");

 rootRef.on('value', function(snapshot) {
   if (snapshot.val() == 1){
     ...
 });
```

Hasura



https://hasura.io/diy-graphql-baas
https://hasura.io/

Live Action

Raíssa
Antonella


INTERNET DAS COISAS
para desenvolvedores
IoT
Ricardo da Silva Ogliari
novatec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Questions?

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