MODULO 3 | Desarrollo de Aplicaciones Móviles Android Java | Ignacio Cavallo

https://github.com/cavigna/modulo_desarrollo_de_aplicaciones_moviles_android_java

Clase 46 | 05-07

Hoy decidí aprender Android Room y seguí el tutorial de Google. Básicamente es utilizar sqlite pero con un intermediario, como lo es el DAO.

Como siempre el código al final de este readme!.

Los pasos seguir son los siguientes:

Instalar las librerias

En Gradle Modulo `build.gradle (Module: app)`.

```
    dependencies {
def room_version = "2.3.0"

implementation "androidx.room:room-runtime:$room_version"
annotationProcessor "androidx.room:room-compiler:$room_version"

// optional - RxJava2 support for Room
implementation "androidx.room:room-rxjava2:$room_version"

// optional - RxJava3 support for Room
implementation "androidx.room:room-rxjava3:$room_version"

// optional - Guava support for Room, including Optional and ListenableFuture
implementation "androidx.room:room-guava:$room_version"

// optional - Test helpers
testImplementation "androidx.room:room-testing:$room_version"
}
```

Crear una Entidad

Creamos una Clase `Word.java`.

```
package com.example.android.roomwordssample;


import androidx.room.ColumnInfo;
import androidx.room.Entity;
import androidx.room.PrimaryKey;
```

```
import androidx.annotation.NonNull;


@Entity(tableName = "word_table")
public class Word {

    @PrimaryKey
    @NonNull
    @ColumnInfo(name = "word")
    private String mWord;

    public Word(@NonNull String word) {
        this.mWord = word;
    }

    @NonNull
    public String getWord() {
        return this.mWord;
    }
}
```

Implementar una Interfaz DAO

Creamos una interfaz `WordDao.java`. también se implemento una clase *Live Data*

```
package com.example.room_tutorial;


import androidx.lifecycle.LiveData;
import androidx.room.Dao;
import androidx.room.Insert;
import androidx.room.OnConflictStrategy;
import androidx.room.Query;

import java.util.List;

@Dao
public interface WordDao {
    @Insert(onConflict = OnConflictStrategy.IGNORE)
    void insert(Word word);

    @Query("DELETE FROM word_table")
    void deleteAll();

    @Query("SELECT * FROM word_table ORDER BY word ASC")
    LiveData<List<Word>> getAlphabetizedWords();

}
```

Agregar la Base de Datos

WordRoomDatabase.java

```
package com.example.room_tutorial;

import android.content.Context;

import androidx.annotation.NonNull;
import androidx.room.Database;
import androidx.room.Room;
import androidx.room.RoomDatabase;
import androidx.sqlite.db.SupportSQLiteDatabase;

import java.util.concurrent.Executor;
import java.util.concurrent.ExecutorService;
import java.util.concurrent.Executors;

@Database(entities = Word.class, version = 1, exportSchema = false)
public abstract class WordRoomDatabase extends RoomDatabase {
    public static Executor databaseWriteExecutor;
    //public static Executor databaseWriteExecutor; // revisar esto

    public abstract WordDao wordDao();

    private static volatile WordRoomDatabase INSTANCE;
    private static final int  NUMBER_OF_THREADS = 4;
    static final ExecutorService databaseWriterExecutor=
            Executors.newFixedThreadPool(NUMBER_OF_THREADS);

    static WordRoomDatabase getDatabase(final Context context){
        if (INSTANCE == null){
            synchronized (WordRoomDatabase.class){
                if (INSTANCE == null){
                    INSTANCE =
Room.databaseBuilder(context.getApplicationContext(),
                            WordRoomDatabase.class, "word_database")
                            .build();
                }
            }
        }
        return INSTANCE;
    }

    /**
     * Override para agregar datos a la db.
     * Borramos la bd cada vez que es creada.
     */
    private static RoomDatabase.Callback sRoomDatabaseCallback = new
RoomDatabase.Callback() {
        @Override
        public void onCreate(@NonNull SupportSQLiteDatabase db) {
```

```
            super.onCreate(db);

            databaseWriteExecutor.execute(() -> {
                WordDao dao = INSTANCE.wordDao();
                dao.deleteAll();

                Word word = new Word("Hello");
                dao.insert(word);
                word = new Word("World");
                dao.insert(word);
            });
        }
    };

}
```

Creamos un Repositorio

WordRepository.java

```
package com.example.room_tutorial;

import android.app.Application;

import androidx.lifecycle.LiveData;

import java.util.List;

public class WordRepository {
    private WordDao mWordDao;
    private LiveData<List<Word>> mAllWords;


    WordRepository(Application application) {
        WordRoomDatabase db = WordRoomDatabase.getDatabase(application);
        mWordDao = db.wordDao();
        mAllWords = mWordDao.getAlphabetizedWords();
    }


    LiveData<List<Word>> getAllWords() {
        return mAllWords;
    }


    void insert(Word word) {
        WordRoomDatabase.databaseWriteExecutor.execute(() -> {
            mWordDao.insert(word);
        });
    }
```

```
}
```

Creamos un ViewModel

WordViewModel.java

```
package com.example.room_tutorial;

import android.app.Application;

import androidx.lifecycle.AndroidViewModel;
import androidx.lifecycle.LiveData;

import java.util.List;

public class WordViewModel extends AndroidViewModel {
    private WordRepository mRepository;

    private final LiveData<List<Word>> mAllWords;

    public WordViewModel (Application application) {
        super(application); //revisar
        mRepository = new WordRepository(application);
        mAllWords = mRepository.getAllWords();
    }

    LiveData<List<Word>> getAllWords() { return mAllWords; }

    public void insert(Word word) { mRepository.insert(word); }
}
```

Agregamos un ReciclerView

WordViewHolder.java

```
package com.example.room_tutorial;

import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.TextView;

import androidx.recyclerview.widget.RecyclerView;

class WordViewHolder extends RecyclerView.ViewHolder {
    private final TextView wordItemView;
```

```
    private WordViewHolder(View itemView) {
        super(itemView);
        wordItemView = itemView.findViewById(R.id.textView);
    }

    public void bind(String text) {
        wordItemView.setText(text);
    }

    static WordViewHolder create(ViewGroup parent) {
        View view = LayoutInflater.from(parent.getContext())
                .inflate(R.layout.recyclerview_item, parent, false);
        return new WordViewHolder(view);
    }
}
```

Actividad para agregar nuevas palabras

NewWordActivity.java

```
public class NewWordActivity extends AppCompatActivity {

   public static final String EXTRA_REPLY =
"com.example.android.wordlistsql.REPLY";

   private  EditText mEditWordView;

   @Override
   public void onCreate(Bundle savedInstanceState) {
       super.onCreate(savedInstanceState);
       setContentView(R.layout.activity_new_word);
       mEditWordView = findViewById(R.id.edit_word);

       final Button button = findViewById(R.id.button_save);
       button.setOnClickListener(view -> {
           Intent replyIntent = new Intent();
           if (TextUtils.isEmpty(mEditWordView.getText())) {
               setResult(RESULT_CANCELED, replyIntent);
           } else {
               String word = mEditWordView.getText().toString();
               replyIntent.putExtra(EXTRA_REPLY, word);
               setResult(RESULT_OK, replyIntent);
           }
           finish();
       });
   }
}
```

Modificamos la MainActivity

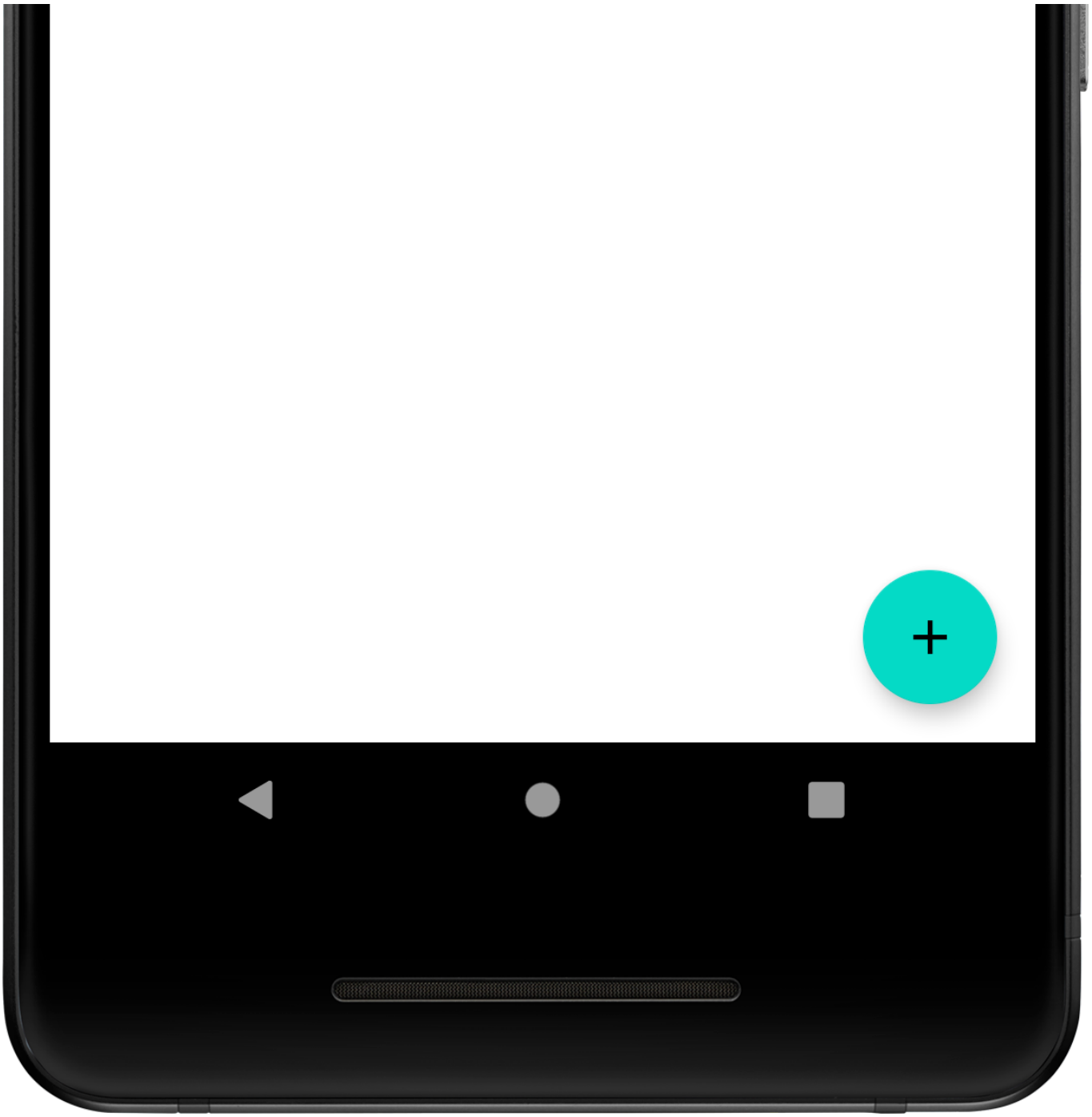
MainActivity.java

```
package com.example.room_tutorial;

import androidx.appcompat.app.AppCompatActivity;
import androidx.lifecycle.ViewModelProvider;
import androidx.recyclerview.widget.LinearLayoutManager;
import androidx.recyclerview.widget.RecyclerView;

import android.content.Intent;
import android.os.Bundle;
import android.widget.Toast;

import com.google.android.material.floatingactionbutton.FloatingActionButton;

public class MainActivity extends AppCompatActivity {
    public static final int NEW_WORD_ACTIVITY_REQUEST_CODE = 1;

    private WordViewModel mWordViewModel;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        RecyclerView recyclerView = findViewById(R.id.recyclerview);
        final WordListAdapter adapter = new WordListAdapter(new
WordListAdapter.WordDiff());
        recyclerView.setAdapter(adapter);
        recyclerView.setLayoutManager(new LinearLayoutManager(this));


        mWordViewModel = new ViewModelProvider(this).get(WordViewModel.class);


        mWordViewModel.getAllWords().observe(this, words -> {

            adapter.submitList(words);
        });

        FloatingActionButton fab = findViewById(R.id.fab);
        fab.setOnClickListener(view -> {
            Intent intent = new Intent(MainActivity.this, NewWordActivity.class);
            startActivityForResult(intent, NEW_WORD_ACTIVITY_REQUEST_CODE);
        });
    }

    public void onActivityResult(int requestCode, int resultCode, Intent data) {
        super.onActivityResult(requestCode, resultCode, data);

        if (requestCode == NEW_WORD_ACTIVITY_REQUEST_CODE && resultCode ==
RESULT_OK) {
            Word word = new
```

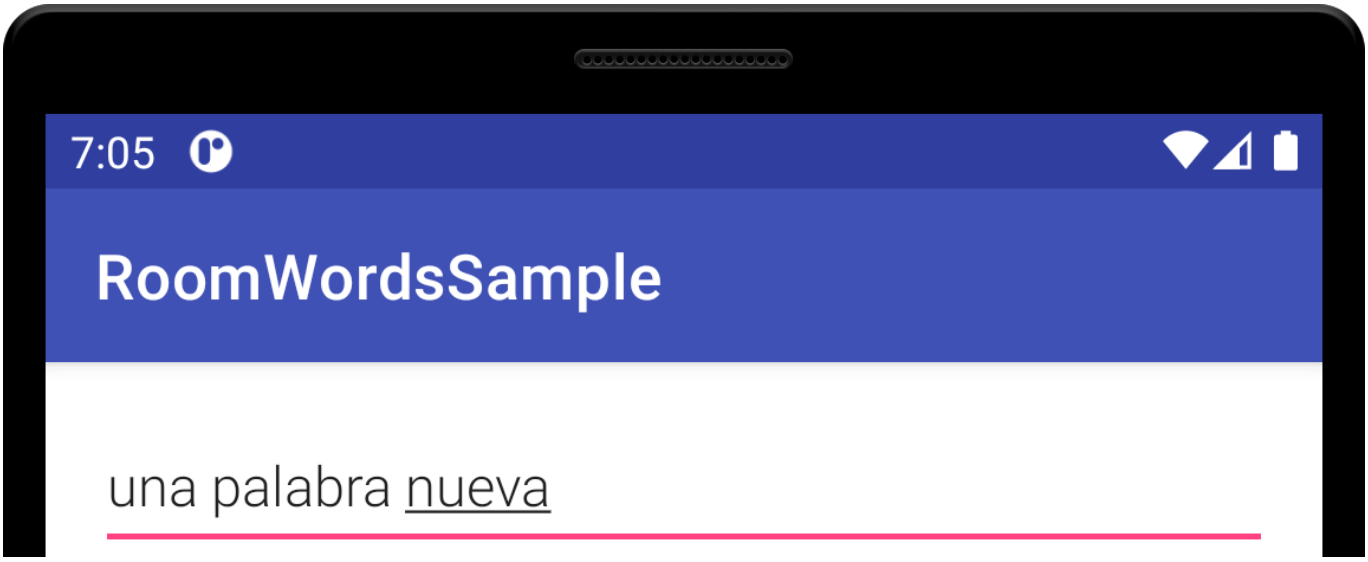
```
Word(data.getStringExtra(NewWordActivity.EXTRA_REPLY));
            mWordViewModel.insert(word);
        } else {
            Toast.makeText(
                    getApplicationContext(),
                    R.string.empty_not_saved,
                    Toast.LENGTH_LONG).show();
        }
    }
}
```

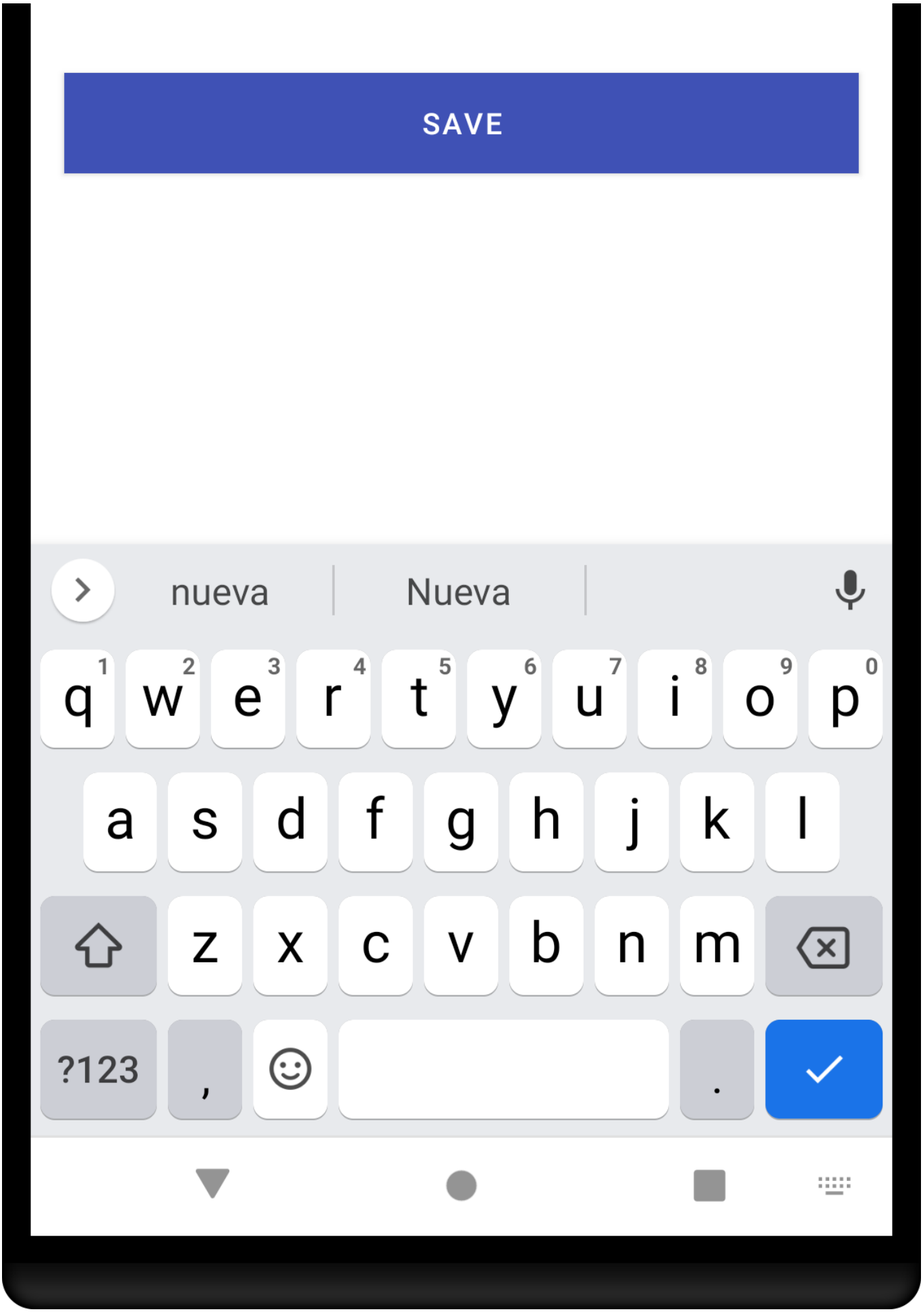
Resultado

DB Original



Agregar una Palabra Nueva




SAVE
nueva
Nueva
q 1 w 2 e 3 r 4 t 5 y 6 u 7 i 8 o 9 p 0
a s d f g h j k l
z x c v b n m
?123
,
.

Código

Main

```
package com.example.room_tutorial;

import androidx.appcompat.app.AppCompatActivity;
import androidx.lifecycle.ViewModelProvider;
import androidx.recyclerview.widget.LinearLayoutManager;
import androidx.recyclerview.widget.RecyclerView;

import android.content.Intent;
import android.os.Bundle;
import android.widget.Toast;

import com.google.android.material.floatingactionbutton.FloatingActionButton;

public class MainActivity extends AppCompatActivity {
   public static final int NEW_WORD_ACTIVITY_REQUEST_CODE = 1;

   private WordViewModel mWordViewModel;

   @Override
   protected void onCreate(Bundle savedInstanceState) {
       super.onCreate(savedInstanceState);
       setContentView(R.layout.activity_main);

       RecyclerView recyclerView = findViewById(R.id.recyclerview);
       final WordListAdapter adapter = new WordListAdapter(new
WordListAdapter.WordDiff());
       recyclerView.setAdapter(adapter);
       recyclerView.setLayoutManager(new LinearLayoutManager(this));


       mWordViewModel = new ViewModelProvider(this).get(WordViewModel.class);


       mWordViewModel.getAllWords().observe(this, words -> {

           adapter.submitList(words);
       });

       FloatingActionButton fab = findViewById(R.id.fab);
       fab.setOnClickListener(view -> {
           Intent intent = new Intent(MainActivity.this, NewWordActivity.class);
           startActivityForResult(intent, NEW_WORD_ACTIVITY_REQUEST_CODE);
       });
   }

   public void onActivityResult(int requestCode, int resultCode, Intent data) {
       super.onActivityResult(requestCode, resultCode, data);

       if (requestCode == NEW_WORD_ACTIVITY_REQUEST_CODE && resultCode ==
RESULT_OK) {
```

```
            Word word = new Word(data.getStringExtra(NewWordActivity.EXTRA_REPLY));
            mWordViewModel.insert(word);
        } else {
            Toast.makeText(
                    getApplicationContext(),
                    R.string.empty_not_saved,
                    Toast.LENGTH_LONG).show();
        }
    }
}
```

El código completo:

https://github.com/cavigna/modulo_desarrollo_de_aplicaciones_moviles_android_java/tree/main/Clase_46__05-07