THỰC HÀNH BUỔI 3
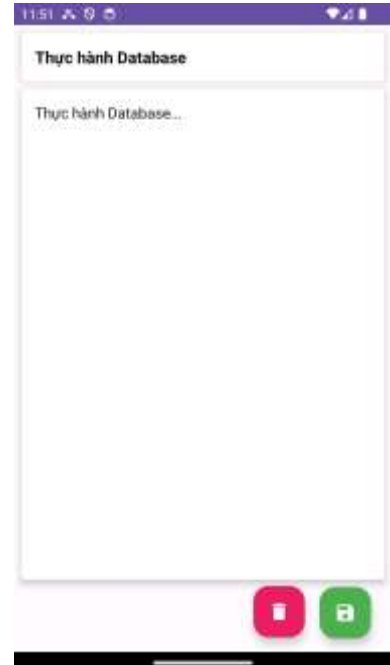# ỨNG DỤNG QUẢN LÝ BÀI VIẾT

Giao diện chính (Nút Add)	Giao diện thêm mới (Nút Save)	Giao diện chỉnh sửa (Nút Delete, Nút Save)

Mục tiêu:

- Luyện tập cách sử dụng RecyclerView
- Luyện tập cách sử dụng Room để tương tác cơ sở dữ liệu SQLite
- Luyện tập cách tương tác giao diện (sử dụng binding và gọi Intent)

1. **Cấu hình project (build.gradle)**

```
plugins {
    id 'com.android.application'
    id 'org.jetbrains.kotlin.android'
    id 'kotlin-kapt'
}

android {
    namespace 'com.example.demodb'
    compileSdk 33

    defaultConfig {
        applicationId "com.example.demodb"
        minSdk 27
        targetSdk 33
        versionCode 1
        versionName "1.0"

        testInstrumentationRunner "androidx.test.runner.AndroidJUnitRunner"
    }
```

```
        buildTypes {
            release {
                minifyEnabled false
                proguardFiles getDefaultProguardFile('proguard-android-optimize.txt'),
'proguard-rules.pro'
            }
        }
        compileOptions {
            sourceCompatibility JavaVersion.VERSION_17
            targetCompatibility JavaVersion.VERSION_17
        }
        kotlinOptions {
            jvmTarget = '17'
        }
        buildFeatures{
            viewBinding true
        }
    }

    dependencies {

        implementation 'androidx.core:core-ktx:1.8.0'
        implementation 'androidx.appcompat:appcompat:1.6.1'
        implementation 'com.google.android.material:material:1.5.0'
        implementation 'androidx.constraintlayout:constraintlayout:2.1.4'
        testImplementation 'junit:junit:4.13.2'
        androidTestImplementation 'androidx.test.ext:junit:1.1.5'
        androidTestImplementation 'androidx.test.espresso:espresso-core:3.5.1'

        implementation("androidx.room:room-runtime:2.5.1")
        annotationProcessor("androidx.room:room-compiler:2.5.1")
        kapt("androidx.room:room-compiler:2.5.1")
    }
```

2. Tạo 3 acitivity: MainActivity (Giao diện chính), AddNewsActivity (Giao diện thêm mới), UpdateNewsActivity (Giao diện cập nhật)

3. Thiết kế giao diện cho **MainActivity**

```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <androidx.recyclerview.widget.RecyclerView
        android:id="@+id/rvNewsList"
        android:layout_width="0dp"
        android:layout_height="0dp"
        android:visibility="gone"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <TextView
        android:id="@+id/tvEmptyText"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:gravity="center"
        android:text="Chưa có bài bài viết nào :("
        android:textColor="@color/black"
        android:textSize="18sp"
        android:textStyle="bold" />
```

```xml
    <com.google.android.material.floatingactionbutton.FloatingActionButton
        android:id="@+id/btnAddNews"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginEnd="16dp"
        android:layout_marginBottom="16dp"
        android:clickable="true"
        android:focusable="true"
        android:src="@drawable/baseline_add_24"
        app:backgroundTint="#4CAF50"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:tint="@color/white" />

</androidx.constraintlayout.widget.ConstraintLayout>
```

4. Thiết kế giao diện cho **AddNewsActivity**

```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".AddNewsActivity">

    <androidx.cardview.widget.CardView
        android:id="@+id/nameCard"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="8dp"
        app:cardBackgroundColor="@color/white"
        app:cardCornerRadius="5dp"
        app:cardElevation="5dp"
        app:layout_constraintTop_toTopOf="parent">

        <EditText
            android:id="@+id/edtTitle"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_margin="15dp"
            android:background="@android:color/transparent"
            android:hint="Title"
            android:maxLines="1"
            android:textColor="@color/black"
            android:textSize="18sp"
            android:textStyle="bold" />

    </androidx.cardview.widget.CardView>

    <androidx.cardview.widget.CardView
        android:id="@+id/ageCard"
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_margin="8dp"
        app:cardBackgroundColor="@color/white"
        app:cardCornerRadius="5dp"
        app:cardElevation="5dp"
        app:layout_constraintBottom_toTopOf="@+id/btnSave"
        app:layout_constraintTop_toBottomOf="@id/nameCard"
        tools:layout_editor_absoluteX="8dp">

        <EditText
            android:id="@+id/edtDesc"
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:layout_margin="15dp"
```

```xml
                    android:background="@android:color/transparent"
                    android:gravity="top"
                    android:hint="Description"
                    android:inputType="text"
                    android:textColor="@color/black"
                    android:textSize="16sp" />

        </androidx.cardview.widget.CardView>

        <com.google.android.material.floatingactionbutton.FloatingActionButton
                android:id="@+id/btnSave"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:src="@drawable/baseline_save_24"
                android:text="Save"
                android:textColor="@color/white"
                app:backgroundTint="#4CAF50"
                android:layout_marginBottom="15dp"
                android:layout_marginEnd="15dp"
                app:layout_constraintBottom_toBottomOf="parent"
                app:layout_constraintEnd_toEndOf="@+id/ageCard"
                app:tint="@color/white" />

</androidx.constraintlayout.widget.ConstraintLayout>
```

5. Thiết kế giao diện cho **UpdateNewsActivity**

```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".ui.UpdateNoteActivity">

    <androidx.cardview.widget.CardView
            android:id="@+id/nameCard"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_margin="8dp"
            app:cardBackgroundColor="@color/white"
            app:cardCornerRadius="5dp"
            app:cardElevation="5dp"
            app:layout_constraintTop_toTopOf="parent">

            <EditText
                android:id="@+id/edtTitle"
                android:layout_width="match_parent"
                android:layout_height="wrap_content"
                android:layout_margin="15dp"
                android:background="@android:color/transparent"
                android:hint="Title"
                android:maxLines="1"
                android:textColor="@color/black"
                android:textSize="18sp"
                android:textStyle="bold" />

        </androidx.cardview.widget.CardView>

        <androidx.cardview.widget.CardView
            android:id="@+id/ageCard"
            android:layout_width="match_parent"
            android:layout_height="0dp"
            android:layout_margin="8dp"
            app:cardBackgroundColor="@color/white"
            app:cardCornerRadius="5dp"
            app:cardElevation="5dp"
```

```xml
            app:layout_constraintBottom_toTopOf="@+id/btnSave"
            app:layout_constraintTop_toBottomOf="@id/nameCard"
            tools:layout_editor_absoluteX="8dp">

            <EditText
                android:id="@+id/edtDesc"
                android:layout_width="match_parent"
                android:layout_height="match_parent"
                android:layout_margin="15dp"
                android:background="@android:color/transparent"
                android:gravity="top"
                android:hint="Description"
                android:inputType="text"
                android:textColor="@color/black"
                android:textSize="16sp" />

    </androidx.cardview.widget.CardView>

    <com.google.android.material.floatingactionbutton.FloatingActionButton
        android:id="@+id/btnSave"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:src="@drawable/baseline_save_24"
        android:text="Save"
        android:textColor="@color/white"
        app:backgroundTint="#4CAF50"
        android:layout_marginBottom="15dp"
        android:layout_marginEnd="15dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="@+id/ageCard"
        app:tint="@color/white" />


    <com.google.android.material.floatingactionbutton.FloatingActionButton
        android:id="@+id/btnDelete"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_margin="16dp"
        android:src="@drawable/baseline_delete_24"
        android:text="Delete"
        android:textColor="@color/white"
        app:backgroundTint="#E91E63"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toStartOf="@+id/btnSave"
        app:tint="@color/white"
        android:layout_marginBottom="15dp"
        android:layout_marginEnd="15dp"/>

</androidx.constraintlayout.widget.ConstraintLayout>
```

6. Tạo object

```kotlin
object Constants {
    const val NEWS_TABLE= "news_table"
    const val NEWS_DATABASE= "news_database"
    const val BUNDLE_NEWS_ID="bundle_news_id"
}
```

7. Tạo data class cho bài viết **NewsEntity**

```kotlin
@Entity(tableName = NEWS_TABLE)
data class NewsEntity(
    @PrimaryKey(autoGenerate = true)
    val newsId :Int,
    @ColumnInfo(name = "news_title")
    val newsTitle:String,
    @ColumnInfo(name = "news_desc")
    val newsDesc : String
)
```

8. Tạo đối tượng truy cập dữ liệu cho bài viết **NewsDao**

```kotlin
@Dao
interface NewsDao {

    @Insert(onConflict = OnConflictStrategy.REPLACE)
    fun insertNews(newsEntity: NewsEntity)

    @Update
    fun updateNews(newsEntity: NewsEntity)

    @Delete
    fun deleteNews(newsEntity: NewsEntity)

    @Query("SELECT * FROM $NEWS_TABLE ORDER BY newsId DESC")
    fun getAllNews() : MutableList<NewsEntity>

    @Query("SELECT * FROM $NEWS_TABLE WHERE newsId LIKE :id")
    fun getNews(id : Int) : NewsEntity

}
```

9. Tạo database

```kotlin
@Database(entities = [NewsEntity::class], version = 1)
abstract class NewsDatabase : RoomDatabase(){
    abstract fun doa():NewsDao
}
```

10. Tạo adapter cho bài viết (render dữ liệu qua RecyclerView)

```kotlin
class NewsAdapter: RecyclerView.Adapter<NewsAdapter.ViewHolder>() {
    private lateinit var binding: ItemNewsBinding
    private lateinit var context: Context

    override fun onCreateViewHolder(parent: ViewGroup, viewType: Int): NewsAdapter.ViewHolder {
        val inflater = LayoutInflater.from(parent.context)
        binding = ItemNewsBinding.inflate(inflater, parent, false)
        context = parent.context
        return ViewHolder()
    }

    override fun onBindViewHolder(holder: NewsAdapter.ViewHolder, position: Int) {
        holder.bind(differ.currentList[position])
        holder.setIsRecyclable(false)
    }

    override fun getItemCount(): Int {
        return differ.currentList.size
    }

    inner class ViewHolder : RecyclerView.ViewHolder(binding.root) {

        @SuppressLint("SetTextI18n")
        fun bind(item: NewsEntity) {
            //InitView
            binding.apply {
                //Set text
                tvTitle.text = item.newsTitle
                tvDesc.text= item.newsDesc

                root.setOnClickListener {
                    val intent= Intent(context, UpdateNewsActivity::class.java)
                    intent.putExtra(BUNDLE_NEWS_ID, item.newsId)
                    context.startActivity(intent)
                }

            }
        }
```

```
        }

    private val differCallback = object : DiffUtil.ItemCallback<NewsEntity>() {
        override fun areItemsTheSame(oldItem: NewsEntity, newItem: NewsEntity): Boolean {
            return oldItem.newsId == newItem.newsId
        }

        override fun areContentsTheSame(oldItem: NewsEntity, newItem: NewsEntity): Boolean {
            return oldItem == newItem
        }
    }

    val differ = AsyncListDiffer(this, differCallback)
}
```

11. Code giao diện chính **MainActivity**

```
class MainActivity : AppCompatActivity() {
    lateinit var binding: ActivityMainBinding
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        binding=ActivityMainBinding.inflate(layoutInflater)
        setContentView(binding.root)

        binding.btnAddNews.setOnClickListener {
            startActivity(Intent(this,AddNewsActivity::class.java))
        }
    }

    private val newsDB : NewsDatabase by lazy {
        Room.databaseBuilder(this,NewsDatabase::class.java,NEWS_DATABASE)
            .allowMainThreadQueries()
            .fallbackToDestructiveMigration()
            .build()
    }
    private val newsAdapter by lazy { NewsAdapter() }

    override fun onResume() {
        super.onResume()
        checkItem()
    }

    private fun checkItem(){
        binding.apply {
            if(newsDB.doa().getAllNews().isNotEmpty()){
                rvNewsList.visibility= View.VISIBLE
                tvEmptyText.visibility=View.GONE
                newsAdapter.differ.submitList(newsDB.doa().getAllNews())
                setupRecyclerView()
            }else{
                rvNewsList.visibility=View.GONE
                tvEmptyText.visibility=View.VISIBLE
            }
        }
    }

    private fun setupRecyclerView(){
        binding.rvNewsList.apply {
            layoutManager= LinearLayoutManager(this@MainActivity)
            adapter=newsAdapter
        }
    }
}
```

12. Code giao diện thêm bài viết **AddNewsActivity**

```
class AddNewsActivity : AppCompatActivity() {

    lateinit var binding: ActivityAddNewsBinding
```

7

```kotlin
    private lateinit var newsEntity: NewsEntity

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        binding= ActivityAddNewsBinding.inflate(layoutInflater)
        setContentView(binding.root)

        binding.apply {
            btnSave.setOnClickListener {
                val title = edtTitle.text.toString()
                val desc = edtDesc.text.toString()
                if (title.isNotEmpty() || desc.isNotEmpty()){
                    newsEntity= NewsEntity(0,title,desc)
                    newsDB.doa().insertNews(newsEntity)
                    finish()
                }
                else{
                    Snackbar.make(it,"Title and Description cannot be
    Empty",Snackbar.LENGTH_LONG).show()
                }
            }
        }
    }

    private val newsDB : NewsDatabase by lazy {
        Room.databaseBuilder(this, NewsDatabase::class.java, Constants.NEWS_DATABASE)
            .allowMainThreadQueries()
            .fallbackToDestructiveMigration()
            .build()
    }
}
```

13. Code giao diện cập nhật bài viết **UpdateNewsActivity**

```kotlin
class UpdateNewsActivity : AppCompatActivity() {

    private lateinit var binding: ActivityUpdateNewsBinding

    private lateinit var newsEntity: NewsEntity
    private var newsId = 0
    private var defaultTitle = ""
    private var defaultDesc = ""

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        binding = ActivityUpdateNewsBinding.inflate(layoutInflater)
        setContentView(binding.root)

        intent.extras?.let {
            newsId = it.getInt(BUNDLE_NEWS_ID)
        }

        binding.apply {
            defaultTitle=newsDB.doa().getNews(newsId).newsTitle
            defaultDesc=newsDB.doa().getNews(newsId).newsDesc

            edtTitle.setText(defaultTitle)
            edtDesc.setText(defaultDesc)

            btnDelete.setOnClickListener {
                newsEntity= NewsEntity(newsId,defaultTitle,defaultDesc)
                newsDB.doa().deleteNews(newsEntity)
                finish()
            }

            btnSave.setOnClickListener {
                val title = edtTitle.text.toString()
                val desc=edtDesc.text.toString()
                if (title.isNotEmpty() || desc.isNotEmpty()){
```

```kotlin
                    newsEntity= NewsEntity(newsId,title,desc)
                    newsDB.doa().updateNews(newsEntity)
                    finish()
                }
                else{
                    Snackbar.make(it,"Title and Description cannot be Empty",
        Snackbar.LENGTH_LONG).show()
                }
            }
        }
    }

    private val newsDB : NewsDatabase by lazy {
        Room.databaseBuilder(this, NewsDatabase::class.java, Constants.NEWS_DATABASE)
            .allowMainThreadQueries()
            .fallbackToDestructiveMigration()
            .build()
    }
}
```