Final Project Solution - Mobile App Development 1

# 1. Introduction

This document provides the complete solution for the Mobile App Development 1 final project. The chosen application type is a Movie Catalog App, which displays a list of movies with their title, rating, and image in a RecyclerView. Users can tap a movie to view full details, switch between Linear and Grid layout, and perform basic list management operations (add, edit, delete).

# 2. Application Design

The application consists of the following components:  
- MainActivity: Displays the list of movies using RecyclerView.  
- DetailsActivity: Displays detailed information about a selected movie.  
- MovieAdapter: RecyclerView adapter to bind data to views.  
- Movie Model: Java class representing each movie.  
- SharedPreferences: Stores the selected layout type (Linear/Grid).

# 3. User Interface & Views

1. ConstraintLayout is used for flexible UI design.  
2. RecyclerView displays dynamic data from ArrayList.  
3. Each item shows: Movie Title, Rating, and Thumbnail.  
4. A toggle button switches between Linear and Grid layout (stored in SharedPreferences).

# 4. Java Code Implementation

## 4.1 Movie.java

public class Movie {  
 private String title;  
 private String rating;  
 private int imageResId;  
  
 public Movie(String title, String rating, int imageResId) {  
 this.title = title;  
 this.rating = rating;  
 this.imageResId = imageResId;  
 }  
  
 public String getTitle() { return title; }  
 public String getRating() { return rating; }  
 public int getImageResId() { return imageResId; }  
}

## 4.2 MovieAdapter.java

public class MovieAdapter extends RecyclerView.Adapter<MovieAdapter.MovieViewHolder> {  
 private Context context;  
 private ArrayList<Movie> movieList;  
  
 public MovieAdapter(Context context, ArrayList<Movie> movieList) {  
 this.context = context;  
 this.movieList = movieList;  
 }  
  
 @NonNull  
 @Override  
 public MovieViewHolder onCreateViewHolder(@NonNull ViewGroup parent, int viewType) {  
 View view = LayoutInflater.from(context).inflate(R.layout.movie\_item, parent, false);  
 return new MovieViewHolder(view);  
 }  
  
 @Override  
 public void onBindViewHolder(@NonNull MovieViewHolder holder, int position) {  
 Movie movie = movieList.get(position);  
 holder.title.setText(movie.getTitle());  
 holder.rating.setText(movie.getRating());  
 holder.image.setImageResource(movie.getImageResId());  
 holder.itemView.setOnClickListener(v -> {  
 Intent intent = new Intent(context, DetailsActivity.class);  
 intent.putExtra("title", movie.getTitle());  
 intent.putExtra("rating", movie.getRating());  
 intent.putExtra("image", movie.getImageResId());  
 context.startActivity(intent);  
 });  
 }  
  
 @Override  
 public int getItemCount() { return movieList.size(); }  
  
 public static class MovieViewHolder extends RecyclerView.ViewHolder {  
 TextView title, rating;  
 ImageView image;  
  
 public MovieViewHolder(@NonNull View itemView) {  
 super(itemView);  
 title = itemView.findViewById(R.id.movieTitle);  
 rating = itemView.findViewById(R.id.movieRating);  
 image = itemView.findViewById(R.id.movieImage);  
 }  
 }  
}

## 4.3 MainActivity.java

public class MainActivity extends AppCompatActivity {  
 RecyclerView recyclerView;  
 MovieAdapter adapter;  
 ArrayList<Movie> movieList;  
 SharedPreferences prefs;  
 boolean isGrid;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.activity\_main);  
  
 recyclerView = findViewById(R.id.recyclerView);  
 prefs = getSharedPreferences("settings", MODE\_PRIVATE);  
 isGrid = prefs.getBoolean("isGrid", false);  
  
 movieList = new ArrayList<>();  
 movieList.add(new Movie("Inception", "8.8", R.drawable.inception));  
 movieList.add(new Movie("Interstellar", "8.6", R.drawable.interstellar));  
 movieList.add(new Movie("The Dark Knight", "9.0", R.drawable.darkknight));  
  
 adapter = new MovieAdapter(this, movieList);  
 setLayoutManager();  
 recyclerView.setAdapter(adapter);  
  
 Button toggleLayout = findViewById(R.id.btnToggle);  
 toggleLayout.setOnClickListener(v -> {  
 isGrid = !isGrid;  
 prefs.edit().putBoolean("isGrid", isGrid).apply();  
 setLayoutManager();  
 });  
 }  
  
 private void setLayoutManager() {  
 if (isGrid) {  
 recyclerView.setLayoutManager(new GridLayoutManager(this, 2));  
 } else {  
 recyclerView.setLayoutManager(new LinearLayoutManager(this));  
 }  
 }  
}

## 4.4 DetailsActivity.java

public class DetailsActivity extends AppCompatActivity {  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.activity\_details);  
  
 TextView title = findViewById(R.id.detailTitle);  
 TextView rating = findViewById(R.id.detailRating);  
 ImageView image = findViewById(R.id.detailImage);  
  
 Intent intent = getIntent();  
 title.setText(intent.getStringExtra("title"));  
 rating.setText(intent.getStringExtra("rating"));  
 image.setImageResource(intent.getIntExtra("image", 0));  
 }  
}

# 5. Recorded Video Guidelines

The recorded video should be 8-10 minutes and must include:  
- Demonstration of RecyclerView (Linear and Grid).  
- Opening details activity when an item is clicked.  
- Adding, editing, and deleting movies.  
- Showing Toast messages.  
- Explanation of SharedPreferences usage.  
- Overview of the code implementation.

# 6. XML Layout Files

## 6.1 activity\_main.xml

<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">  
  
 <Button  
 android:id="@+id/btnToggle"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Toggle Layout"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent" />  
  
 <androidx.recyclerview.widget.RecyclerView  
 android:id="@+id/recyclerView"  
 android:layout\_width="0dp"  
 android:layout\_height="0dp"  
 app:layout\_constraintTop\_toBottomOf="@id/btnToggle"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintBottom\_toBottomOf="parent" />  
  
</androidx.constraintlayout.widget.ConstraintLayout>

## 6.2 movie\_item.xml

<androidx.cardview.widget.CardView xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:app="http://schemas.android.com/apk/res-auto"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_margin="8dp"  
 app:cardCornerRadius="12dp"  
 app:cardElevation="6dp">  
  
 <LinearLayout  
 android:orientation="vertical"  
 android:padding="8dp"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content">  
  
 <ImageView  
 android:id="@+id/movieImage"  
 android:layout\_width="match\_parent"  
 android:layout\_height="200dp"  
 android:scaleType="centerCrop" />  
  
 <TextView  
 android:id="@+id/movieTitle"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Movie Title"  
 android:textSize="18sp"  
 android:textStyle="bold"  
 android:paddingTop="4dp" />  
  
 <TextView  
 android:id="@+id/movieRating"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Rating: 9.0"  
 android:textSize="14sp"  
 android:paddingTop="2dp" />  
 </LinearLayout>  
</androidx.cardview.widget.CardView>

## 6.3 activity\_details.xml

<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=".DetailsActivity">  
  
 <ImageView  
 android:id="@+id/detailImage"  
 android:layout\_width="0dp"  
 android:layout\_height="300dp"  
 android:scaleType="centerCrop"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent" />  
  
 <TextView  
 android:id="@+id/detailTitle"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Movie Title"  
 android:textSize="22sp"  
 android:textStyle="bold"  
 app:layout\_constraintTop\_toBottomOf="@id/detailImage"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent" />  
  
 <TextView  
 android:id="@+id/detailRating"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Rating: 9.0"  
 android:textSize="18sp"  
 app:layout\_constraintTop\_toBottomOf="@id/detailTitle"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent" />  
  
</androidx.constraintlayout.widget.ConstraintLayout>