

# Simple Android News App – Three Fragment Case Study

In this case study, we'll create a simple **News App** using three fragments to showcase different categories of news such as **Latest News**, **Sports News**, and **Technology News**. We'll use **ViewPager2** and **TabLayout** for fragment navigation. This example will focus on fragment management, RecyclerView usage, and passing data between fragments.

## Features:

1. **Three Tabs:** Latest, Sports, and Technology news.
2. Each tab contains a **RecyclerView** displaying a list of news articles.
3. Each news item can be clicked to view details.

## Tech Stack:

- **Language:** JAVA
- **Android Version:** Android 5.0 (Lollipop) or higher
- **Libraries:** ViewPager2, TabLayout, RecyclerView

## App Structure

1. **MainActivity:** Hosts the `BottomNavigationView` and manages fragment switching.
2. **Fragments:**
  1. **HomeFragment**
  2. **SportsFragment**
  3. **TechFragment**
3. **Model:** A `News` model class.
4. **Adapter:** A `RecyclerView` adapter for displaying news items.
5. **Dummy Data:** Hardcoded news for simplicity.

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## Steps to Implement

### 1. Setup Dependencies

Add required dependencies in `build.gradle`:

```
gradle
Copy code
implementation 'androidx.appcompat:appcompat:1.6.1'
implementation 'androidx.recyclerview:recyclerview:1.3.1'
implementation 'com.google.android.material:material:1.10.0'
```

### 2. Layouts

- **activity\_main.xml:**

```
xml
Copy code
<androidx.coordinatorlayout.widget.CoordinatorLayout
    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">
```

```
<FrameLayout
    android:id="@+id/fragment_container"
    android:layout_width="match_parent"
    android:layout_height="match_parent"/>
```

```
<com.google.android.material.bottomnavigation.BottomNavigationView
    android:id="@+id/bottom_navigation"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_gravity="bottom"
```

```
app:menu="@menu/bottom_navigation_menu"/></androidx.coordinatorlayout.widget.CoordinatorLayout>
```

- **bottom\_navigation\_menu.xml** (in res/menu):

xml

Copy code

```
<menu xmlns:android="http://schemas.android.com/apk/res/android">
    <item android:id="@+id/home"
        android:icon="@drawable/ic_home"
        android:title="Home"/>
    <item android:id="@+id/sports"
        android:icon="@drawable/ic_sports"
        android:title="Sports"/>
    <item android:id="@+id/tech"
        android:icon="@drawable/ic_tech"
        android:title="Technology"/></menu>
```

- **fragment\_generic.xml**:

xml

Copy code

```
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical">

    <androidx.recyclerview.widget.RecyclerView
        android:id="@+id/recycler_view"
        android:layout_width="match_parent"
        android:layout_height="match_parent"/></LinearLayout>
```

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### 3. Model Class

java

Copy code

```
public class News {
    private String title;
    private String description;

    public News(String title, String description) {
        this.title = title;
        this.description = description;
    }

    public String getTitle() {
        return title;
    }

    public String getDescription() {
        return description;
    }
}
```

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### 4. Adapter Class

java

Copy code

```
import android.view.LayoutInflater;import android.view.View;import
android.view.ViewGroup;import android.widget.TextView;import
androidx.annotation.NonNull;import androidx.recyclerview.widget.RecyclerView;import
java.util.List;
public class NewsAdapter extends RecyclerView.Adapter<NewsAdapter.NewsViewHolder> {

    private List<News> newsList;

    public NewsAdapter(List<News> newsList) {
        this.newsList = newsList;
    }

    @NonNull
    @Override
    public NewsViewHolder onCreateViewHolder(@NonNull ViewGroup parent, int viewType) {
        View view =
LayoutInflater.from(parent.getContext()).inflate(android.R.layout.simple_list_item_2,
parent, false);
        return new NewsViewHolder(view);
    }

    @Override
    public void onBindViewHolder(@NonNull NewsViewHolder holder, int position) {
```

```

        News news = newsList.get(position);
        holder.title.setText(news.getTitle());
        holder.description.setText(news.getDescription());
    }

    @Override
    public int getItemCount() {
        return newsList.size();
    }

    static class NewsViewHolder extends RecyclerView.ViewHolder {
        TextView title, description;

        public NewsViewHolder(@NonNull View itemView) {
            super(itemView);
            title = itemView.findViewById(android.R.id.text1);
            description = itemView.findViewById(android.R.id.text2);
        }
    }
}

```

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## 5. Fragment Class

### Example: **HomeFragment**

java

Copy code

```

import android.os.Bundle;import androidx.annotation.NonNull;import
androidx.annotation.Nullable;import androidx.fragment.app.Fragment;import
androidx.recyclerview.widget.LinearLayoutManager;import
androidx.recyclerview.widget.RecyclerView;import android.view.LayoutInflater;import
android.view.View;import android.view.ViewGroup;import java.util.ArrayList;import
java.util.List;
public class HomeFragment extends Fragment {
    @Nullable
    @Override
    public View onCreateView(@NonNull LayoutInflater inflater, @Nullable ViewGroup
container, @Nullable Bundle savedInstanceState) {
        View view = inflater.inflate(R.layout.fragment_generic, container, false);

        RecyclerView recyclerView = view.findViewById(R.id.recycler_view);
        recyclerView.setLayoutManager(new LinearLayoutManager(getContext()));

        List<News> newsList = new ArrayList<>();
        newsList.add(new News("General News 1", "Description 1"));
        newsList.add(new News("General News 2", "Description 2"));

        NewsAdapter adapter = new NewsAdapter(newsList);
        recyclerView.setAdapter(adapter);
    }
}

```

```

        return view;
    }
}

```

Repeat for **SportsFragment** and **TechFragment** with different dummy data.

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## 6. MainActivity

```

java
Copy code
import android.os.Bundle;import androidx.appcompat.app.AppCompatActivity;import
androidx.fragment.app.Fragment;import
com.google.android.material.bottomnavigation.BottomNavigationView;
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        BottomNavigationView bottomNavigationView =
findViewById(R.id.bottom_navigation);

        bottomNavigationView.setOnNavigationItemSelectedListener(item -> {
            Fragment selectedFragment = null;
            switch (item.getItemId()) {
                case R.id.home:
                    selectedFragment = new HomeFragment();
                    break;
                case R.id.sports:
                    selectedFragment = new SportsFragment();
                    break;
                case R.id.tech:
                    selectedFragment = new TechFragment();
                    break;
            }
            if (selectedFragment != null) {
                getSupportFragmentManager().beginTransaction()
                    .replace(R.id.fragment_container, selectedFragment)
                    .commit();
            }
            return true;
        });

        // Default Fragment
        bottomNavigationView.setSelectedItemId(R.id.home);
    }
}

```

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## Result

The app allows switching between three categories of news using the `BottomNavigationView`. Each fragment displays a list of dummy news items.