MODUL 3: FRAGMENT (Communicating Fragments)

A. TUJUAN

1. Mahasiswa diharapkan dapat mengetahui dan mengimplemantasikan kegunaan fragment.
2. Mahasiswa diharapkan dapat mengetahui dan mengimplemantasikan cara membuat fragment.
3. Mahasiswa dapat mengetahui dan mengimplemantasikan komunikasi antar fragment.
4. Mahasiswa dapat mengetahui dan mengimplemantasikan komunikasi antar fragment dan activity.

B. MATERI

1. Presentasi dari Fragment dapat diakses pada lms.jti.polinema.ac.id
2. Referensi
   a. https://developer.android.com/training/multiscreen/screensizes
   b. https://developer.android.com/training/basics/fragments/communicating

C. PRAKTIKUM

1. Buat proyek baru dan beri nama **CommunicatingFragment. Kemudian tambahkan library RecyclerView, Glide dan CardView pada gradle.**

```
implementation 'androidx.recyclerview:recyclerview:1.0.0'
implementation 'androidx.cardview:cardview:1.0.0'
implementation 'com.github.bumptech.glide:glide:4.9.0'
```

Gambar 1. Gradle module

*library diatas jika kita menggunakan android jetpack. Untuk yang tidak menggunakan jetpack dapat menyesuaikan.

2. Buka res > value > strings.xml. Tambahkan string yang akan digunakan dalam file xml seperti berikut:

```xml
<resources>
    <string name="app_name">CommunicatingFragment</string>

    <!-- TODO: Remove or change this placeholder text -->
    <string name="hello_blank_fragment">Hello blank fragment</string>
    <string name="rating">Rating</string>
    <string name="genre">Genre</string>
    <string name="sinopsis">Review</string>
</resources>
```

Gambar 2. strings.xml

Buat 2 fragment yaitu :

i. MovieFragment generate layoutnya dengan nama fragment_movie.xml
ii. DetailFragment generate layoutnya dengan nama detail_fragment.xml

MovieFragment digunakan untuk menampilkan list/daftar film sedangkan DetailFragment digunakan menampilkan detail dari film.

3. Edit fragment_movie.xml seperti code dibawah ini. **Karena kita menggunakan RecyclerView pastikan library RecyclerView sudah ditambahkan di gradle**.

```xml
<?xml version="1.0" encoding="utf-8"?>
<FrameLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MovieFragment">

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

Gambar 3. fragment_movie.xml

Gambar 4. Preview fragment_movie.xml

4. Edit detail_fragment.xml menjadi seperti code berikut:

```xml
<?xml version="1.0" encoding="utf-8"?>
<ScrollView 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">

    <androidx.constraintlayout.widget.ConstraintLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent">

        <TextView
            android:id="@+id/tvJudul"
            style="@style/TextList"
```

```xml
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_marginStart="8dp"
        android:layout_marginTop="16dp"
        android:layout_marginEnd="8dp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toEndOf="@+id/imageView"
        app:layout_constraintTop_toTopOf="parent"
        tools:text="Judul" />

    <ImageView
        android:id="@+id/imageView"
        android:layout_width="70dp"
        android:layout_height="100dp"
        android:layout_marginStart="8dp"
        android:layout_marginLeft="8dp"
        android:layout_marginTop="8dp"
        android:background="@mipmap/ic_launcher"
        android:scaleType="centerCrop"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <TextView
        android:id="@+id/tvGenre"
        style="@style/TextList"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_marginStart="8dp"
        android:layout_marginTop="8dp"
        android:layout_marginEnd="8dp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.484"
        app:layout_constraintStart_toEndOf="@+id/imageView"
        app:layout_constraintTop_toBottomOf="@+id/tvRating"
        tools:text="Genre" />

    <TextView
        android:id="@+id/tvRating"
        style="@style/TextList"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_marginStart="8dp"
        android:layout_marginTop="8dp"
        android:layout_marginEnd="8dp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toEndOf="@+id/imageView"
        app:layout_constraintTop_toBottomOf="@+id/tvJudul"
        tools:text="Rating" />

    <TextView
        android:id="@+id/tvSinopsis"
        style="@style/TextList"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_marginStart="8dp"
        android:layout_marginTop="24dp"
        android:layout_marginEnd="8dp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.0"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/imageView"
        android:text="@string/sinopsis" />

    <TextView
        android:id="@+id/tvContentSinopsis"
        style="@style/TextList"
```
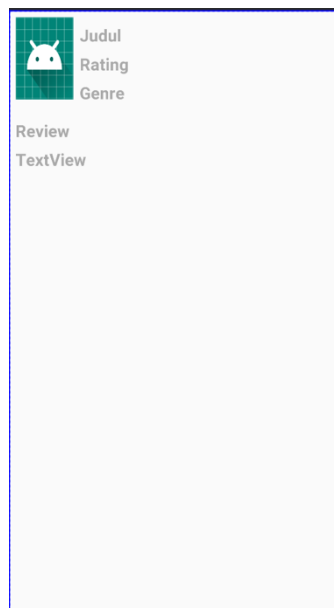
```xml
            android:layout_width="0dp"
            android:layout_height="wrap_content"
            android:layout_marginStart="8dp"
            android:layout_marginTop="8dp"
            android:layout_marginEnd="8dp"
            app:layout_constraintEnd_toEndOf="parent"
            app:layout_constraintStart_toStartOf="parent"
            app:layout_constraintTop_toBottomOf="@+id/tvSinopsis"
            tools:text="TextView" />
    </androidx.constraintlayout.widget.ConstraintLayout>

</ScrollView>
```

Gambar 5. detail_fragment.xml

Gambar 6. Preview detail_fragment.xml

5. Buat class MovieModel.java seperti berikut
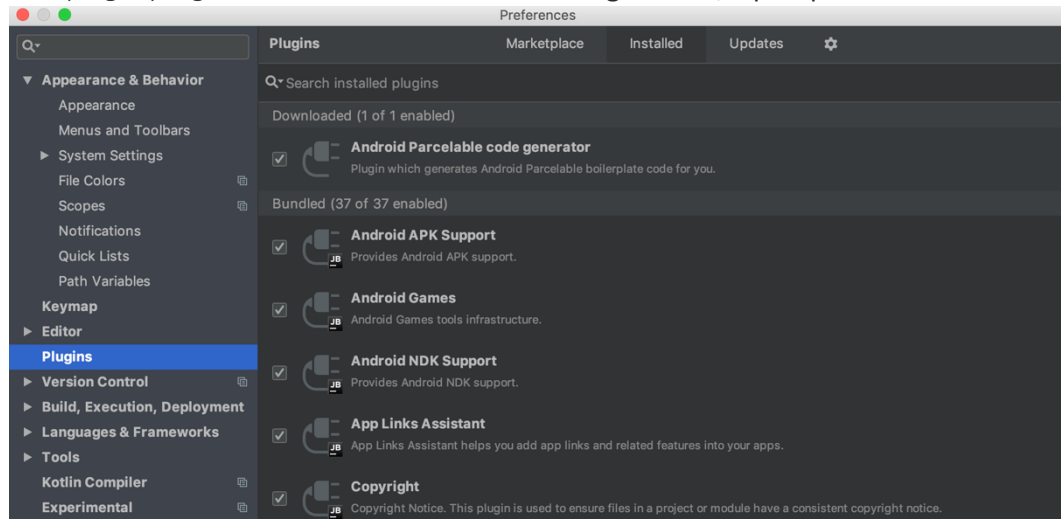
```java
public class MovieModel {
    String judul;
    int poster;
    String genre;
    String ratingScore;
    String sinopsis;

    public MovieModel(String judul, int poster, String genre, String
ratingScore, String sinopsis) {
        this.judul = judul;
        this.poster = poster;
        this.genre = genre;
        this.ratingScore = ratingScore;
        this.sinopsis = sinopsis;
    }
}
```

Gambar 7. class MovieModel.java

Install plugin yang bernama **Android Parcelable code generator,** seperti pada screenshor berikut:

Gambar 8. Cara untuk menginstall plugin

Restart Android studio kemudian gunakan plugin tersebut untuk mengenerate MovieModel.java sehingga meng-implements interface Parcelable seperti berikut :

```java
public class MovieModel implements Parcelable {
    String judul;
    int poster;
    String genre;
    String ratingScore;
    String sinopsis;

    public MovieModel(String judul, int poster, String genre, String ratingScore, String sinopsis) {...}

    public String getJudul() { return judul; }

    public void setJudul(String judul) { this.judul = judul; }

    public int getPoster() { return poster; }

    public void setPoster(int poster) { this.poster = poster; }

    public String getGenre() { return genre; }

    public void setGenre(String genre) { this.genre = genre; }

    public String getRatingScore() { return ratingScore; }

    public void setRatingScore(String ratingScore) { this.ratingScore = ratingScore; }

    public String getSinopsis() { return sinopsis; }

    public void setSinopsis(String sinopsis) { this.sinopsis = sinopsis; }

    @Override
    public int describeContents() { return 0; }

    @Override
    public void writeToParcel(Parcel dest, int flags) {
        dest.writeString(this.judul);
        dest.writeInt(this.poster);
        dest.writeString(this.genre);
        dest.writeString(this.ratingScore);
        dest.writeString(this.sinopsis);
    }

    protected MovieModel(Parcel in) {
        this.judul = in.readString();
        this.poster = in.readInt();
        this.genre = in.readString();
```

Gambar 9. MovieModel.java

6. Pada tahap selanjutnya edit code MovieFragment menjadi seperti berikut.
   a. Tambahkan fungsi dummyData seperti berikut:

```java
private void dummyData(List<MovieModel> listMovieModel) {

    listMovieModel.add(new MovieModel("Spider-Man: Far from
Home",R.drawable.spiderman,"Action","78","Peter Parker and his friends go on a
summer trip to Europe. However, they will hardly be able to rest – Peter will have
to agree to help Nick Fury uncover the mystery of creatures that cause natural
disasters and destruction throughout the continent."));
    listMovieModel.add(new MovieModel("The Lion
King",R.drawable.lionking,"Animation","67","Simba idolises his father, King Mufasa,
and takes to heart his own royal destiny. But not everyone in the kingdom celebrates
the new cub's arrival. Scar, Mufasa's brother—and former heir to the throne—has
plans of his own. The battle for Pride Rock is ravaged with betrayal, tragedy and
drama, ultimately resulting in Simba's exile. With help from a curious pair of
newfound friends, Simba will have to figure out how to grow up and take back what is
rightfully his."));
    listMovieModel.add(new MovieModel("Toy Story
4",R.drawable.toystory,"Animation","77","Woody has always been confident about his
place in the world and that his priority is taking care of his kid, whether that's
Andy or Bonnie. But when Bonnie adds a reluctant new toy called Forky to her room, a
road trip adventure alongside old and new friends will show Woody how big the world
can be for a toy."));
    listMovieModel.add(new MovieModel("Avengers:
Endgame",R.drawable.avengger,"Animation","84","After the devastating events of
Avengers: Infinity War, the universe is in ruins due to the efforts of the Mad
Titan, Thanos. With the help of remaining allies, the Avengers must assemble once
more in order to undo Thanos' actions and restore order to the universe once and for
all, no matter what consequences may be in store."));
    listMovieModel.add(new MovieModel("Crawl",R.drawable.crawl,"Action","60","While
struggling to save her father during a Category 5 hurricane, a young woman finds
herself trapped inside a flooding house and fighting for her life against Florida's
most savage and feared predators."));
    listMovieModel.add(new MovieModel("Annabelle Comes
Home",R.drawable.anabelle,"Horror","60","Determined to keep Annabelle from wreaking
more havoc, demonologists Ed and Lorraine Warren bring the possessed doll to the
locked artifacts room in their home, placing her "safely" behind sacred glass and
enlisting a priest's holy blessing. But an unholy night of horror awaits as
Annabelle awakens the evil spirits in the room, who all set their sights on a new
target—the Warrens' ten-year-old daughter, Judy, and her friends."));
    listMovieModel.add(new MovieModel("Men in Black:
Internationa",R.drawable.mib,"Action","60","The Men in Black have always protected
the Earth from the scum of the universe. In this new adventure, they tackle their
biggest, most global threat to date: a mole in the Men in Black organization."));
    listMovieModel.add(new MovieModel("Shaft ",R.drawable.shaft,"Action","64","JJ,
aka John Shaft Jr., may be a cyber security expert with a degree from MIT, but to
uncover the truth behind his best friend's untimely death, he needs an education
only his dad can provide. Absent throughout JJ's youth, the legendary locked-and-
loaded John Shaft agrees to help his progeny navigate Harlem's heroin-infested
underbelly."));
    listMovieModel.add(new
MovieModel("Yesterday",R.drawable.yesterday,"Drama","66","Jack Malik is a struggling
singer-songwriter in an English seaside town whose dreams of fame are rapidly
fading, despite the fierce devotion and support of his childhood best friend, Ellie.
After a freak bus accident during a mysterious global blackout, Jack wakes up to
discover that he's the only person on Earth who can remember The Beatles."));
    listMovieModel.add(new
MovieModel("Stuber",R.drawable.struber,"Action","64","After crashing his car, a cop
who's recovering from eye surgery recruits an Uber driver to help him catch a heroin
dealer. The mismatched pair soon find themselves in for a wild day of stakeouts and
shootouts as they encounter the city's seedy side."));
    listMovieModel.add(new MovieModel("Anna",R.drawable.anna,"Action","60","Beneath
Anna Poliatova's striking beauty lies a secret that will unleash her indelible
strength and skill to become one of the world's most feared government
assassins."));

}
```

Gambar 10. Fungsi dummyData

b. Instansiasi atribut dan inisialiasi menggunakan id yang ada di layout seperti berikut

```java
import android.content.Context;
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 MovieFragment extends Fragment {

    private RecyclerView movieListView;
    private MovieAdapter movieAdapter;
    private List<MovieModel> listMovieModel = new ArrayList<>();
    public static final String KEY_PARCEABLE = "parcel";
    private Context mContext;


    @Override
    public void onCreate(@Nullable Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        dummyData(listMovieModel);
    }

    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup container,
                             Bundle savedInstanceState) {
        return inflater.inflate(R.layout.fragment_movie, container, false);
    }

    @Override
    public void onViewCreated(@NonNull View mView, @Nullable Bundle
savedInstanceState) {
        super.onViewCreated(mView, savedInstanceState);
        movieListView = mView.findViewById(R.id.listMovie);
        movieListView.setLayoutManager(new LinearLayoutManager(getActivity()));
        mContext = getActivity().getApplicationContext();

        movieAdapter = new
MovieAdapter(mContext,listMovieModel,getActivity().getSupportFragmentManager());
        movieListView.setAdapter(movieAdapter);

        movieAdapter.SetListModel(listMovieModel);
    }
    //Method dummyDatanya  dimasukkan kedalam MovieFragment
}
```

Gambar 11. MovieFragment

c. Deklarasikan class MovieAdapter yang mengextends Abstract class RecyclerView.Adapter seperti code berikut. Jangan lupa untuk membuat tampilan satuan dari RecyclerView yang diberi nama list_item_satuan.xml, preview dari layout dapat dilihat dibawah code xml.

```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.cardview.widget.CardView
```

```xml
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="wrap_content"
    android:layout_margin="10dp"
    app:cardCornerRadius="5dp"
    app:cardElevation="10dp">

    <androidx.constraintlayout.widget.ConstraintLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent">

        <TextView
            android:id="@+id/tvJudul"
            style="@style/TextList"
            android:layout_width="0dp"
            android:layout_height="wrap_content"
            android:layout_marginStart="8dp"
            android:layout_marginTop="16dp"
            android:layout_marginEnd="8dp"
            android:text="Judul"
            app:layout_constraintEnd_toEndOf="parent"
            app:layout_constraintStart_toEndOf="@+id/imageView"
            app:layout_constraintTop_toTopOf="parent" />

        <ImageView
            android:id="@+id/imageView"
            android:layout_width="70dp"
            android:layout_height="100dp"
            android:layout_marginTop="8dp"
            android:layout_marginBottom="8dp"
            android:background="@mipmap/ic_launcher"
            android:scaleType="centerCrop"
            app:layout_constraintBottom_toBottomOf="parent"
            app:layout_constraintStart_toStartOf="parent"
            app:layout_constraintTop_toTopOf="parent" />

        <TextView
            android:id="@+id/tvRating"
            style="@style/TextList"
            android:layout_width="0dp"
            android:layout_height="wrap_content"
            android:layout_marginStart="8dp"
            android:layout_marginTop="8dp"
            android:layout_marginEnd="8dp"
            android:text="Rating"
            app:layout_constraintEnd_toEndOf="parent"
            app:layout_constraintStart_toEndOf="@+id/imageView"
            app:layout_constraintTop_toBottomOf="@+id/tvJudul" />
    </androidx.constraintlayout.widget.ConstraintLayout>

</androidx.cardview.widget.CardView>
```
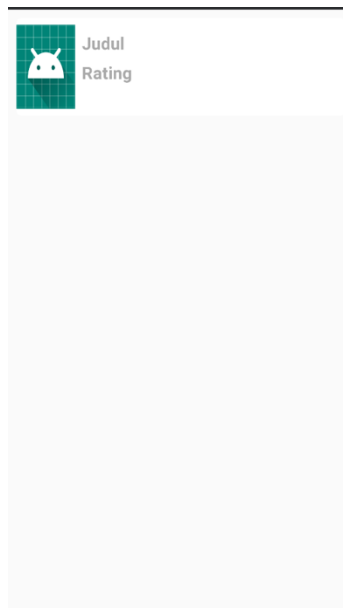
Gambar 12. list_item_satuan.xml

Gambar 13. Preview list_item_satuan.xml

Berikut adalah contoh komunikasi fragments dengan fragments, bentuk komunikasi dengan mengirim data dari MovieFragment ke DetailFragment.

```java
public class MovieAdapter extends RecyclerView.Adapter<MovieAdapter.ViewHolder>{
    private List<MovieModel> listMovieModel;
    private FragmentManager fragmentManager;
    private Context mContext;

    public MovieAdapter(Context context, List<MovieModel> listMovieModel,
FragmentManager fragmentManager) {
        mContext = context;
        this.fragmentManager = fragmentManager;
        this.listMovieModel = listMovieModel;
    }
    public void SetListModel(List<MovieModel> listMovieModel){
        this.listMovieModel = listMovieModel;
        notifyDataSetChanged();
    }

    @NonNull
    @Override
    public ViewHolder onCreateViewHolder(@NonNull ViewGroup parent, int viewType) {
        View mView =
LayoutInflater.from(parent.getContext()).inflate(R.layout.list_item_satuan,parent,
false);
        ViewHolder mViewHolder = new ViewHolder(mView);
        return mViewHolder;
    }

    @Override
    public void onBindViewHolder(@NonNull ViewHolder holder, int position) {
        final MovieModel movieModel =  listMovieModel.get(position);
        holder.tvJudul.setText(movieModel.getJudul());
        holder.tvRating.setText(mContext.getResources().getString(R.string.rating)
+" : "+movieModel.getRatingScore());
        Glide.with (holder.itemView.getContext()).load(movieModel.getPoster()).into(
holder.imageView);

        holder.itemView.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Bundle mBundle = new Bundle();
                DetailFragment mDetailFragment = new DetailFragment();
```

```java
mBundle.putParcelable(MainActivity.class.getSimpleName(),movieModel);
                mDetailFragment.setArguments(mBundle);

                fragmentManager.popBackStackImmediate();
                FragmentTransaction mFragmentTransaction  =
                        fragmentManager.beginTransaction()
.replace(R.id.frameLayout,mDetailFragment).addToBackStack(null);
                mFragmentTransaction.commit();
            }
        });
    }

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

    public class ViewHolder extends RecyclerView.ViewHolder {
        private TextView tvJudul;
        private TextView tvRating;
        private ImageView imageView;

        public ViewHolder(@NonNull View itemView) {
            super(itemView);
            tvJudul =  itemView.findViewById(R.id.tvJudul);
            tvRating =  itemView.findViewById(R.id.tvRating);
            imageView =  itemView.findViewById(R.id.imageView);
        }
    }
}
```

Gambar 14. class MovieAdapter

7. Edit code MainActivity seperti pada code berikut:

```java
public class MainActivity extends AppCompatActivity {

    private FrameLayout mFrameLayout;
    FragmentTransaction mFragmentTransaction;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        mFrameLayout = findViewById(R.id.frameLayout);
        moveFragment(new MovieFragment());
    }

    private void moveFragment(Fragment fragment) {
        getSupportFragmentManager().popBackStackImmediate();
        mFragmentTransaction =  getSupportFragmentManager().beginTransaction()
                .replace(R.id.frameLayout,fragment);
        mFragmentTransaction.commit();
    }
}
```

Gambar 15. class 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">
```

```xml
    <FrameLayout
        android:id="@+id/frameLayout"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_marginStart="8dp"
        android:layout_marginTop="8dp"
        android:layout_marginEnd="8dp"
        android:layout_marginBottom="8dp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

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

Gambar 15. activity_main.xml

Jalankan code diatas sampai tahap ini program dapat menampilkan list pada RecyclerView dan dapat mengirim data pada DetailFragment. Akan tetapi pada DetailFragment masih tidak kosong hal ini terjadi karena data yang dikirim MovieFragment belum diolah/ atau ditangkap oleh Detail Fragment.

D. **TUGAS**
   1. Lengkapi DetailFragment sehingga menampilkan detail dari film.
      Hint : cara menangkap data berupa parcelable dapat dilakukan dengan code seperti berikut

      ```java
      getArguments().getParcelable(MainActivity.class.getSimpleName());
      ```

   2. Buat MovieFragment dan DetailFragment sehingga mensuport twopane ketika layer berorientasi landscape.

Hint: Hal ini dapat dilakukan dengan menggunakan komunikasi dengan fragment dengan activity dapat dipelajari referensi berikut
(https://developer.android.com/training/basics/fragments/communicating)

*** Selamat Mengerjakan ***

*** Tetap Semangat ***