

Android LiveData

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Motivation

- core concept to present data
- clean way to hand data across the architecture
- guarantee that latest data is presented in view
- first thing to learn, when joining a real android project team

Technical Background

- first thing to learn, when joining a real android project team
- 1/2 year internship in a android project
- learned android basics (Activity, Fragment, Lifecycle, Viewmodel, Views, LiveData, Databinding)
- my first task have been "redesign view xyz regarding to the designers wishes"

Technical Background

- learn how to design views with different layouts
- how to bind data to the view
- how adapter and lists work
- how to apply Data to a viewmodel
- how to publish Data by a viewmodel
- (Spoiler) its no magic, its LiveData

LiveData

LiveData is an observable data holder class. Unlike a regular observable, LiveData is lifecycle-aware, meaning it respects the lifecycle of other app components, such as activities, fragments, or services. This awareness ensures LiveData only updates app component observers that are in an active lifecycle state

developer.android.com
(official documentaion of android)

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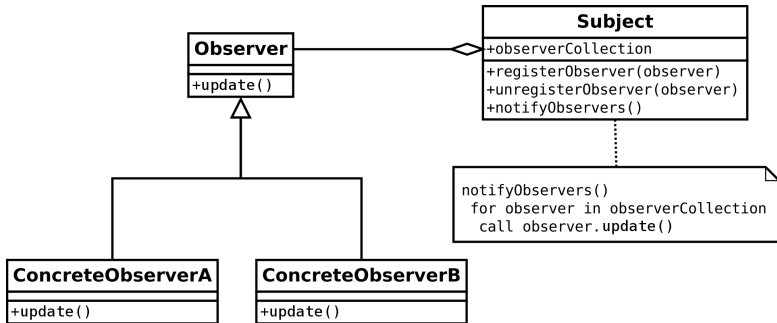
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Observer Pattern



LifeCycle Awarenes

- Observer almost everytime need an LifeCycle
- only exception when using "observeForever" method
- LifeCycles are provided by the Activity and/or Fragments
- Observer only observe while the passed LifeCycle is (STARTED/RESUMED)
- Observer do not observe when the LifeCycle is PAUSED or in a dead state

Fazit: make sure, to have an lifecycle when you want to observe

Code example

Create MutableLiveData

```
val liveData = MutableLiveData<String>().apply{  
    value = "Hello World"  
}
```

Modify MutableLiveData with operations like *postValue()* or *setValue()* (which only can be called from the main-thread)

Create LiveData

```
@Query("SELECT * FROM PERSON ORDER BY NAME")  
LiveData<List<Person>> loadAllPersons();
```

Code example

Create LiveData using MutableLiveData

```
private val privateLiveData = MutableLiveData<String>
    .apply{
        value = "Hello World"
    }

val publicLiveData : LiveData<String> = privateLiveData

fun changeString(string : String){
    privateLiveData.postValue(string)
}
```

Code example

Observing LiveData with Observer object

```
val nameObserver = Observer<String> { newName ->
    nameTextView.text = newName
}
currentName.observe(lifecycleOwner, nameObserver)
```

Observing LiveData with Lambda

```
// not observed
val name = repository.currentName
// make line above observing indirectly
val nameLetters = name.observe(lifecycleOwner, observe {
    it.toCharArray().asList()
})
```

Observing LiveData + Databinding

Fragment

```
override fun onCreateView(  
    inflater: LayoutInflater, container: ViewGroup?,  
    savedInstanceState: Bundle?  
): View? {  
    val binding : FragmentDetailWithBindingBinding! = DataBindingUtil  
        .inflate<FragmentDetailWithBindingBinding>(inflater,  
            R.layout.fragment_detail_with_binding,  
            container,  
            attachToParent: false)  
    binding.model = viewModel  
    binding.lifecycleOwner = this  
    return binding.root  
}
```

XML

```
<data>  
    <variable  
        name="model"  
        type="com.example.livedatapresentation.tshirt.screens.TShirtSelectorViewModel" />  
</data>
```

Observing LiveData + Databinding

XML

<ImageView

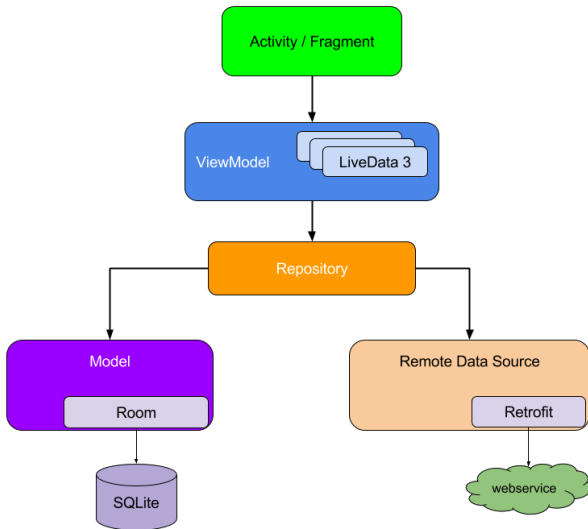
```
    android:id="@+id/t_shirt_image"  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:scaleType="fitCenter"  
    android:src="@drawable/t_shirt"  
    android:tint="@{model.tshirtColor}"  
    app:layout_constraintLeft_toLeftOf="parent"  
    app:layout_constraintTop_toTopOf="parent" />
```

Observing LiveData + Databinding

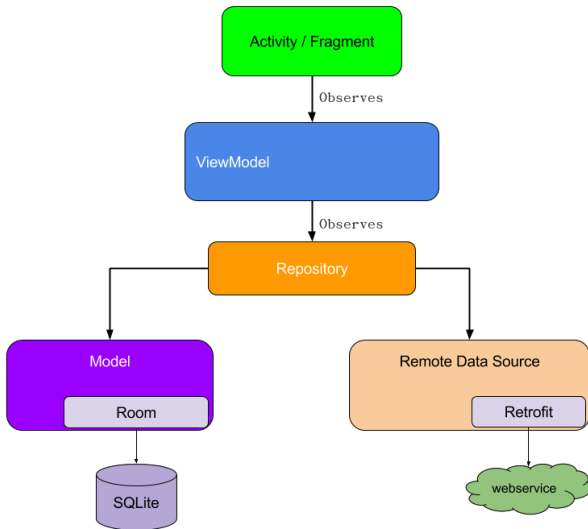
XML

```
<TextView
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_weight="0.5"
    android:gravity="end"
    android:text="@{model.selectedTShirt.size.toString()}"
    android:textAlignment="textEnd"/>
</LinearLayout>
```


Overall Structure of Android Apps



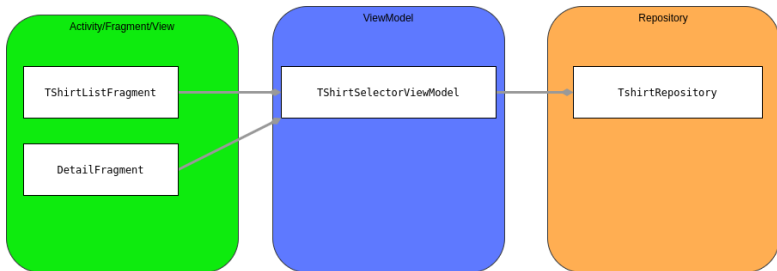
Overall Structure of Android Apps



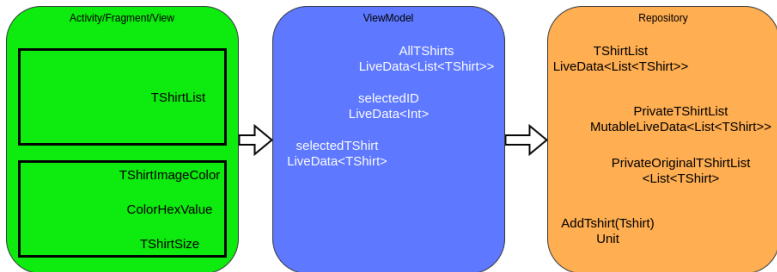
T-Shirt App Fragments

Show the APP now

T-Shirt App



T-Shirt App



Summary

- check Lifecycle
no observation when Lifecycle is Paused
- pass lifecycle to binding
- check if LiveData is observed
not observed LiveData does not change
- check value is in proper Type in xml
android:text = "@{viewmodel.number}"
≠
android:text = "@{viewmodel.number.toString()}"
- check LiveData is not Mutable accidentally

more information

- [udemy.com/course/android-jetpack/](https://www.udemy.com/course/android-jetpack/)
- medium.com/androiddevelopers/viewmodels-and-livedata-patterns-antipatterns-21efaef74a54

developer.android.com:

- [/topic/libraries/architecture/livedata](https://developer.android.com/topic/libraries/architecture/livedata)
- [/reference/androidx/lifecycle/Transformations](https://developer.android.com/reference/androidx/lifecycle/Transformations)
- [/jetpack/docs/guide](https://developer.android.com/jetpack/docs/guide)

Questions?

Thank you for your attention

Feel free to ask me anything about

- LiveData
- Android General
- work in the internship

Repo: github.com/Tosaa/mobile-application-presentation