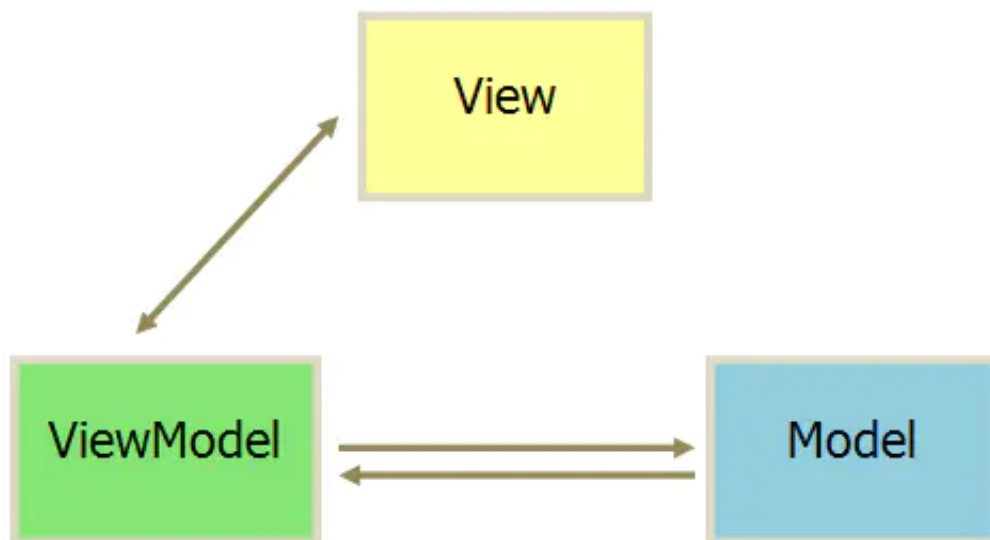


新技术或开源库封装模板

新技术或开源库介绍(Mvvm+Databind+LiveData):

Mvvm:

- 与传统的Mvc, Mvp架构模式类似, Mvvm也采用三层结构: Model, View, ViewModel, 其中ViewModel的功能跟Mvp中的Presenter非常接近



Databinding:

- DataBinding 是谷歌官方发布的一个框架, 顾名思义即为数据绑定, 是 MVVM 模式在 Android 上的一种实现, 用于降低布局和逻辑的耦合性, 使代码逻辑更加清晰。

LiveData:

- LiveData是Jetpack的一个组件, 可以感知 Activity、Fragment生命周期的数据容器。当 LiveData 所持有的数据改变时, 它会通知相应的界面代码进行更新。同时, LiveData 持有界面代码 Lifecycle 的引用, 这意味着它会在界面代码 (LifecycleOwner) 的生命周期处于 started 或 resumed 时作出相应更新, 而在 LifecycleOwner 被销毁时停止更新。

新技术或开源库的优缺点:

- Mvvm
 - 优点
 - 双向绑定技术, 当Model变化时, View-Model会自动更新, View也会自动变化
 - 缺点
 - 数据绑定使得 Bug 很难被调试

- 项目偏大时，ViewModel层类会增多
- 数据双向绑定不利于代码重用
- LiveData
 - 优点
 - UI和实时数据保持一致
 - 自动管理数据的更新机制，不需要再解决生命周期带来的问题
 - 减少日常开发中因为数据持有View对象导致内存泄漏的问题
 - 解决Configuration Change问题，在屏幕发生旋转或者被回收再次启动，立刻就能收到最新的数据
 - 缺点
 - 需要对正常使用的数据进行一层包装，设置数据时，稍稍要注意下线程问题(postValue和直接.value)
- DataBinding
 - 优点
 - 数据与界面可以双向绑定，减少日常开发中的各种View的设置属性，监听等等代码的编写
 - View的功能进一步的强化，具有控制的部分功能
 - 减少View层和Model层的部分操作View属性的逻辑代码，再也不必为View层臃肿的代码而烦恼
 - 缺点
 - 因为xml文件中引入了部分简单逻辑，出现语法错误有可能检测不出，导致编译或者运行出错，调试代码，难度偏大。

新技术封装流程：

- 技术引入前配置依赖
 - Databinding：在使用到了databinding的模块中的build.gradle文件中的android节点下加入
- ```
buildFeatures {
 dataBinding = true
}
```
- Livedata:在使用到了LiveData的模块中的build.gradle文件中的dependencies中加入livedata, lifecycle  
的依赖

```
androidx.lifecycle:lifecycle-livedata-ktx:2.2.0
androidx.lifecycle:lifecycle-extensions:2.2.0
```

- 定义基类

例如BaseMvvmActivity,BaseMvvmFragment,BaseVmViewMoel,简化具体业务类的公共逻辑

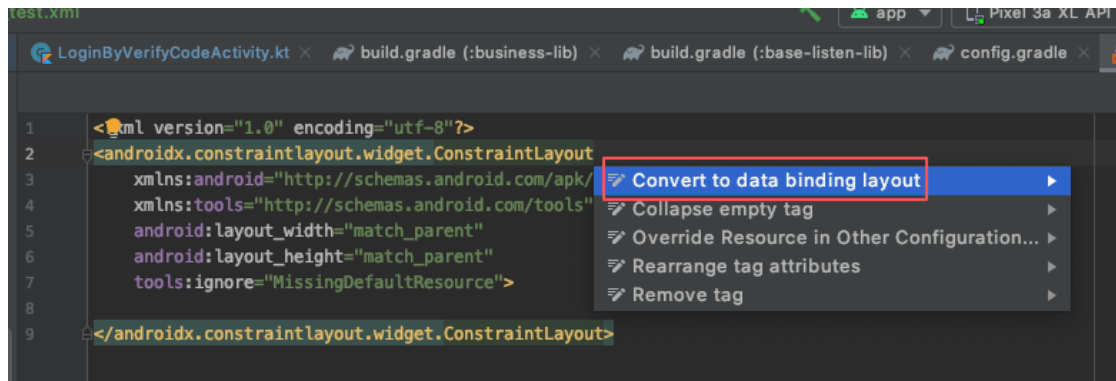
```
abstract class BaseVMActivity<V : ViewDataBinding, VM : BaseVMViewModel> :
 BaseActivity()
```

- 定义帮助类，管理类或者工具类等等辅助相关的类

例如DataBindingHelper,KoinHelper等等

- 使用流程(以Activity为例子)

- 新建一个Activity，并且将Activity对应的布局文件按照提示修改为databinding类型的，



- 定义该Activity对应的ViewModel(类似MVP模式中的Presenter，可以认为是对数据的操作者，包含获取，修改，删除等等)，该ViewModel中所有声明的数据类型和方法，大部分都会跟Activity中的xml文件绑定，ViewModel的作用就是声明对应View层所需的数据类型，然后通过和repository(可以为是数据的存储仓库，例如网络接口，数据库集合，本地缓存等等)的交互，对页面上的数据进行一系列操作，然后通过数据绑定，将变化后的数据直接显示在界面上。

```
/**
 * desc : 登陆viewModel
 * date : 2020/08/26
 * version: 1.0
 */
class LoginByVerifyViewModel(private val repository: LoginRepository) : BaseVMViewModel() {
 var phoneInputViewModel = PhoneInputViewModel()

 // 用户协议和隐私协议是否选择
 var isChecked = ObservableField<Boolean>(value: false)

 // 错误提示信息
 var errorTips = ObservableField<String>(value: "")

 var loginStatus = ObservableField(value: 0)

 // 回调到Activity中的方法块
 // var callBackToActivity: (Int) -> Unit = {}

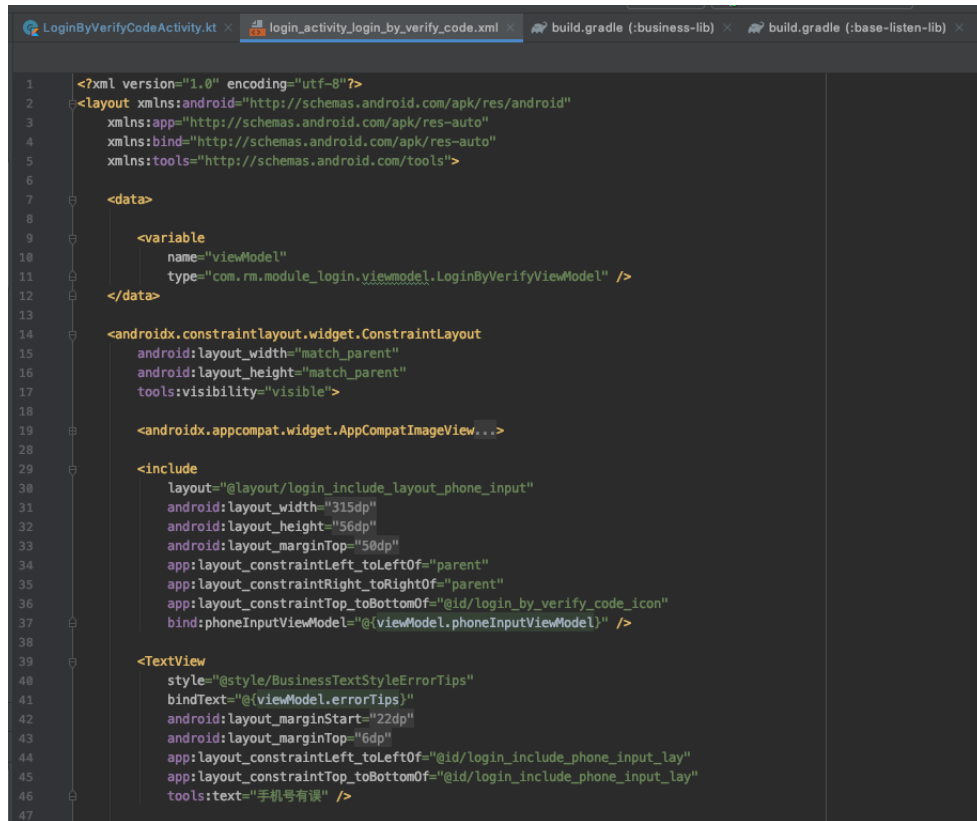
 var testDialogData = MutableLiveData<MutableList<LoginDialogModel>>(mutableListOf())

 /** 获取验证码 ... */
 fun getCode() {...}

 /** 密码登录入口 ... */
 fun loginByPassword() {...}

 fun testClick() {...}

 fun getDialogData() {...}
```



- 让该Activity继承BaseVMActivity，并指定相应的泛型类，实现抽象的方法

```

/**
 * desc : 验证码登陆界面
 * date : 2020/08/26
 * version: 1.0
 */
class LoginByVerifyCodeActivity :
 BaseVMActivity<LoginActivityLoginByVerifyCodeBinding,
 LoginByVerifyViewModel>() {
 companion object {
 fun startActivity(context: Context) {
 context.startActivity(Intent(context,
LoginByVerifyCodeActivity::class.java))
 }
 }
}

/**
 * 获取Activity的布局文件
 * @return Int
 */
override fun getLayoutId(): Int =
 R.layout.login_activity_login_by_verify_code

/**

```

```

 * 获取dataBinding模式下Activity布局文件中声明的viewModel的BR的id,BR类是
 dataBind特有的资源ID集合类, 类似于Android的R文件
 * @return Int
 */
 override fun initModelBrId() = BR.viewModel

 /**
 * MVVM模式开启LiveData的数据监听
 */
 override fun startObserve() {
 mViewModel.testDialogData.observe(this, Observer {
 dialogAdapter.setList(mViewModel.testDialogData.value!!)
 })
 }
}

```

- 注意事项

- Activity的第一个泛型参数, 是DataBinding框架自动根据每个xml文件对应生成的类(规则xml是每个单词首字母大写, 去掉下划线然后以Binding结尾), 例如LoginByVerifyCodeActivity对应的xml文件是login\_activity\_login\_by\_verify\_code, 那么就会有一个LoginActivityLoginByVerifyCodeBinding, 如果对应的xml文件是activity\_test,那么就是ActivityTestBinding
- BR文件也是DataBinding框架的一个自动生成的类, 里面存放了, 所有DataBinding形式的xml文件中声明的variable变量,例如下图中在xml中声明了一个viewModel的变量, 那么在BR文件中就会有有一个viewModel的ID

```

<data>
 <!-- xml中逻辑需要用的类, 需要在data节点倒入, 类似java中的导包 -->
 <import type="android.text.TextUtils"/>
 <!-- xml中逻辑需要用的变量, 需要声明为variable, name属性会在BR文件中生成对应的
 ID type对应该变量的类的导包 -->
 <variable
 name="viewModel"
 type="com.rm.module_login.viewmodel.LoginByVerifyViewModel" />
</data>

```



```
1 package com.rm.module_login;
2
3 public class BR {
4 public static final int _all = 0;
5
6 public static final int item = 1;
7
8 public static final int passwordInputViewModel = 2;
9
10 public static final int phoneInputViewModel = 3;
11
12 public static final int status = 4;
13
14 public static final int title = 5;
15
16 public static final int viewModel = 6;
17 }
```

- DataBinding框架提供了@BindAdapter注解给开发者使用，可以根据业务需求扩展View的功能，举个例子，我们需要对View的onClickListener做扩展，先使用@BindAdapter声明属性名字和具体方法执行的逻辑，然后在xml中直接使用该属性，如果xml文件与viewModel中的属性是单向绑定，使用@{}，如果是双向绑定，请使用@={}，例如EditText输入用户手机号码

```
/**
 * BindingAdapter注解里面的属性名字，是可以直接用在xml中的，方法定义声明的
 * View.bindClick
 * 代表了是对view的功能扩展，接受的参数是一个代码块，也就是方法的引用
 * @receiver View 扩展对象为View
 * @param action Function0<Unit>? 方法体(或者叫代码块)
 */
@BindingAdapter("bindClick")
fun View.bindClick(action: (() -> Unit)?) {
 if (action != null) {
 setOnClickListener { action() }
 }
}
```

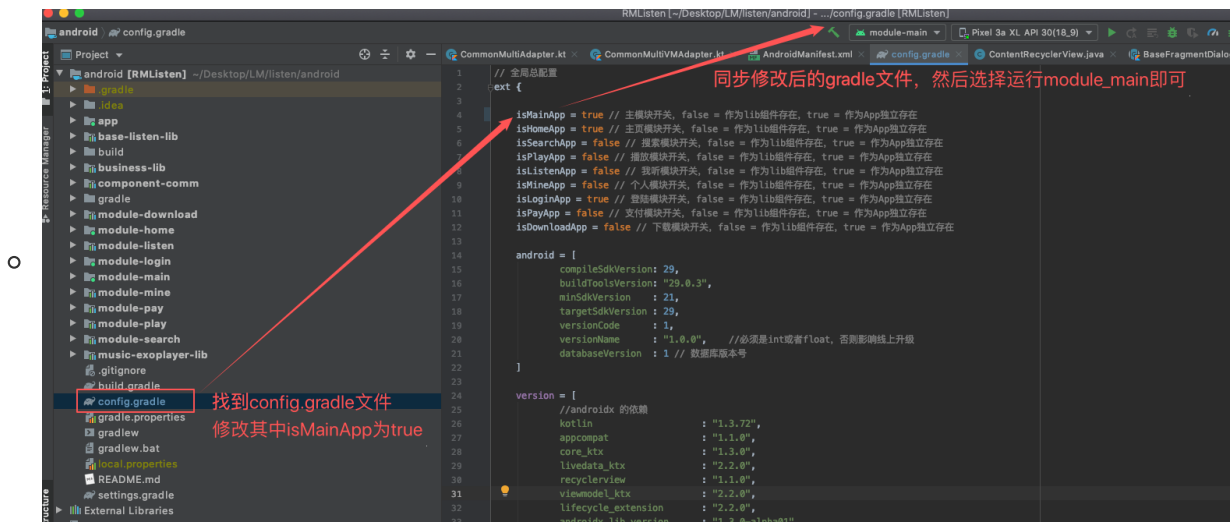
```
1 <?xml version="1.0" encoding="utf-8"?>
2 <layout xmlns:android="http://schemas.android.com/apk/res/android"
3 xmlns:app="http://schemas.android.com/apk/res-auto"
4 xmlns:bind="http://schemas.android.com/apk/res-auto"
5 xmlns:tools="http://schemas.android.com/tools">
6
7 <data>
8 <!-- xml中逻辑需要用的类，需要在data节点倒入，类似java中的导包 -->
9 <import type="android.text.TextUtils"/>
10 <!-- xml中逻辑需要用的变量，需要声明为variable，name属性会在BR文件中生成对应的ID type对应应该变量的类的导包 -->
11 <variable
12 name="viewModel"
13 type="com.rm.module_login.viewmodel.LoginByVerifyViewModel" />
14 </data>
15
16 <androidx.constraintlayout.widget.ConstraintLayout
17 android:layout_width="match_parent"
18 android:layout_height="match_parent"
19 tools:visibility="visible">
20
21 <androidx.appcompat.widget.AppCompatImageView...>
22
23 <include...>
24
25 <TextView...>
26
27 <androidx.appcompat.widget.AppCompatButton
28 android:id="@+id/login_by_verify_code_get_btn"
29 style="@style/ButtonStyle"
30 bindClick="@{viewModel.getCode}"
31 android:layout_width="0dp"
32 android:layout_height="56dp"
33 android:layout_marginTop="52dp"
34 android:enabled="@{viewModel.phoneInputViewModel.isInputText}"
35 android:text="获取验证码"
36 app:layout_constraintLeft_toLeftOf="@id/login_include_phone_input_lay"
37 app:layout_constraintRight_toRightOf="@id/login_include_phone_input_lay"
38 app:layout_constraintTop_toBottomOf="@id/login_include_phone_input_lay" />
39
40 </androidx.constraintlayout.widget.ConstraintLayout>
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42 </include...>
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- 输出封装模板

- 纯展示的Activity(自带数据源，且不会发生改变)继承BaseActivity，其他的Activity应该都统一继承MVVM模式的BaseVMActivity
- 纯展示的Fragment(自带数据源，且不会发生改变)继承BaseFragment，其他的Activity应该都统一继承MVVM模式的BaseVMFragment
- 纯展示的Dialog请使用CommonMvFragmentDialog，其他都使用CommonMvFragmentDialog
- 纯展示的(没有点击事件)单Item的RecyclerView请使用CommonBindAdapter，涉及到逻辑操作的单Item的RecyclerView请使用CommonBindVMAdapter
- 纯展示的(没有点击事件)多Item的RecyclerView请使用CommonMultiAdapter，涉及到逻辑操作的多Item的RecyclerView请使用CommonMultiVMAdapter

- 示例Demo

- 地址：[http://192.168.11.214:8087/listen\\_book/android/tree/develop\\_v1.0](http://192.168.11.214:8087/listen_book/android/tree/develop_v1.0)
- 下载项目后，分支切到develop\_1.0,按照下图操作即可运行demo



o Demo页面





