

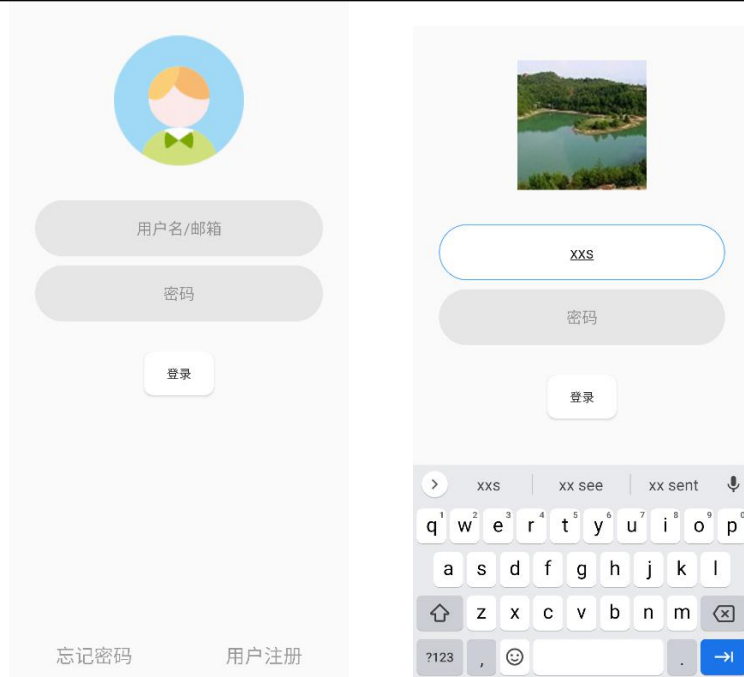
Android软件设计课程实验报告

学号 SA20225506 姓名 谢雪松 日期 2020.10.27
学号 SA20225483 姓名 吴俊锋
学号 SA20225490 姓名 伍开秋

实验名称	实验二：实现Activity跳转以及控件的综合使用
实验内容	<p>要求：1. Button跳转页面；2. ListView使用；3. ImageView使用；4. 布局综合使用；</p> <p>评分：1. 完成上述4项基本UI设计和功能（7分）； 2. 可根据UI美化效果适当加分或模仿微信或手机QQ的UI和框架设计；</p>
实验完成情况 (包括完成的实验内容及每个实验的完成程度。注意要贴出每个实验的核心代码)	<p>完成的实验内容</p> <p>1、 完成了Button跳转页面。 核心代码：</p> <pre>login_bt.setOnClickListener(this); @Override public void onClick(View v) { switch (v.getId()) { case R.id.loginbutton: //执行登录操作 login_action(); break; } } //登录操作 private void login_action(){ Intent intent = new Intent(LoginActivity.this, HomeActivity.class); intent.putExtra("name",name); startActivity(intent); }</pre> <p>2、 使用了ListView，配合BaseAdapter展示用户安装的应用 核心代码</p> <pre>public class AllListAdapter extends BaseAdapter implements Filterable { ... } appAdapter =new AllListAdapter(getContext()); for(PackageInfo packageInfo:packages){ app.set...(...); appAdapter.add(app); } app_list_view.setAdapter(appAdapter);</pre> <p>3、 多次使用到了ImageView，进行用户头像、默认提示图片、应用图标显示。 核心代码</p> <pre>Drawable avatar_drawable = db.getAvatarByName(name); if(avatar_drawable==null){ avatar_img.setImageResource(R.drawable.boy); } else { avatar_img.setImageDrawable(avatar_drawable); }</pre> <p>4、 通过RadioButton、Fragment配合，使得HomeActivity内通过底部导航按钮切换不同的Fragment。 核心代码</p> <pre>@Override public void onCheckedChanged(RadioGroup group, int checkedId) { transaction=fm.beginTransaction(); switch (checkedId){ case R.id.radio1:</pre>

	<pre> fragment=fragments.get(0); transaction.replace(R.id.mFragment,fragment,"all"); break; case R.id.radio2: fragment=fragments.get(1); transaction.replace(R.id.mFragment,fragment,"favorite"); break; } transaction.commit(); } </pre> <p>5、使用到了RecyclerView配合RecyclerView.Adapter来显示用户的应用收藏列表。</p> <pre> favoriteListView =getActivity().findViewById(R.id.users_listview); mAdapter=new FavoriteListAdapter(getContext(),db_name); favoriteListView.setLayoutManager(new GridLayoutManager(getContext(),2)); favoriteListView.setAdapter(mAdapter); </pre> <p>6、使用了Sqlite数据库完成对用户登录信息的持久化操作。 User类保存一个用户的用户名、密码等信息，对应数据库中的一条记录。 UsersDBHelper类继承自SQLiteOpenHelper，完成了数据库创建、表创建、插入用户记录、查询用户等操作。</p> <p>7、通过Google官方提供的Room库来进行SQLite数据库操作，实现了对用户收藏列表的持久化操作。 AppBean类注解为room中的Entity，AppDAO接口对应room中的DAO，AppDataBase抽象类对应room中的database。在使用room的过程中，不需要自己手写具体实现，而是通过注解，room框架会自动帮我们实现，大大简化了数据库的开发。</p>
<p>实验中的问题</p> <p>（包括在实验中遇到的问题，以及解决问题的方法）</p>	<p>1、如何通过数据库保存和读取用户的头像。 在建表时，声明头像（avatar）为blob类型的字段</p> <pre> final String CREATE_USER="create table User (" + "uid integer primary key autoincrement," + "name text ," + "password text," + "email text," + "avatar blob)"; db.execSQL(CREATE_USER); </pre> <p>头像从数据库中读取为byte数组，可以将其转换为Drawable对象显示在界面上。</p> <pre> if((bytes=cursor.getBlob(cursor.getColumnIndex("avatar")))!=null){ avatar= new BitmapDrawable(BitmapFactory.decodeByteArray(bytes, 0, bytes.length)); } </pre> <p>同理，将图片转化为byte数组后，可以存入数据库。</p> <pre> public byte[] getAvatarBytes(){ Bitmap imageBitmap = ((BitmapDrawable) d).getBitmap(); ByteArrayOutputStream baos = new ByteArrayOutputStream(); imageBitmap.compress(Bitmap.CompressFormat.PNG, 100, baos); byte[] byteData = baos.toByteArray(); } contentValues.put("avatar", User.getAvatarBytes()); db.insert(TABLE_NAME,null,contentValues); </pre> <p>2、如何对所有应用列表进行搜索，方便用户查找到含有关键词的应用。 给搜索框添加文本改变时的监听器，当文本改变时，会通知listview的适配器过滤得到含有关键字的app的名称。</p> <pre> public class AllAppsFragment extends Fragment implements View.OnClickListener, TextWatcher { search_box.addTextChangedListener(this); @Override public void onTextChanged(CharSequence s, int start, int before, int count) { appAdapter.getFilter().filter(s); } } public class AllListAdapter extends BaseAdapter implements Filterable { @Override public Filter getFilter() { ... } } </pre>

	<pre> if (app.getAppname().toLowerCase().contains(constraint.toString())) { filteredApps.add(app); } ... } } </pre> <p>3、如何让不同用户有不同的收藏列表。</p> <p>获得登录界面传来的用户名信息，在创建数据库访问对象时，数据库名字包含用户名信息，即可让不同用户有不同的收藏列表。</p> <pre> Intent intent=getIntent(); name=intent.getStringExtra("name"); String db_name=userName+".db"; AppDataBase db = Room.databaseBuilder(context, AppDataBase.class, db_name).allowMainThreadQueries().build(); </pre> <p>4、不同Fragment之间如何调用对方的函数。</p> <p>先在一个Fragment里声明一个public的方法</p> <pre> public void insertApp(AppBean app){ mAdapter.insertApp(app); } </pre> <p>在HomeActivity切换不同Fragment时指明一个标签</p> <pre> transaction.replace(R.id.mFragment,fragment,"favorite"); </pre> <p>在另一个Fragment里通过标签获取之前fragment的引用</p> <pre> favoriteFragment=(FavoriteFragment) fragmentManager.findFragmentByTag("favorite"); </pre> <p>之后就可以方便的调用之前Fragment的方法了</p> <pre> favoriteFragment.insertApp(app); </pre> <p>5、如何让用户的收藏列表可以显示为网格状。</p> <p>可以用多个listview来实现，但这样效率不高。通过查找资料，谷歌官方推荐使用RecyclerView来实现列表的网格视图。</p> <pre> favoriteListview.setLayoutManager(new GridLayoutManager(getContext(),2)); </pre> <p>如上代码，可以实现列表显示为网格视图，每一行有两格。</p> <p>5、如何在项目中使用room框架</p> <p>在项目或模块的build.gradle文件里添加依赖：</p> <pre> dependencies { //room 库的依赖 def room_version = "2.2.5" implementation "androidx.room:room-runtime:\$room_version" annotationProcessor "androidx.room:room-compiler:\$room_version" // optional - RxJava support for Room implementation "androidx.room:room-rxjava2:\$room_version" // optional - Guava support for Room, including Optional and ListenableFuture implementation "androidx.room:room-guava:\$room_version" // optional - Test helpers testImplementation "androidx.room:room-testing:\$room_version" } </pre>
<p>实验结果及成果展示</p> <p>（包括实验完成后的源码和打包文件的说明）</p>	<p>一、成果展示和完成后的源码</p> <p>1、登录界面</p>

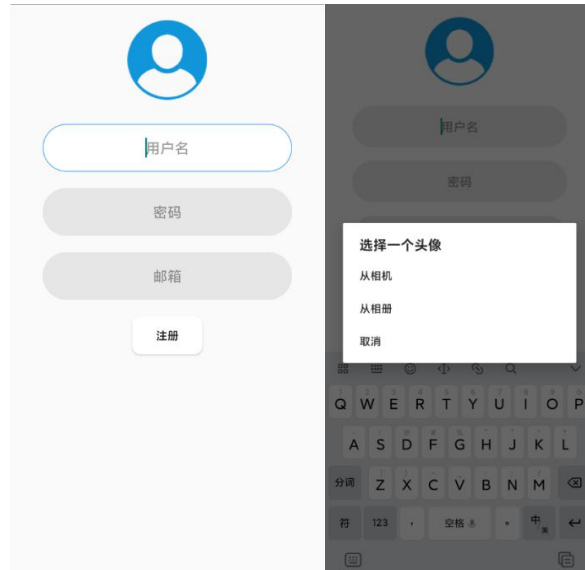


这是登录界面，头像处使用Imageview实现，当用户输入用户名后，会从数据库找到对应的用户头像，并显示出来,如果没有该用户，或该用户没有头像，则显示默认头像图片。

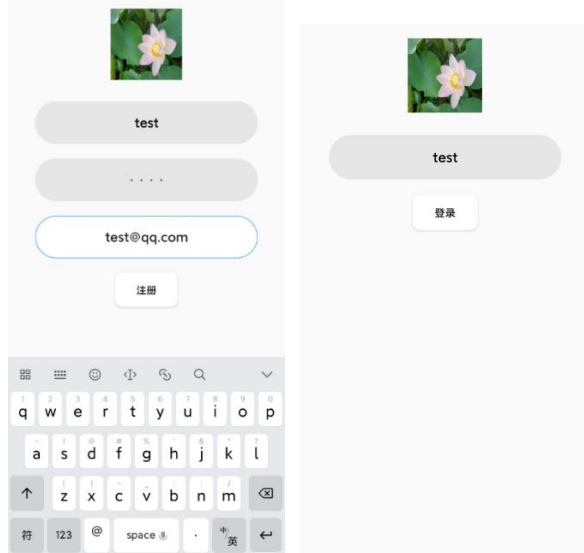
用户名和密码输入框使用EditText实现，登录按钮使用了Button。用户名密码匹配成功则会跳转到主界面。下面忘记密码和用户注册使用的是TextView，点按会跳转到相应的界面。

2、注册界面源码

点击用户注册会跳转到该界面。

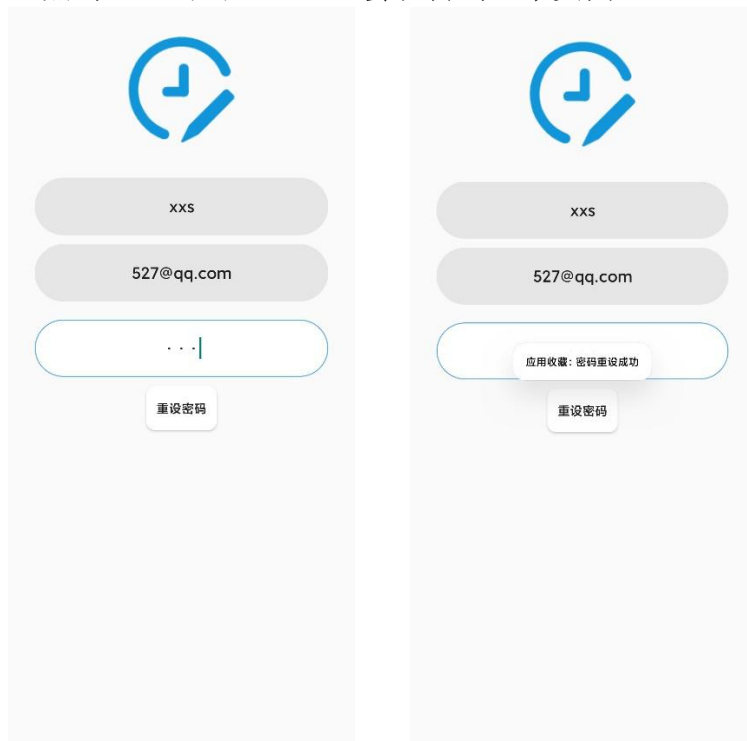


输入用户名密码、选择头像，会在数据库中创建一个新的用户。



3、重设密码界面

点击忘记密码TextView会跳转到这个页面。

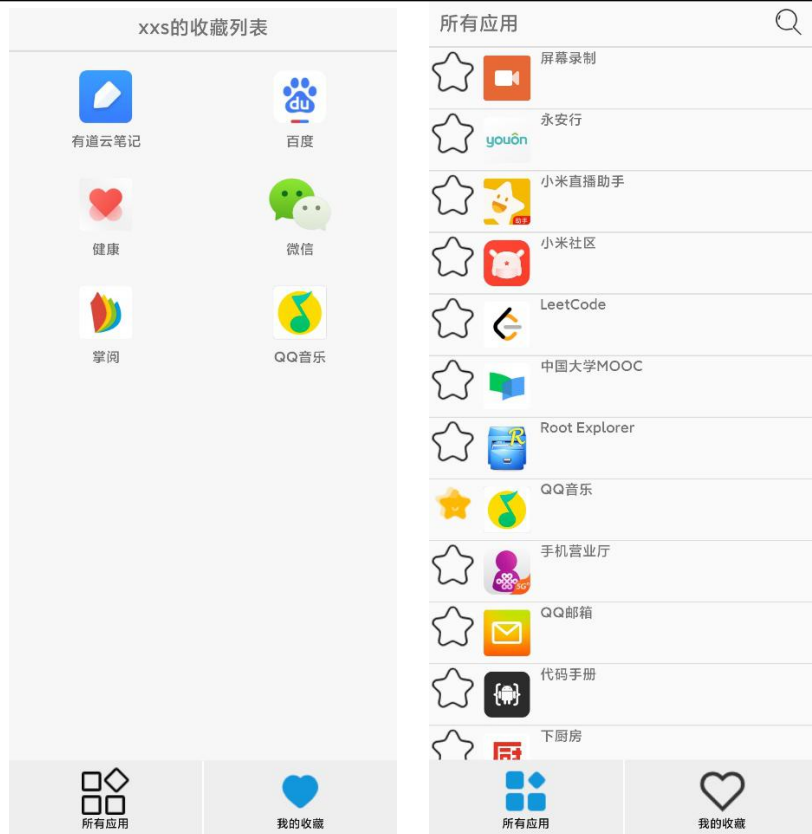


在输入框中输入用户名和注册所用的邮箱，如果匹配则可以成功修改密码。有相应的toast提醒修改成功、用户不存在、信息不匹配等情况。

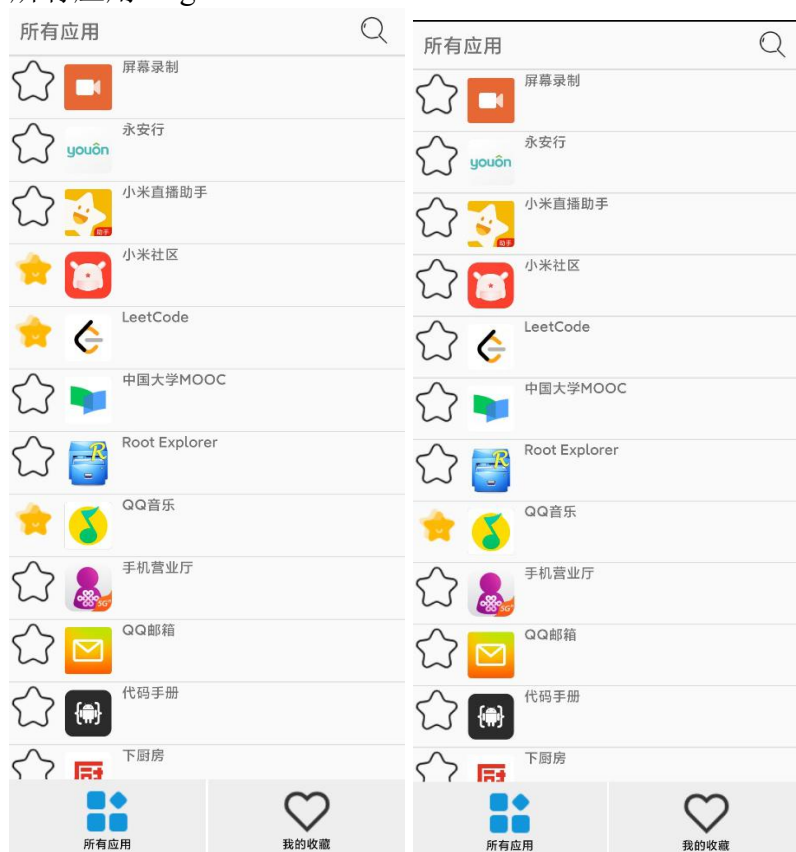
4、主界面

登录成功后会进入主界面。

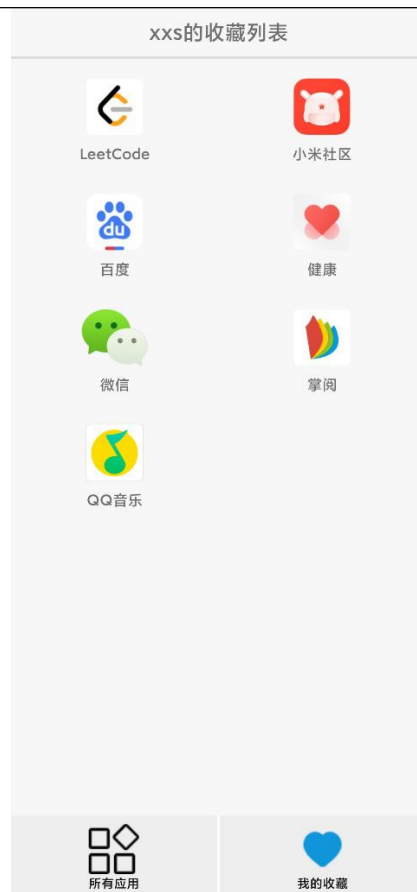
主界面由我的收藏和所有应用两个板块组成，通过下方的按钮可以实现切换。



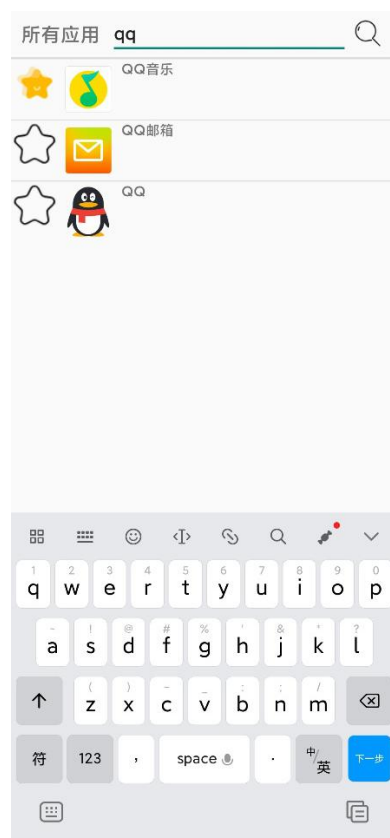
6、所有应用Fragment



在所有应用fragment获取并显示手机的所有应用，点击左侧的星星按钮可以把应用添加到用户的收藏列表。



加了星的应用会在我的收藏页面中显示。



点击右上角的搜索按钮，会显示出搜索框。输入文字过程中，会实时更新和输入文字相匹配的应用。

7、我的收藏Fragment

点击下方我的收藏可进入我的收藏页面。

这里显示了用户加星收藏的应用。点击应用图标会显示两个操作按钮。

xxs的收藏列表





有道云笔记

百度





健康

微信





掌阅

QQ音乐





所有应用

我的收藏

xxs的收藏列表





百度

健康





微信

掌阅



QQ音乐





所有应用

我的收藏

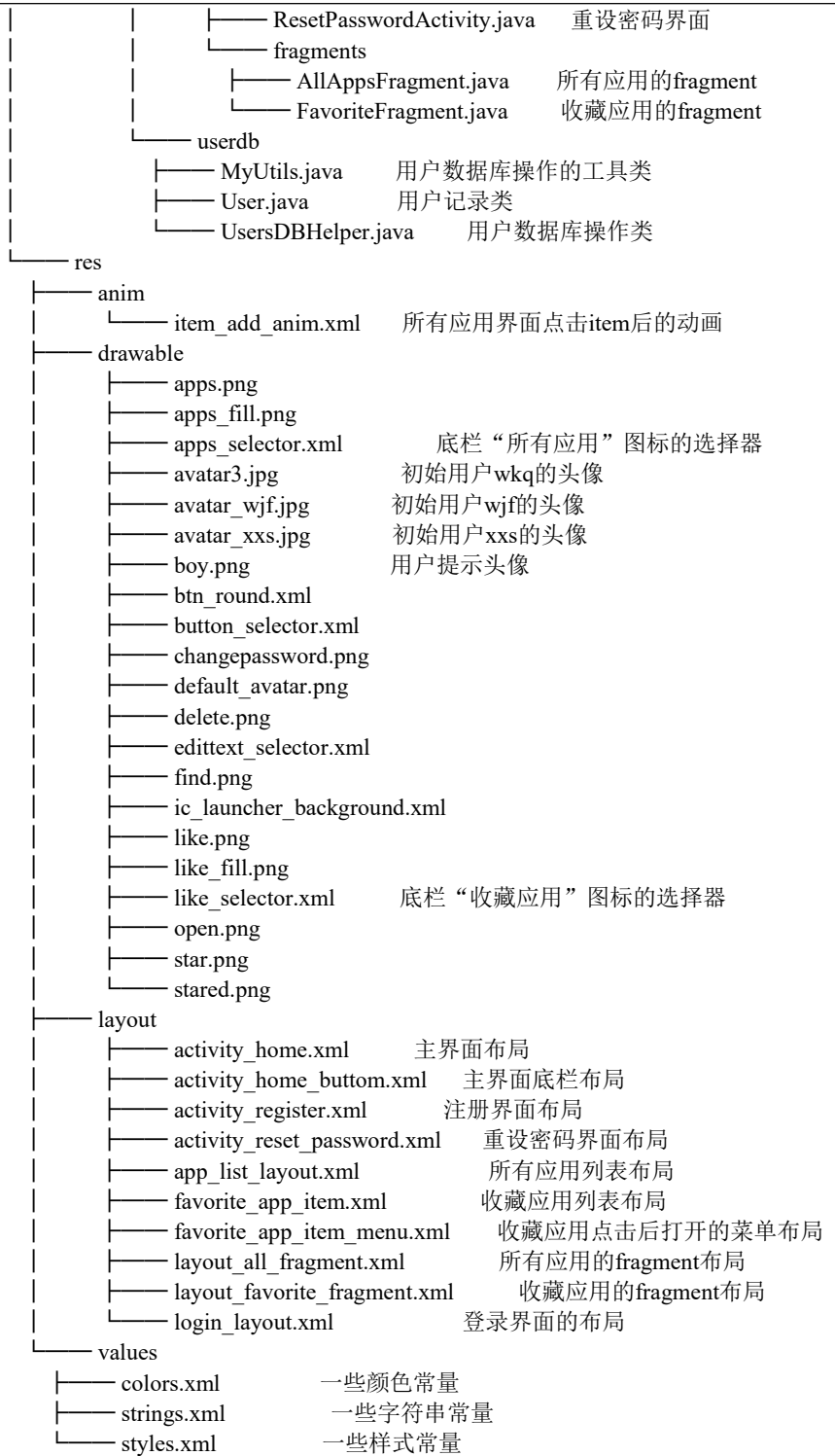
点击右边的“垃圾桶”图标可将对应的应用从收藏列表中删除。
(右图为删除“有道云笔记”后的界面)

点击左边的“播放”图标可以打开对应的应用。第一次打开时，系统会提示，点击“允许”后将会打开应用“百度”，这里不进行显示。



二、打包文件说明

app2/	项目名称
— build.gradle	gradle的配置文件
— gradle	
— wrapper	
— gradle.properties	
— gradlew	
— gradlew.bat	
— local.properties	
— settings.gradle	
— xxs	模块名称
— build	
— build.gradle	
— proguard-rules.pro	
— src	
— main	
— AndroidManifest.xml	应用清单
— java	
— com	
— rom471	
— adapters	
— AllListAdapter.java	所有应用列表的适配器
— FavoriteListAdapter.java	收藏应用列表
— appsdb	
— AppBean.java	收藏应用记录类
— AppDAO.java	收藏应用的数据库操作接口
— AppDataBase.java	收藏应用的数据库抽象类
— main	
— HomeActivity.java	主界面
— LoginActivity.java	登录界面
— RegisterActivity.java	注册界面



三、实验源码

LoginActivity.java

```

package com.rom471.main;
import android.content.Intent;
import android.graphics.drawable.Drawable;
import android.os.Bundle;
import android.text.Editable;
import android.text.TextWatcher;
import android.view.Gravity;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.ImageView;
import android.widget.TextView;
import android.widget.Toast;

```

```

import androidx.appcompat.app.AppCompatActivity;

import com.rom471.lab1.R;
import com.rom471.userdb.UsersDBHelper;

public class LoginActivity extends AppCompatActivity implements View.OnClickListener {
    EditText name_et; //用户名输入框
    EditText password_et; //用户密码输入框
    UsersDBHelper db; //用户数据库操作类
    ImageView avatar_img; //用户头像图片
    TextView register_tv; //注册按钮
    TextView reset_tv; //重设密码按钮

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.Login_Layout);
        //绑定资源
        name_et=findViewById(R.id.Acount);
        avatar_img=findViewById(R.id.pic);
        password_et=findViewById(R.id.passwd);
        Button login_bt=findViewById(R.id.Loginbutton);
        register_tv=findViewById(R.id.register_tv);
        reset_tv=findViewById(R.id.forget);

        //设置按钮的点击事件监听器
        login_bt.setOnClickListener(this);
        register_tv.setOnClickListener(this);
        reset_tv.setOnClickListener(this);
        //根据名字输入框动态的查找用户的头像
        name_et.addTextChangedListener(new TextWatcher() {
            @Override
            public void beforeTextChanged(CharSequence s, int start, int count, int
after) { }
            @Override
            public void onTextChanged(CharSequence s, int start, int before, int
count) {
                String name=s.toString();//获取用户输入的用户名
                if(!name.equals("")){
                    Drawable avatar_drawable = db.getAvatarByName(name);
                    if(avatar_drawable==null){
                        avatar_img.setImageResource(R.drawable.boy);
                    }
                    else {
                        avatar_img.setImageDrawable(avatar_drawable);
                    }
                }
                else {
                    avatar_img.setImageResource(R.drawable.boy);
                }
            }
            @Override
            public void afterTextChanged(Editable s) { }
        });

        //初始化数据库
        db=new UsersDBHelper(this);
        db.InitialWithTestData();
    }

    @Override
    public void onClick(View v) {
        switch (v.getId()){
            case R.id.Loginbutton:
                //执行登录操作
                login_action();
                break;
            case R.id.register_tv:
                //跳转到注册界面
                Intent intent = new Intent(LoginActivity.this,
RegisterActivity.class );
                startActivity(intent);
                break;
            case R.id.forget:
                //跳转到重设密码界面
                Intent intent2 = new Intent(LoginActivity.this,
ResetPasswordActivity.class );
                startActivity(intent2);
                break;
        }
    }
}

```

```

    }
    //登录操作
    private void login_action(){
        String name= name_et.getText().toString();
        String password=password_et.getText().toString();
        //先判断数据库里是否存在该用户
        if(!db.haveUser(name)){
            toast("该用户不存在! ");
            return;
        }
        if(db.loginWith(name,password)){
            db.close();
            // 登录成功, 跳转到 Home 界面
            Intent intent = new Intent(LoginActivity.this, HomeActivity.class );
            intent.putExtra("name",name);
            startActivity(intent);
            this.finish();
        }
        else {
            toast("密码错误");
        }
    }
}

@Override
protected void onPause() {
    super.onPause();
    db.close();
}

@Override
protected void onResume() {
    super.onResume();
    db=new UsersDBHelper(this);
}
//-----toast
public void toast( String text){
    Toast toast=Toast.makeText(LoginActivity.this, text, Toast.LENGTH_SHORT);
    toast.setGravity(Gravity.CENTER, 0, 0);
    toast.show();
}
}

```

login_layout.xml

```

<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:focusableInTouchMode="true"

    >

    <ImageView
        android:id="@+id/pic"
        android:layout_width="370dp"
        android:layout_height="150dp"
        android:layout_centerHorizontal="true"
        android:layout_margin="40dp"
        android:scaleType="fitCenter"
        android:src="@drawable/boy" />

    <EditText
        android:id="@+id/Acount"
        android:layout_width="match_parent"
        android:layout_height="65dp"
        android:layout_below="@+id/pic"
        android:layout_marginLeft="30dp"
        android:layout_marginRight="30dp"
        android:layout_weight="1"

        android:background="@drawable/edittext_selector"
        android:hint="@string/account"
        android:selectAllOnFocus="false"
        android:singleLine="true"
        android:textAlignment="center"
        android:visibility="visible" />

    <EditText
        android:id="@+id/passwd"
        android:layout_width="match_parent"
        android:layout_height="65dp"
        android:layout_below="@+id/Acount"

```

```

        android:layout_marginLeft="30dp"
        android:layout_marginTop="10dp"
        android:layout_marginRight="30dp"
        android:layout_marginBottom="35dp"
        android:layout_weight="1"
        android:background="@drawable/edittext_selector"
        android:hint="@string/passwd"
        android:inputType="textPassword"
        android:selectAllOnFocus="false"
        android:singleLine="false"
        android:textAlignment="center"
        android:visibility="visible" />

```

<Button

```

        android:id="@+id/loginbutton"
        android:layout_width="80dp"
        android:layout_height="50dp"
        android:layout_below="@+id/passwd"
        android:layout_centerHorizontal="true"
        android:background="@drawable/button_selector"
        android:text="@string/login" />

```

<LinearLayout

```

        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_alignParentBottom="true"
        android:layout_marginBottom="20dp"

```

```

        android:orientation="horizontal">

```

<LinearLayout

```

        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:orientation="vertical">

```

<TextView

```

        android:id="@+id/forget"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_gravity="center_horizontal"
        android:hint="@string/forget"
        android:textSize="10pt" />

```

```

    </LinearLayout>

```

<LinearLayout

```

        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:orientation="vertical">

```

<TextView

```

        android:id="@+id/register_tv"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_gravity="center_horizontal"
        android:hint="@string/signin"
        android:textSize="10pt" />

```

```

    </LinearLayout>

```

```

</LinearLayout>

```

```

</RelativeLayout>

```

RegisterActivity.java

```

package com.rom471.main;

```

```

public class RegisterActivity extends AppCompatActivity implements
View.OnClickListener {
    Button register_btn; //注册按钮
    EditText name_et; //用户名输入框
    EditText password_et; //密码输入框
    EditText email_et; //用户邮箱输入框
    ImageView avatar_img; //用户头像图片
    UsersDBHelper db; //用户数据库操作类
    User user =new User(); //用户对象
    public final static int PICTURE=10; //通过相册获取用户头像的请求码
    public final static int CAMERA =11; //通过相机获取用户头像的请求码
    boolean userNameValid=true; //记录输入的用户名是否合法
    boolean registerFinish=false; //注册是否完成
    @Override

```

```

protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_register);
    //绑定组件
    register_btn=findViewById(R.id.register_button);
    name_et=findViewById(R.id.name_et);
    password_et=findViewById(R.id.passwd_et);
    email_et=findViewById(R.id.email_et);
    avatar_img=findViewById(R.id.avatar_img);
    //设置点击事件监听器
    avatar_img.setOnClickListener(this);
    register_btn.setOnClickListener(this);
    //设置用户名输入框的监视器
    name_et.addTextChangedListener(new TextWatcher() {
        @Override
        public void beforeTextChanged(CharSequence s, int start, int count, int
after) { }
        @Override
        public void onTextChanged(CharSequence s, int start, int before, int
count) {
            String name=s.toString();//获取用户输入的用户名
            if(db.haveUser(name)){ //该用户名已经存在
                name_et.setTextColor(Color.RED);
                userNameValid=false;
            }
            else {
                name_et.setTextColor(Color.BLACK);
                userNameValid=true;
            }
        }
        @Override
        public void afterTextChanged(Editable s) { }
    });
    //给用户数据库操作类赋值
    db=new UsersDBHelper(this);
}

@Override
public void onClick(View v) {
    String name=name_et.getText().toString();
    String password=password_et.getText().toString();
    String email=name_et.getText().toString();
    switch (v.getId()){
        case R.id.register_button:
            if(registerFinish){
                Intent intent = new Intent(RegisterActivity.this,
HomeActivity.class );
                intent.putExtra("name",name);
                startActivity(intent);
                this.finish();
            }
            if(!userNameValid){
                toast("该用户名已经被使用!");
                return;
            }
            User.setName(name);
            User.setPassword(password);
            User.setEmail(email);
            db.insertUser(User);
            MyUtils.toast(this,"注册成功");
            db.close();
            registerFinish=true;
            hideViews();
            //this.finish();
            break;
        case R.id.avatar_img:
            MyUtils.verifyStoragePermissions(this);
            getPhotoOrPicture();
            break;
    }
}

//注册成功后删除一些 view
private void hideViews(){
    ViewGroup parent =(ViewGroup) name_et.getParent();
    parent.removeView(email_et);
    parent.removeView(password_et);
    name_et.setFocusable(false);
    register_btn.setText("登录");
}

//弹出对话框，选择从哪里获得头像
private void getPhotoOrPicture(){

```

```

        final CharSequence[] options = { "从相机", "从相册", "取消" };
        AlertDialog.Builder builder = new
AlertDialog.Builder(RegisterActivity.this);
        builder.setTitle("选择一个头像");
        builder.setItems(options, new DialogInterface.OnClickListener() {
            @Override
            public void onClick(DialogInterface dialog, int item) {
                if (item==0){ // 打开系统相机获取头像图片
                    Intent camera = new Intent(MediaStore.ACTION_IMAGE_CAPTURE);
                    startActivityForResult(camera, CAMERA);
                }
                else if (item==1){ //打开系统相册获取头像图片
                    Intent intent = new
Intent(Intent.ACTION_PICK,android.provider.MediaStore.Images.Media.EXTERNAL_CONTENT_
URI);
                    startActivityForResult(intent, PICTURE);
                }
                else if (item==2) { //取消对话框
                    dialog.dismiss();
                }
            }
        });
        builder.show();
    }
    @Override
    protected void onActivityResult(int requestCode, int resultCode, @Nullable
Intent data) {
        super.onActivityResult(requestCode, resultCode, data);
        if(requestCode==PICTURE && resultCode==RESULT_OK && data!=null){
            String img_path=null;
            Uri uri=data.getData();
            img_path=uri.getPathSegments().get(1);
            MyUtils.Log(img_path);
            Bitmap decodeFile= BitmapFactory.decodeFile(img_path);
            Bitmap zoomBitmap = MyUtils.zoomImg(decodeFile,200,200);
            Drawable avatar_drawable=new BitmapDrawable(zoomBitmap);
            avatar_img.setImageDrawable(avatar_drawable);
            User.setAvatar(avatar_drawable);
        }
        else if(requestCode== CAMERA && resultCode==RESULT_OK && data!=null){
            Bundle bundle = data.getExtras();
            // 获取相机返回的数据，并转换为图片格式
            Bitmap bitmap = (Bitmap) bundle.get("data");
            Bitmap zoomBitmap = MyUtils.zoomImg(bitmap,200,200);
            Drawable avatar_drawable=new BitmapDrawable(zoomBitmap);
            avatar_img.setImageDrawable(avatar_drawable);
            User.setAvatar(avatar_drawable);
        }
    }
    //-----toast
    public void toast( String text){
        Toast toast=Toast.makeText(RegisterActivity.this, text, Toast.LENGTH_SHORT);
        toast.setGravity(Gravity.CENTER, 0, 0);
        toast.show();
    }
}

```

activity_register.xml

```

<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:focusableInTouchMode="true"
    android:gravity="center|top"

    >

    <ImageView
        android:id="@+id/avatar_img"
        android:layout_height="100dp"
        android:layout_width="100dp"
        android:layout_centerHorizontal="true"
        android:layout_marginVertical="20dp"
        android:layout_marginHorizontal="40dp"
        android:src="@drawable/default_avatar"/>

    <EditText
        android:id="@+id/name_et"
        android:layout_width="match_parent"
        android:layout_height="60dp"
        android:layout_marginVertical="10dp"
        android:layout_marginHorizontal="40dp"
    >

```

```

        android:background="@drawable/edittext_selector"
        android:hint="@string/name"
        android:selectAllOnFocus="false"
        android:singleLine="false"
        android:visibility="visible"
        android:textAlignment="center"/>

<EditText
    android:id="@+id/passwd_et"
    android:inputType="textPassword"
    android:layout_width="match_parent"
    android:layout_height="60dp"
    android:layout_marginVertical="10dp"
    android:layout_marginHorizontal="40dp"
    android:background="@drawable/edittext_selector"
    android:hint="@string/passwd"
    android:selectAllOnFocus="false"
    android:singleLine="false"
    android:visibility="visible"
    android:textAlignment="center"/>

<EditText
    android:id="@+id/email_et"
    android:inputType="textEmailAddress"
    android:layout_width="match_parent"
    android:layout_height="60dp"
    android:layout_marginVertical="10dp"
    android:layout_marginHorizontal="40dp"
    android:background="@drawable/edittext_selector"
    android:hint="@string/email"
    android:selectAllOnFocus="false"
    android:singleLine="false"
    android:visibility="visible"
    android:textAlignment="center"/>

<Button
    android:id="@+id/register_button"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginVertical="10dp"
    android:layout_marginHorizontal="40dp"
    android:layout_below="@+id/email_et"
    android:text="@string/register"
    android:background="@drawable/button_selector"/>
</LinearLayout>

```

ResetPasswordActivity.java

```

package com.rom471.main;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.ImageView;
import com.rom471.lab1.R;
import com.rom471.userdb.MyUtils;
import com.rom471.userdb.UsersDBHelper;

public class ResetPasswordActivity extends AppCompatActivity implements
View.OnClickListener {
    Button resetPassword_btn;
    EditText name_et;
    EditText email_et;
    EditText newPassword_et;
    ImageView avatar_img;
    UsersDBHelper db;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_reset_password);
        //绑定组件
        resetPassword_btn=findViewById(R.id.register_button);
        name_et=findViewById(R.id.name_et);
        newPassword_et=findViewById(R.id.passwd_et);
        email_et=findViewById(R.id.email_et);
        avatar_img=findViewById(R.id.avatar_img);
        //设置监听器
        avatar_img.setOnClickListener(this);
        resetPassword_btn.setOnClickListener(this);
        //初始化数据库操作类
        db=new UsersDBHelper(this);
    }
}

```



```

@Override
public void onClick(View v) {
    if (v.getId() == R.id.register_button) {
        String name = name_et.getText().toString();
        String password = newPassword_et.getText().toString();
        String email = email_et.getText().toString();
        if(!db.haveUser(name)){
            MyUtils.toast(this, "该用户不存在! ");
            return;
        }
        //修改密码成功会产生变化
        int i = db.updatePasswordByNameAndEmail(name, email, password);
        if(i<=0){ //没有变化, 代表邮箱不匹配
            MyUtils.toast(this, "邮箱信息不匹配");
            return;
        }else {
            // 密码重置成功
            MyUtils.toast(this, "密码重设成功");
        }
    }
}
}
}

```

布局文件activity_reset_password.xml

```

<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:focusableInTouchMode="true"
    >
    <ImageView
        android:id="@+id/avatar_img"
        android:layout_height="120dp"
        android:layout_width="120dp"
        android:scaleType="fitXY"
        android:layout_centerHorizontal="true"
        android:layout_margin="40dp"
        android:src="@drawable/changepassword"/>
    <EditText
        android:id="@+id/name_et"
        android:layout_width="match_parent"
        android:layout_height="65dp"
        android:layout_marginLeft="30dp"
        android:layout_marginRight="30dp"
        android:layout_below="@+id/avatar_img"
        android:layout_weight="1"

        android:background="@drawable/edittext_selector"
        android:hint="@string/name_reset"
        android:selectAllOnFocus="false"
        android:singleLine="false"
        android:visibility="visible"
        android:textAlignment="center"/>
    <EditText
        android:id="@+id/email_et"
        android:inputType="textEmailAddress"
        android:layout_width="match_parent"
        android:layout_height="65dp"
        android:layout_marginTop="10dp"
        android:layout_marginLeft="30dp"
        android:layout_marginRight="30dp"
        android:layout_marginBottom="10dp"
        android:layout_below="@+id/name_et"
        android:layout_weight="1"
        android:background="@drawable/edittext_selector"
        android:hint="@string/email_reset"
        android:selectAllOnFocus="false"
        android:singleLine="false"
        android:visibility="visible"
        android:textAlignment="center"/>
    <EditText
        android:id="@+id/passwd_et"
        android:inputType="textPassword"
        android:layout_width="match_parent"
        android:layout_height="65dp"
        android:layout_marginTop="10dp"
        android:layout_marginLeft="30dp"
        android:layout_marginRight="30dp"

```

```

        android:layout_marginBottom="10dp"
        android:layout_below="@+id/email_et"
        android:layout_weight="1"
        android:background="@drawable/edittext_selector"
        android:hint="@string/passwd_new"
        android:selectAllOnFocus="false"
        android:singleLine="false"
        android:visibility="visible"
        android:textAlignment="center"/>
<Button
    android:id="@+id/register_button"
    android:layout_width="80dp"
    android:layout_height="50dp"
    android:layout_below="@+id/passwd_et"
    android:layout_centerHorizontal="true"
    android:text="@string/passwd_reset"
    android:background="@drawable/button_selector"/>
</RelativeLayout>

```

HomeActivity.java

```

package com.rom471.main;
import android.app.Fragment;
import android.app.FragmentManager;
import android.app.FragmentTransaction;
import android.content.Intent;
import android.os.Bundle;
import android.widget.RadioButton;
import android.widget.RadioGroup;
import androidx.appcompat.app.AppCompatActivity;
import com.rom471.lab1.R;
import com.rom471.main.fragments.AllAppsFragment;
import com.rom471.main.fragments.FavoriteFragment;
import java.util.ArrayList;
import java.util.List;

public class HomeActivity extends AppCompatActivity implements
RadioGroup.OnCheckedChangeListener {
    public static final String TAG="cedar";
    RadioGroup mRadioGroup;
    RadioButton rb1,rb2;

    String name; // 登录的用户名
    private List<Fragment> fragments = new ArrayList<>();
    private Fragment fragment;
    private FragmentManager fm;
    private FragmentTransaction transaction;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        // 绑定资源
        setContentView(R.layout.activity_home);
        mRadioGroup=findViewById(R.id.radioGroup1);
        rb1=findViewById(R.id.radio1);
        rb2=findViewById(R.id.radio2);
        // 初始 Fragments
        initFragments();
        // 设置默认显示 fragment
        setDefaultFragment();
        // 设置监听器
        mRadioGroup.setOnCheckedChangeListener(this);
    }
    // 返回登录界面传递的用户名信息
    public String getName(){
        Intent intent=getIntent();
        name=intent.getStringExtra("name");
        return name;
    }
    // 设置默认的 fragment 为收藏界面
    private void setDefaultFragment(){
        fm=getFragmentManager();
        transaction=fm.beginTransaction();
        fragment=fragments.get(1);
        transaction.replace(R.id.mFragment,fragment,"favorite");
    }

```

```

        transaction.commit();
    }
    // 初始化 Fragments
    private void initFragments(){
        fragments.add(new AllAppsFragment());
        fragments.add(new FavoriteFragment());
    }

    @Override
    public void onCheckedChanged(RadioGroup group, int checkedId) {
        transaction=fm.beginTransaction();
        switch (checkedId){
            case R.id.radio1:
                fragment=fragments.get(0);
                transaction.replace(R.id.mFragment,fragment,"all");
                break;
            case R.id.radio2:
                fragment=fragments.get(1);
                transaction.replace(R.id.mFragment,fragment,"favorite");
                break;
        }
        transaction.commit();
    }
}

```

布局文件layout_all_fragment.xml

```

<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical">

    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:gravity="center">

        <TextView
            android:id="@+id/name"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_gravity="center"

            android:padding="10dp"
            android:text="所有应用"
            android:textSize="20sp" />

        <EditText
            android:id="@+id/search_box"
            android:layout_width="250dp"

            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:singleLine="true"
            android:visibility="invisible" />

        <ImageView
            android:id="@+id/search_btn"

            android:layout_width="wrap_content"
            android:layout_height="30dp"
            android:layout_marginRight="10dp"
            android:layout_weight="1"
            android:src="@drawable/find" />

    </LinearLayout>
    <TextView
        android:layout_width="match_parent"
        android:layout_height="2dp"
        android:background="#dddddd" />
    <ListView
        android:id="@+id/app_list"

```

```
        android:layout_width="match_parent"
        android:layout_height="wrap_content" />
</LinearLayout>
```

布局文件layout_like_fragment.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#F7F7F7"
    android:orientation="vertical">

    <TextView
        android:id="@+id/like_tile"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginVertical="10dp"
        android:gravity="center"
        android:textSize="20dp" />

    <TextView
        android:layout_width="match_parent"
        android:layout_height="2dp"
        android:background="#dddddd" />

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

    <LinearLayout
        android:id="@+id/empty_view"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginVertical="40dp"
        android:gravity="center"
        android:orientation="vertical">

        <ImageView
            android:id="@+id/radio1"
            android:layout_width="100dp"
            android:layout_height="wrap_content"
            android:src="@drawable/apps_selector" />

        <TextView
            android:layout_width="match_parent"
            android:layout_height="wrap_content"

            android:gravity="center"
            android:text="@string/empty_hint"
            android:textSize="20dp" />

    </LinearLayout>
</LinearLayout>
```

FavoriteFragment.java

```
package com.rom471.main.fragments;

import android.app.Fragment;
import android.os.Bundle;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.TextView;
import androidx.annotation.NonNull;
import androidx.annotation.Nullable;
import androidx.recyclerview.widget.DefaultItemAnimator;
import androidx.recyclerview.widget.GridLayoutManager;
import androidx.recyclerview.widget.RecyclerView;
import com.rom471.adapters.FavoriteListAdapter;
import com.rom471.appsdB.AppBean;
```

```

import com.rom471.lab1.R;
import com.rom471.main.HomeActivity;

public class FavoriteFragment extends Fragment {
    RecyclerView favoriteListView; //列表视图
    TextView tile_tv;
    FavoriteListAdapter mAdapter;
    public FavoriteFragment(){
    }
    @Nullable
    @Override
    public View onCreateView(@NonNull LayoutInflater inflater,
@Nullable ViewGroup container, @Nullable Bundle savedInstanceState)
    {
        return inflater.inflate(R.layout.layout_like_fragment,
container, false);
    }
    @Override
    public void onActivityCreated(@Nullable Bundle
savedInstanceState) {
        super.onActivityCreated(savedInstanceState);
        //绑定资源
        tile_tv= getActivity().findViewById(R.id.like_tile);
        String userName = ((HomeActivity) getActivity()).getName();
        String db_name=userName+".db";
        favoriteListView
=getActivity().findViewById(R.id.users_listview);
        mAdapter=new FavoriteListAdapter(getContext(),db_name);
        favoriteListView.setLayoutManager(new
GridLayoutManager(getContext(),2));
        favoriteListView.setAdapter(mAdapter);
        //给 recyclerview 设置动画
        DefaultItemAnimator defaultItemAnimator = new
DefaultItemAnimator();
        defaultItemAnimator.setRemoveDuration(300);
        favoriteListView.setItemAnimator(defaultItemAnimator);
        //设置标题标签
        tile_tv.setText(userName+"我的收藏列表");
    }
    public boolean hasAppName(String appname){
        return mAdapter.hasAppName(appname);
    }
    public void insertApp(AppBean app){
        mAdapter.insertApp(app);
    }
}

```

layout favorite fragment.xml

```

<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#F7F7F7"
    android:orientation="vertical">

    <TextView
        android:id="@+id/like_tile"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginVertical="10dp"
        android:gravity="center"
        android:textSize="20dp" />

    <TextView
        android:layout_width="match_parent"
        android:layout_height="2dp"

```

```

        android:background="#dddddd" />

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

<LinearLayout
    android:id="@+id/empty_view"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginVertical="40dp"
    android:gravity="center"
    android:orientation="vertical">

    <ImageView
        android:id="@+id/radio1"
        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:src="@drawable/apps_selector" />

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"

        android:gravity="center"
        android:text="@string/empty_hint"
        android:textSize="20dp" />

</LinearLayout>
</LinearLayout>

```

AllAppsFragment.java

```

public class AllAppsFragment extends Fragment implements
View.OnClickListener, TextWatcher {
    AllListAdapter appAdapter;
    ListView app_list_view;
    ImageView search_btn;
    EditText search_box;
    PackageManager pm;
    FavoriteFragment favoriteFragment;
    @Nullable
    @Override
    public View onCreateView(@NonNull LayoutInflater inflater,
@Nullable ViewGroup container, @Nullable Bundle savedInstanceState)
    {
        return
inflater.inflate(R.layout.layout_all_fragment,container,false);
    }
    @Override
    public void onActivityCreated(@Nullable Bundle
savedInstanceState) {
        super.onActivityCreated(savedInstanceState);
        FragmentManager fragmentManager=getFragmentManager();
        favoriteFragment=(FavoriteFragment)
fragmentManager.findFragmentByTag("favorite");
        search_btn=getActivity().findViewById(R.id.search_btn);
        search_box=getActivity().findViewById(R.id.search_box);
        search_btn.setOnClickListener(this);
        search_box.addTextChangedListener(this);
        app_list_view=getActivity().findViewById(R.id.app_list);
        appAdapter =new AllListAdapter(getContext());
        pm=getContext().getPackageManager();
    }
}

```

```

        getApplist();
        app_list_view.setOnItemClickListener(new
AdapterView.OnItemClickListener() {
            @Override
            public void onItemClick(AdapterView<?> parent, View
view, int position, long id) {
                AppBean app=appAdapter.get(position);
                if(favoriteFragment!=null &&
favoriteFragment.hasAppName(app.getAppname())){
                    Toast.makeText(getContext(),"该应用已经被收藏
",Toast.LENGTH_SHORT).show();
                    return;
                }
                try {
                    favoriteFragment.insertApp(app);
                    Animation animation =
AnimationUtils.loadAnimation(getContext(),R.anim.item_add_anim);
                    view.startAnimation(animation);
                    appAdapter.notifyDataSetChanged();
                }catch (Exception e){
                    e.printStackTrace();
                }
            }
        });
    }
    private void getApplist(){

        List<PackageInfo> packages=pm.getInstalledPackages(0);
        appAdapter =new AllListAdapter(getContext());
        for(PackageInfo packageInfo:packages){
            if((packageInfo.applicationInfo.flags&
ApplicationInfo.FLAG_SYSTEM)==0) { //非系统应用
                ApplicationInfo info = packageInfo.applicationInfo;
                AppBean app=new AppBean();
                String name = info.loadLabel(pm).toString();
                app.setAppname(name);
                app.setPkghname(info.packageName);
                app.setIcon(info.loadIcon(pm));
                app.setLiked(favoriteFragment.hasAppName(name));
                appAdapter.add(app);
            }
            else{ //系统应用，暂时不添加
                ApplicationInfo info = new ApplicationInfo();
                info.name =
packageInfo.applicationInfo.loadLabel(pm).toString();
                AppBean app=new AppBean();
                String name = info.loadLabel(pm).toString();
                app.setAppname(name);
                app.setPkghname(info.packageName);
                app.setIcon(info.loadIcon(pm));
                app.setLiked(favoriteFragment.hasAppName(name));
                appAdapter.add(app);
            }
        }
        app_list_view.setAdapter(appAdapter);
    }

    @Override
    public void onClick(View v) {
        switch (v.getId()){
            case R.id.search_btn:
                search_box.setVisibility(View.VISIBLE);
                break;
        }
    }

```

```

    }
}
@Override
public void beforeTextChanged(CharSequence s, int start, int
count, int after) {

}
@Override
public void onTextChanged(CharSequence s, int start, int
before, int count) {
    appAdapter.getFilter().filter(s);
}

@Override
public void afterTextChanged(Editable s) {

}

}

```

layout all fragment.xml

```

<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical">
    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:gravity="center">
        <TextView
            android:id="@+id/name"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_gravity="center"
            android:padding="10dp"
            android:text="所有应用"
            android:textSize="20sp" />

        <EditText
            android:id="@+id/search_box"
            android:layout_width="250dp"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:singleline="true"
            android:visibility="invisible" />

        <ImageView
            android:id="@+id/search_btn"
            android:layout_width="wrap_content"
            android:layout_height="30dp"
            android:layout_marginRight="10dp"
            android:layout_weight="1"
            android:src="@drawable/find" />
    </LinearLayout>
    <TextView
        android:layout_width="match_parent"
        android:layout_height="2dp"
        android:background="#dddddd" />
    <ListView
        android:id="@+id/app_list"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" />
</LinearLayout>

```

FavoriteListAdapter.java


```

public class FavoriteListAdapter extends
RecyclerView.Adapter<RecyclerView.ViewHolder> {
    private List<AppBean> mAppsList;
    private final int SHOW_MENU = 1;
    private final int HIDE_MENU = 2;
    AppDAO dao; //用户收藏数据库操作类
    Context context;
    PackageManager pm;
    public FavoriteListAdapter(Context context, String db_name) {
        this.context=context;
        this.mAppsList = mAppsList;
        dao=getDao(db_name);
        initApps();
    }
    @NonNull
    @Override
    public RecyclerView.ViewHolder onCreateViewHolder(@NonNull
    ViewGroup parent, int viewType) {
        View view;
        if(viewType==SHOW_MENU){
            view=
            LayoutInflater.from(parent.getContext()).inflate(R.layout.favorite_
            app_item_menu,parent,false);
            return new MenuViewHolder((view));
        }
        else {
            view=
            LayoutInflater.from(parent.getContext()).inflate(R.layout.favorite_
            app_item,parent,false);
            ViewHolder holder=new ViewHolder(view);
            return holder;
        }
    }
    public void showMenu(int position) {
        for(int i=0; i<mAppsList.size(); i++){
            mAppsList.get(i).setShowMenu(false);
        }
        mAppsList.get(position).setShowMenu(true);
        notifyDataSetChanged();
    }
    public void closeMenu() {
        for(int i=0; i<mAppsList.size(); i++){
            mAppsList.get(i).setShowMenu(false);
        }
        notifyDataSetChanged();
    }
    //渲染数据到 View 中
    @Override
    public void onBindViewHolder(RecyclerView.ViewHolder holder,
    final int position) {
        //默认项目
        if(holder instanceof ViewHolder){
            ViewHolder mHolder=(ViewHolder) holder;
            AppBean app=mAppsList.get(position);
            mHolder.appIcon.setBackground(app.getIcon());
            mHolder.appName.setText(app.getAppname());
            mHolder.list.setOnClickListener(new
            View.OnClickListener() {
                @Override
                public void onClick(View v) {
                    if(position<mAppsList.size())
                        showMenu(position);
                }
            });
        }
    }
}

```

```

    }
    //项目菜单
    if(holder instanceof MenuViewHolder){
        MenuViewHolder mHolder=(MenuViewHolder) holder;
        AppBean app=mAppsList.get(position);
        mHolder.appName.setText(app.getAppname());
        mHolder.list.setOnClickListener(new
View.OnClickListener() {
            @Override
            public void onClick(View v) {
                closeMenu();
            }
        });
        mHolder.delete.setOnClickListener(new
View.OnClickListener() {
            @Override
            public void onClick(View v) {
                dao.deleteApp(mAppsList.get(position));
                mAppsList.remove(position);
                notifyItemRemoved(position);

notifyItemRangeChanged(position,mAppsList.size()-position);
            }
        });
        mHolder.open.setOnClickListener(new
MyOnclickListenr(context,mAppsList.get(position).getPkgname()));
    }
    //可以接受参数的点击监听器
    private class MyOnclickListenr implements View.OnClickListener{
        Context context;
        String pkgname;
        public MyOnclickListenr(Context context,String pkgname){
            this.context=context;
            this.pkgname=pkgname;
        }
        @Override
        public void onClick(View v) {
            try {
                Intent intent
=context.getPackageManager().getLaunchIntentForPackage(pkgname);
                context.startActivity(intent);
                toast("启动成功");
            }catch (Exception e){
                toast("打开失败");
            }
        }
    }
    @Override
    public int getItemViewType(int position) {
        if(mAppsList.get(position).isShowMenu()){
            return SHOW_MENU;
        }else{
            return HIDE_MENU;
        }
    }
    @Override
    public int getItemCount() {
        return mAppsList.size();
    }
    static class ViewHolder extends RecyclerView.ViewHolder {
        ImageView appIcon;
        TextView appName;
        LinearLayout list;
        public ViewHolder(View view) {
            super(view);

```

```

        appIcon = (ImageView)
view.findViewById(R.id.item_icon);
        appName = (TextView) view.findViewById(R.id.item_name);
        list=view.findViewById(R.id.item_list_layout);

    }
}
public class MenuViewHolder extends RecyclerView.ViewHolder{
    TextView appName;
    LinearLayout list;
    Button delete;
    Button open;

    public MenuViewHolder(View view){
        super(view);
        list=view.findViewById(R.id.item_list_layout);
        appName = (TextView) view.findViewById(R.id.item_name);
        delete=(Button)
view.findViewById(R.id.recycle_menu_delete);
        open=(Button)
view.findViewById(R.id.recycle_menu_open);

    }
}
//获得收藏应用数据库操作对象
private AppDAO getDao(String db_name){
    AppDataBase db = Room.databaseBuilder(context,
AppDataBase.class, db_name).allowMainThreadQueries().build();
    return db.getAppDAO();
}
private void initApps(){
    pm=context.getPackageManager();
    mAppsList=dao.getAllApps();
    for (AppBean app:mAppsList
    ) {
        try {
            ApplicationInfo appInfo =
pm.getApplicationInfo(app.getPkgname(),
PackageManager.GET_META_DATA);

            Drawable appIcon = pm.getApplicationIcon(appInfo);
            app.setIcon(appIcon);
            app.setShowMenu(false);

        } catch (PackageManager.NameNotFoundException e) {
            e.printStackTrace();
        }
    }
}
public boolean hasAppName(String appname){

    for (AppBean app:
        mAppsList) {
        if(app.getAppname().equals(appname)){

            return true;
        }
    }
    return false;
}
//添加进收藏
public void insertApp(AppBean app){
    app.setLiked(true);
    mAppsList.add(app);
    dao.insertApp(app);
}
}

```

```

        public void toast( String text){
            Toast toast=Toast.makeText(context, text,
Toast.LENGTH_SHORT);
            toast.setGravity(Gravity.CENTER, 0, 0);
            toast.show();
        }
    }
}

```

AllListAdapter.java

```

public class AllListAdapter extends BaseAdapter implements
Filterable {
    public static final String TAG=
AllListAdapter.class.getSimpleName();
    private List<AppBean> appList;
    private List<AppBean> allAppList;
    private LayoutInflater mInflater;
    PackageManager pm;
    public AllListAdapter(Context context){
        appList =new ArrayList<>();
        mInflater=LayoutInflater.from(context);
        pm=context.getPackageManager();
    }

    public void add(AppBean app){
        this.appList.add(app);
    }
    @Override
    public int getCount() {
        return appList ==null?0: appList.size();
    }
    @Override
    public Object getItem(int position) {
        return appList ==null?null: appList.get(position);
    }
    @Override
    public long getItemId(int position) {
        return position;
    }
    @RequiresApi(api = Build.VERSION_CODES.Q)
    @Override
    public View getView(int position, View convertView, ViewGroup
parent) {
        ViewHolder holder=null;
        if(convertView==null){
            holder=new ViewHolder();
convertView=mInflater.inflate(R.layout.app_list_layout,null);
            bindView(convertView,holder);
            convertView.setTag(holder);
        }else {
            holder= (ViewHolder) convertView.getTag();
        }
        renderView(position,holder);
        return convertView;
    }
    public void bindView(View convertView,ViewHolder holder){
        holder.icon=convertView.findViewById(R.id.appicon);
        holder.liked =convertView.findViewById(R.id.Liked);
        holder.appname=convertView.findViewById(R.id.appname);
    }
    @RequiresApi(api = Build.VERSION_CODES.Q)
    public void renderView(int position, ViewHolder holder){
        AppBean appinfo= appList.get(position);
        if(appinfo.isLiked()){

```

```

        holder.liked.setBackgroundResource(R.drawable.stared);
    }else {
        holder.liked.setBackgroundResource(R.drawable.star);
    }
    Drawable icon=appinfo.getIcon();
    holder.icon.setBackground(icon);
    holder.appname.setText(appinfo.getAppname());
}

public AppBean get(int position) {
    return appList.get(position);
}

@Override
public Filter getFilter() {
    if(allAppList==null){
        allAppList=applist;
    }
    Filter filter=new Filter() {
        @Override
        protected FilterResults performFiltering(CharSequence
constraint) {
            FilterResults results = new FilterResults();
            ArrayList<AppBean> filteredApps = new
ArrayList<>();

            constraint = constraint.toString().toLowerCase();
            for (int i = 0; i < allAppList.size(); i++) {
                AppBean app = allAppList.get(i);
                if
(app.getAppname().toLowerCase().contains(constraint.toString())) {
                    filteredApps.add(app);
                }
            }
            results.count =filteredApps.size();
            results.values = filteredApps;
            return results;
        }

        @Override
        protected void publishResults(CharSequence constraint,
FilterResults results) {
            appList = (List<AppBean>) results.values;
            notifyDataSetChanged();
        }
    };
    return filter;
}

class ViewHolder{
    public ImageView icon; //显示应用图标
    public ImageView liked;//显示受否被收藏
    public TextView appname;//显示应用标签
}
}

```

与用户数据库操作有关的类

User.java

```

package com.rom471.userdb;
import android.content.Context;
import android.content.res.Resources;
import android.graphics.Bitmap;
import android.graphics.BitmapFactory;
import android.graphics.drawable.BitmapDrawable;
import android.graphics.drawable.Drawable;
import java.io.ByteArrayOutputStream;

```

```

public class User {
    private int id;
    private String name;
    private String password;
    private String email;
    private Drawable avatar;
    public void setAvatar(Drawable avatar) {
        this.avatar = avatar;
    }
    public User() {
        this.name = null;
        this.password = null;
        this.email = null;
    }
    @Override
    public String toString() {
        return "User{" +
            "id=" + id +
            ", name='" + name + '\'' +
            ", password='" + password + '\'' +
            ", avatarUrl='" + email + '\'' +
            '}';
    }

    public User( String name, String password, String email) {

        this.name = name;
        this.password = password;
        this.email = email;
    }
    //指定资源 id, 来设置用户的头像
    public void setAvatarResource(Context context, int id){
        Resources resources=context.getResources();
        Bitmap bmp= BitmapFactory.decodeResource(resources, id);
        ByteArrayOutputStream baos=new ByteArrayOutputStream();
        bmp.compress(Bitmap.CompressFormat.PNG,100,baos);//压缩图片
        byte[] bytes = baos.toByteArray();
        this.avatar = byteToDrawable(bytes);
    }
    public Drawable getAvatar() {
        return avatar;
    }
    public byte[] getAvatarBytes(){
        return MyUtils.drawableToByteArray(this.avatar);
    }
    public static Drawable byteToDrawable(byte[] data) {
        if (data == null)
            return null;
        else
            return new
BitmapDrawable(BitmapFactory.decodeByteArray(data, 0,
data.length));
    }
    public int getId() {
        return id;
    }

    public void setId(int id) {
        this.id = id;
    }

    public String getName() {
        return name;
    }

    public String getPassword() {

```

```

        return password;
    }

    public void setPassword(String password) {
        this.password = password;
    }

    public void setName(String name) {
        this.name = name;
    }

    public String getEmail() {
        return email;
    }

    public void setEmail(String email) {
        this.email = email;
    }
}

```

UsersDBHelper.java

```

package com.rom471.userdb;

import android.content.ContentValues;
import android.content.Context;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;
import android.graphics.BitmapFactory;
import android.graphics.drawable.BitmapDrawable;
import android.graphics.drawable.Drawable;
import com.rom471.lab1.R;
import java.util.ArrayList;
import java.util.List;

public class UsersDBHelper extends SQLiteOpenHelper {
    public static final String TAG="cedar";
    //数据库名字
    public static final String DB_NAME="users.db";
    //存放用户信息的表名
    public static final String TABLE_NAME="User";
    public static final int DB_VERSION=1;
    //内部 Context 引用
    private Context context;
    //内部数据库引用
    private SQLiteDatabase db;
    public void close(){
        db.close();
        super.close();
    }
    @Override
    public void onCreate(SQLiteDatabase db) {
    }
    @Override
    public void onUpgrade(SQLiteDatabase db, int oldVersion, int
newVersion) {
    }
    //初始化内部引用
    public UsersDBHelper(Context context){
        super(context,DB_NAME,null,DB_VERSION);
        db=super.getWritableDatabase();
        this.context=context;
    }
    //创建用户信息表
    public void createUserTable(){
        final String CREATE_USER="create table User ("
            + "uid integer primary key autoincrement,"

```

```

        + "name text ,"
        + "password text,"
        + "email text,"
        + "avatar blob");
    db.execSQL(CREATE_USER);
}

public void dropTable(String table_name){
    db.execSQL("drop table if exists "+table_name);
}
//判断是否存在表
public boolean havingTable(String table_name){
    Cursor cursor;
    boolean a=false;
    cursor = db.rawQuery("select name from sqlite_master where
type='table' ", null);
    while(cursor.moveToNext()) {
        //遍历出表名
        String name = cursor.getString(0);
        if (name.equals(table_name)) { //存在表
            cursor = db.query(table_name, null, null, null,
null, null, null);
            //检查是不是空表
            if (cursor.getCount() > 0) {
                cursor.close();
                return true;
            } else //空表
            {
                cursor.close();
                return false;
            }
        }
    }
    cursor.close();
    return false;
}

//用测试数据初始化数据库
public void InitialWithTestData(){
    if(havingTable(TABLE_NAME))
        return;
    createUserTable();

    addUserWithAvatar("xzs","cedar","527@qq.com",R.drawable.avatar_xxs);
    ;

    addUserWithAvatar("wjf","wjf","wjf@qq.com",R.drawable.avatar_wjf);

    addUserWithAvatar("wkq","wkq",null,R.drawable.avatar3);

}
//添加带头像的用户
private void addUserWithAvatar(String name,String
password,String email,int rid){
    User User =new User(name,password,email);
    User.setAvatarResource(context,rid);
    this.insertUser(User);
}
private void addUserBasic(String name,String password){
    User User =new User(name,password,null);
    this.insertUser(User);
}
//向表中插入一个用户
public void insertUser(User User){
    ContentValues contentValues=new ContentValues();
    //contentValues.put("id",user.getId());

```



```

        contentValues.put("name", User.getName());
        contentValues.put("password", User.getPassword());
        contentValues.put("email", User.getEmail());
        contentValues.put("avatar", User.getAvatarBytes());
        db.insert(TABLE_NAME, null, contentValues);
    }
    //查询所有用户并返回
    public List<User> queryAll(){
        List<User> Users =new ArrayList<>();
        String sql = "SELECT uid,name,password,email,avatar FROM "+TABLE_NAME + " ";
        Cursor cursor=db.rawQuery(sql,null);

        while(cursor.moveToNext()){
            int id=cursor.getInt(cursor.getColumnIndex("uid"));
            String
name=cursor.getString(cursor.getColumnIndex("name"));
            String
password=cursor.getString(cursor.getColumnIndex("password"));
            String
email=cursor.getString(cursor.getColumnIndex("email"));
            User User =new User(name,password,email);
            User.setId(id);
            byte [] bytes=null;
            Drawable avatar=null;
            bytes=cursor.getBlob(cursor.getColumnIndex("avatar"));
            if(bytes!=null){
                avatar= new
BitmapDrawable(BitmapFactory.decodeByteArray(bytes, 0,
bytes.length));
                User.setAvatar(avatar);
            }
            Users.add(User);
        }
        cursor.close();
        return Users;
    }
    //判断用户名是否存在
    public boolean haveUser(String name){
        String sql=" select * from "+TABLE_NAME+ " where name = ?";
        Cursor cursor=db.rawQuery(sql,new String[]{name});
        if(cursor.moveToFirst()==true){
            cursor.close();
            return true;
        }
        cursor.close();
        return false;
    }
    //使用用户名和密码登录
    public boolean loginWith(String name,String password){
        String sql=" select * from "+TABLE_NAME+ " where name = ?
and password=?";
        Cursor cursor=db.rawQuery(sql,new String[]{name,password});
        if(cursor.moveToFirst()==true){
            cursor.close();
            return true;
        }
        cursor.close();
        return false;
    }
    //由用户名获取头像
    public Drawable getAvatarByName(String name){
        String sql = "SELECT avatar FROM "+TABLE_NAME + " WHERE name
= ?";
        Drawable avatar=null;
        byte[] bytes;

```

```

        Cursor cursor=db.rawQuery(sql,new String[]{name});
        if(cursor.moveToFirst()){

if((bytes=cursor.getBlob(cursor.getColumnIndex("avatar")))!=null){
    avatar= new
BitmapDrawable(BitmapFactory.decodeByteArray(bytes, 0,
bytes.length));
    }
    }
    cursor.close();
    return avatar;
}
//提供用户名, 修改密码, 返回数据库中有几行被修改了。
public int updatePasswordByName(String name,String password){
    ContentValues values=new ContentValues();
    values.put("password",password);
    int update = db.update(TABLE_NAME, values, "name = ?", new
String[]{name});
    return update;
}
//提供用户名和邮箱, 修改密码, 返回数据库中有几行被修改了。
public int updatePasswordByNameAndEmail(String name,String
email,String password){
    ContentValues values=new ContentValues();
    values.put("password",password);
    int update = db.update(TABLE_NAME, values, "name = ? and
email = ?", new String[]{name ,email});
    return update;
}
}

```

与应用收藏有关的数据库操作类

AppBean.java

```

package com.rom471.appsdb;

import android.graphics.drawable.Drawable;
import androidx.room.Entity;
import androidx.room.Ignore;
import androidx.room.Index;
import androidx.room.PrimaryKey;
@Entity(indices = {
    @Index(value = "id"),
    @Index(value = "pkgname",unique = true)
})
public class AppBean {
    @PrimaryKey(autoGenerate = true)
    private int id;
    String appname;
    String pkgname;
    @Ignore
    Drawable icon;
    @Ignore
    private boolean showMenu = false;
    @Ignore
    private boolean liked=false;

    public boolean isLiked() {
        return liked;
    }

    public void setLiked(boolean liked) {
        this.liked = liked;
    }

    public boolean isShowMenu() {

```

```

        return showMenu;
    }

    public void setShowMenu(boolean showMenu) {
        this.showMenu = showMenu;
    }

    public Drawable getIcon() {
        return icon;
    }

    public void setIcon(Drawable icon) {
        this.icon = icon;
    }

    public AppBean() {
    }

    public String getAppname() {
        return appname;
    }

    public int getId() {
        return id;
    }

    public void setId(int id) {
        this.id = id;
    }

    public void setAppname(String appname) {
        this.appname = appname;
    }

    public String getPkgname() {
        return pkgname;
    }

    public void setPkgname(String pkgname) {
        this.pkgname = pkgname;
    }
}

```

AppDAO.java

```

package com.rom471.appsdbs;

import androidx.room.Dao;
import androidx.room.Delete;
import androidx.room.Insert;
import androidx.room.Query;
import androidx.room.Update;
import java.util.List;

@Dao
public interface AppDAO {
    @Insert
    void insertApp(AppBean...appBeans);

    @Update
    void updateApp(AppBean...appBeans);
    @Delete
    void deleteApp(AppBean...appBeans);

    @Query("delete from AppBean")
    void deleteAll();
    @Query("select * from AppBean order by id desc")
    List<AppBean> getAllApps();
}

```

```
}
```

AppDataBase.java

```
package com.rom471.appsdb;

import androidx.room.Database;
import androidx.room.RoomDatabase;
@Database(entities = {AppBean.class}, version = 1, exportSchema =
false)
public abstract class AppDataBase extends RoomDatabase {
    public abstract AppDAO getAppDAO();
}
```

工具类MyUtils.java

```
package com.rom471.userdb;

import android.app.Activity;
import android.content.Context;
import android.content.pm.PackageManager;
import android.graphics.Bitmap;
import android.graphics.Matrix;
import android.graphics.drawable.BitmapDrawable;
import android.graphics.drawable.Drawable;
import android.util.Log;
import android.view.Gravity;
import android.widget.Toast;

import androidx.core.app.ActivityCompat;

import java.io.ByteArrayOutputStream;

public class MyUtils {
    public static Bitmap zoomImg(Bitmap bm, int newWidth , int
newHeight){
        // 获得图片的宽高
        int width = bm.getWidth();
        int height = bm.getHeight();
        // 计算缩放比例
        float scaleWidth = ((float) newWidth) / width;
        float scaleHeight = ((float) newHeight) / height;
        // 取得想要缩放的 matrix 参数
        Matrix matrix = new Matrix();
        matrix.postScale(scaleWidth, scaleHeight);
        // 得到新的图片
        Bitmap newbm = Bitmap.createBitmap(bm, 0, 0, width, height,
matrix, true);
        return newbm;
    }

    public static void toast(Context context, String text){
        Toast toast=Toast.makeText(context, text,
Toast.LENGTH_SHORT);
        toast.setGravity(Gravity.CENTER, 0, 0);
        toast.show();
    }

    public static byte[] drawableToByteArray(Drawable d) {

        if (d != null) {
            Bitmap imageBitmap = ((BitmapDrawable) d).getBitmap();
            ByteArrayOutputStream baos = new
ByteArrayOutputStream();
            imageBitmap.compress(Bitmap.CompressFormat.PNG, 100,
baos);
            byte[] byteData = baos.toByteArray();
        }
    }
}
```

```

        return byteData;
    } else
        return null;
}

public static void log(String...strs){
    StringBuilder sb=new StringBuilder();
    for (String str:strs
        ) {
        sb.append(str).append(" ");
    }
    Log.d("cedar", sb.toString());
}

//先定义
private static final int REQUEST_EXTERNAL_STORAGE = 1;

private static String[] PERMISSIONS_STORAGE = {
    "android.permission.READ_EXTERNAL_STORAGE",
    "android.permission.WRITE_EXTERNAL_STORAGE" };

//然后通过一个函数来申请
public static void verifyStoragePermissions(Activity activity)
{
    try {
        //检测是否有写的权限
        int permission =
ActivityCompat.checkSelfPermission(activity,
            "android.permission.WRITE_EXTERNAL_STORAGE");
        if (permission != PackageManager.PERMISSION_GRANTED) {
            // 没有写的权限，去申请写的权限，会弹出对话框
            ActivityCompat.requestPermissions(activity,
PERMISSIONS_STORAGE,REQUEST_EXTERNAL_STORAGE);
        }
    } catch (Exception e) {
        e.printStackTrace();
    }
}
}

```