Permissions-demo
see PermissionDemo project on course website

Define target SDK >23 (I choose 29) support down to 15 or so

add the following dependencies to `build.gradle (app)`
so we can import the Snackbar and use a constrainlayout

```
dependencies {
    implementation 'androidx.appcompat:appcompat:1.1.0'
implementation 'androidx.constraintlayout:constraintlayout:1.1.3'
implementation 'com.google.android.material:material:1.1.0'


}
```

In manifest ask for permission
we will only use the camera though
```
<uses-permission android:name="android.permission.CAMERA" />
<uses-permission
android:name="android.permission.WRITE_EXTERNAL_STORAGE" />
<uses-permission
android:name="android.permission.READ_EXTERNAL_STORAGE" />
```

in mainactivity.xml
add a start camera button and an onClick listener (doCamera) for it
alt enter to create doCamera in main
```
<Button
    android:id="@+id/button"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="8dp"
    android:layout_marginTop="8dp"
    android:layout_marginEnd="8dp"
    android:layout_marginBottom="8dp"
    android:text="Start Camera"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.54"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.151"
    android:onClick="startCamera"/>
```

mainactivity should **extends** AppCompatActivity

add a couple of member vars to the Activity
```
//all the permissions we need (although we are only using the
camera)
//this demonstrates how to ask for a bunch of permissions at one
time
private static final String[]
PERMISSIONS={Manifest.permission.WRITE_EXTERNAL_STORAGE,
Manifest.permission.READ_EXTERNAL_STORAGE,Manifest.permission.CAMERA}
;
private static final int PERMS_REQ_CODE = 200;
```

```
(BTW I'm cheating here, I'm going to use an intent to ask for
the camera, that app will run under that apps permissions)
```

algorithm
click button showcamera preview which calls startCamera(...)
it checks permissions
if you have em then starts the camera
else
request camera permissions

```java
public void startCamera(View view) {
    //TODO verify that app has permission to use camera
    //do we have needed permissions? if not
    if (!verifyPermissions())
        return;
    startCamera();
}
public void startCamera() {
    Intent intent = new Intent(MediaStore.ACTION_IMAGE_CAPTURE);
    startActivity(intent);
}
/**
 * Verify that the specific list of permisions requested have been
granted, otherwise ask for
 * these permissions.  Note this is coarse in that I assumme I need
them all
 */
private boolean verifyPermissions() {
    //loop through all permissions seeing if they are ALL granted
    //iff ALL granted then return true
    boolean allGranted = true;
```

```java
        for (String permission:PERMISSIONS){
            //a single false causes allGranted to be false
            allGranted = allGranted &&
(ActivityCompat.checkSelfPermission(this, permission ) ==
PackageManager.PERMISSION_GRANTED);
        }
        if (!allGranted) {
            //OH NO!, missing some permissions, offer rationale if needed
            for (String permission : PERMISSIONS) {
                if
(ActivityCompat.shouldShowRequestPermissionRationale(this,
permission)) {
                    Snackbar.make(findViewById(android.R.id.content),
                        permission+" WE GOTTA HAVE IT!",
Snackbar.LENGTH_LONG).show();
                }
            }
            //Okay now finally ask for them
            if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.M) {
                requestPermissions(PERMISSIONS, PERMS_REQ_CODE);
            }
        }
        //and return false until they are granted
        return allGranted;
    }
    /***
     * callback from requestPermissions
     * @param permsRequestCode   user defined code passed to
requestpermissions used to identify what callback is coming in
     * @param permissions        list of permissions requested
     * @param grantResults       //results of those requests
     */
    @Override
    public void onRequestPermissionsResult(int permsRequestCode, String[]
permissions, int[] grantResults) {
        boolean allGranted = true;
        switch (permsRequestCode) {
            case PERMS_REQ_CODE:
                for (int result: grantResults){
                    allGranted = allGranted&&(result==
PackageManager.PERMISSION_GRANTED);
                }
                break;
        }
        if (allGranted)
            //TODO do your work here
            startCamera();
    }
```