

# TASK GUIDE (B4.01)

## A. Objectives.

Student will start an Android project to create an Android application that contains several activities entitled Animal Tour. First with project configuration and resource configuration.

## B. Requirements.

Hardware:

- 2 GB RAM minimum, 8 GB RAM recommended
- 2 GB of available disk space minimum, 4 GB Recommended (500 MB for IDE + 1.5 GB for Android SDK and emulator system image)
- 1280 x 800 minimum screen resolution
- Intel processor with support for Intel VT-x, Intel EM64T (Intel 64), and Execute Disable (XD) Bit functionality

Software:

- Microsoft Windows 7/8/10 (32-bit or 64-bit)
- JDK 8
- Android Studio IDE (Minimum 3.2) with AndroidX library.

## C. Resources.

Documents:

- Guide

Supplement files:

- YouTubeAndroidPlayerApi.jar
- amphibians1.png
- amphibians2.png
- amphibians3.png
- amphibians4.png
- amphibians5.png
- animalicon.png
- arachnids.jpg
- birds1.png
- birds2.png
- birds3.png
- birds4.png
- birds5.png
- crustaceans.jpg
- finish\_icon.png
- fishes1.png
- fishes2.png
- fishes3.png
- fishes4.png
- fishes5.png

- icon\_next.png
- icon\_prev.png
- insects.jpg
- inverts1.png
- inverts2.png
- inverts3.png
- inverts4.png
- inverts5.png
- invertbg.jpg
- mammals1.png
- mammals2.png
- mammals3.png
- mammals4.png
- mammals5.png
- molluscs.jpg
- reptiles1.png
- reptiles2.png
- reptiles3.png
- reptiles4.png
- reptiles5.png
- videoamphibians.mp4
- videobirds.mp4
- videofishes.mp4
- videomammals.mp4
- videoreptiles.mp4

Test code:

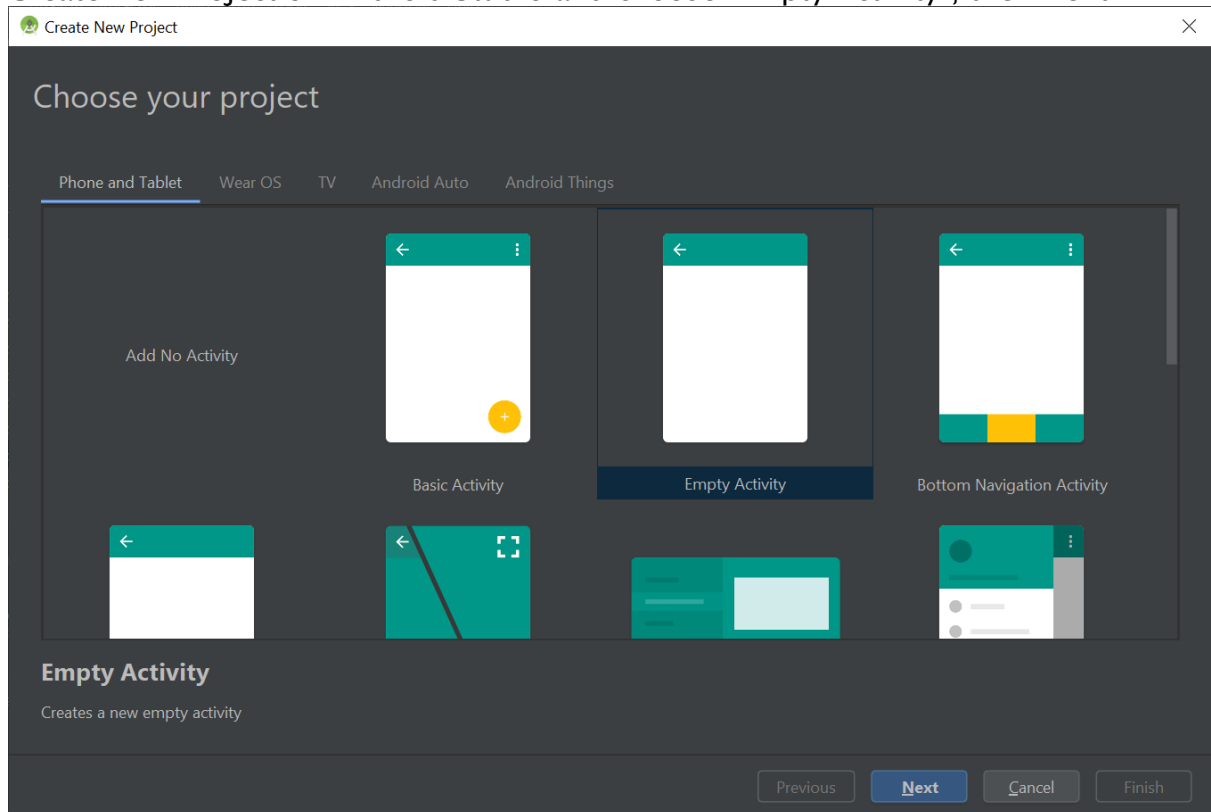
- TestB4MultimediaResources011.java

#### **D. Task Description.**

Student start to create a project configuration and resource configuration.

## E. Specification.

1. Create New Project on Android Studio and choose “Empty Activity”, then Next.

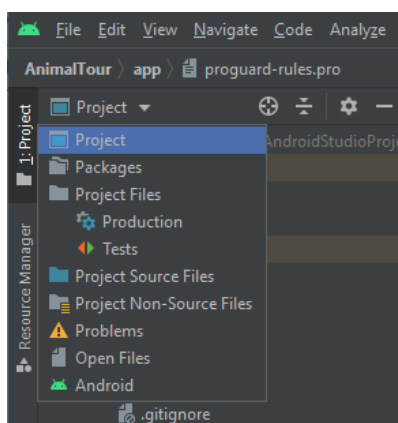


2. Project Configuration.

- Project Name: AnimalTour
- Package Name: org.aplas.animaltour
- Project Location: any
- Language: Java
- Target API Level: Android 6.0 (Marshmallow)
- Support instant apps: uncheck

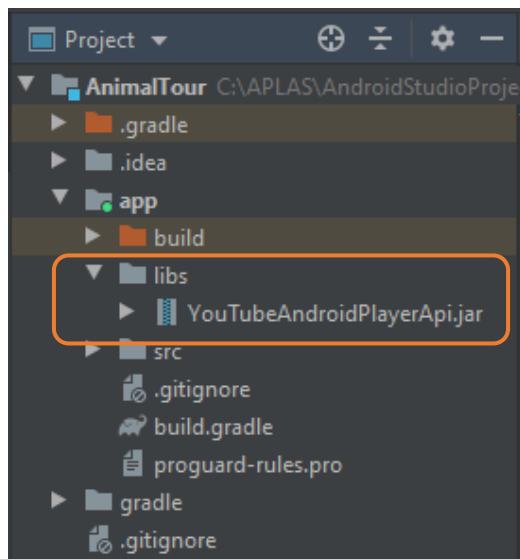
Then Click Finish.

3. Add additional library. Move to Project mode like below.

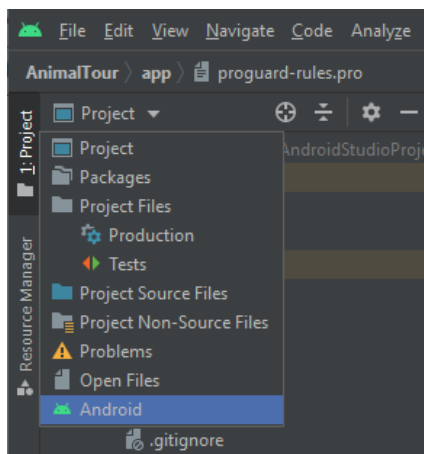


Copy file 'YouTubeAndroidPlayerApi.jar' in supplement folder to app/libs folder in the project. Or you can download the library on :

<https://developers.google.com/youtube/android/player/downloads>



Go back again to Android Mode.



#### 4. Change the content of “build.gradle (Module: app)” file like below, then **Sync** it.

```
plugins {
    id 'com.android.application'
}

android {
    compileSdkVersion 28
    testOptions.unitTests.includeAndroidResources = true

    defaultConfig {
        applicationId "org.aplas.animaltour"
        minSdkVersion 23
        targetSdkVersion 28
        versionCode 1
        versionName "1.0"

        testInstrumentationRunner "androidx.test.runner.AndroidJUnitRunner"
        testInstrumentationRunnerArguments clearPackageData: 'true'
        buildConfigField "int", "MIN_SDK_VERSION", "$minSdkVersion.apiLevel"
        buildConfigField "int", "TARGET_SDK_VERSION", "$targetSdkVersion.apiLevel"
    }

    buildTypes {
        release {
            minifyEnabled false
            proguardFiles getDefaultProguardFile('proguard-android-optimize.txt'),
'proguard-rules.pro'
        }
    }
    compileOptions {
        sourceCompatibility JavaVersion.VERSION_1_8
        targetCompatibility JavaVersion.VERSION_1_8
    }
    allprojects {
        tasks.withType(JavaCompile) {
            options.compilerArgs << "-Xlint:unchecked" << "-Xlint:deprecation"
        }
    }
    testOptions {
        execution 'ANDROIDX_TEST_ORCHESTRATOR'
    }
}

dependencies {
    implementation fileTree(dir: 'libs', include: ['*.jar'])
    implementation 'androidx.appcompat:appcompat:1.2.0'
    implementation 'androidx.recyclerview:recyclerview:1.1.0'
    implementation 'androidx.cardview:cardview:1.0.0'

    testImplementation 'junit:junit:4.13.1'
    testImplementation 'org.robolectric:robolectric:4.2.1'
    testImplementation 'androidx.test:core:1.3.0'

    implementation 'com.google.android.material:material:1.2.1'
    implementation files('libs/YouTubeAndroidPlayerApi.jar')
}
```

## RESOURCE CONFIGURATION

#### 5. Configure the necessary string resource(s)

name	value
app_name	APLAS Animal Tour
transition_name	fade_trans
insect_content	Insects or Insecta (from Latin insectum) are hexapod invertebrates and the largest group within the arthropod

	<p>phylum. Definitions and circumscriptions vary; usually, insects comprise a class within the Arthropoda. As used here, the term Insecta is synonymous with Ectognatha. Insects have a chitinous exoskeleton, a three-part body (head, thorax and abdomen), three pairs of jointed legs, compound eyes and one pair of antennae. Insects are the most diverse group of animals; they include more than a million described species and represent more than half of all known living organisms. The total number of extant species is estimated at between six and ten million; potentially over 90% of the animal life forms on Earth are insects. Insects may be found in nearly all environments, although only a small number of species reside in the oceans, which are dominated by another arthropod group, crustaceans.</p>
arachnid_content	<p>Arachnida (/əˈrækniðə/) is a class of joint-legged invertebrate animals (arthropods), in the subphylum Chelicerata. Arachnida includes orders containing spiders (the largest order), scorpions, ticks, mites, harvestmen, and solifuges. In 2019, a molecular phylogenetic study also placed horseshoe crabs in Arachnida. Almost all adult arachnids have eight legs, although the front pair of legs in some species has converted to a sensory function, while in other species, different appendages can grow large enough to take on the appearance of extra pairs of legs. The term is derived from the Greek word ἀράχνη (aráchnē), from the myth of the hubristic human weaver Arachne, who was turned into a spider.</p>
mollusc_content	<p>Mollusca is the second-largest phylum of invertebrate animals after the Arthropoda. The members are known as molluscs or mollusks[a] (/ˈmɒləsk/). Around 85,000 extant species of molluscs are recognized. The number of fossil species is estimated between 60,000 and 100,000 additional species. The proportion of undescribed species is very high. Many taxa remain poorly studied.</p>
crustacean_content	<p>Crustaceans (Crustacea /krʌˈsteɪʃə/) form a large, diverse arthropod taxon which includes such animals as crabs, lobsters, crayfish, shrimps, prawns, krill, woodlice, and barnacles. The crustacean group can be treated as a subphylum under the clade Mandibulata; because of recent molecular studies it is now well accepted that the crustacean group is paraphyletic, and comprises all animals in the clade Pancrustacea other than hexapods. Some crustaceans are more closely related to insects and other hexapods than they are to certain other crustaceans.</p>
invert_info	<p>Any animal that lacks a vertebral column, or backbone, in contrast to the cartilaginous or bony vertebrates. More than 90 percent of all living animal species are invertebrates.</p>

**Note: you can add other string resource definitions by yourself if necessary.**

6. Configure the necessary string array resource(s)

name	value
animal_icon	animfishes animamphibians animreptiles animbirds animmammals
animal_video	videofishes videoamphibians videoreptiles videobirds videomammals
animal_video	videofishes videoamphibians videoreptiles videobirds videomammals
animal_titles	Fishes Amphibians Reptiles Birds Mammals
animal_youtube	TJN3gJoZqIY XI8GPsf6Tac 6B0apT6VZKk 8vL_2rF8JHU hGonwMTPV6g
animal_info	<p>A group of cold-blooded vertebrates that breathe with gills rather than lungs, live in water, and generally lay eggs, although some bear their young alive.,</p> <p>A group of cold-blooded animals which can live on land or in water and who breathes with gills when young and with lungs as an adult.,</p> <p>A group of cold-blooded animals which have skins covered with small hard plates called scales and lay eggs.</p> <p>A group of warm-blooded vertebrates distinguished by their feathers and their two legs and two wings.</p> <p>A group of warm-blooded animals that is distinguished by the possession of hair or fur, females that secrete milk for the nourishment of the young, and (typically) the birth of live young.</p>

7. Configure the necessary color resource(s)

name	value
textTitle	#FCF08F

invert_color	#ACACAC
--------------	---------

Also create array of color. Define the array like point 6:

name	value
animal_color	#FFEB3B #FAC2C6 #A2FA92 #7491FF #F1B1FF

#### 8. Configure the necessary drawable resource(s)

Copy all pictures in supplement folder to drawable resource folder in Android Studio:

- amphibians1.png
- amphibians2.png
- amphibians3.png
- amphibians4.png
- amphibians5.png
- animalicon.png
- arachnids.jpg
- birds1.png
- birds2.png
- birds3.png
- birds4.png
- birds5.png
- crustaceans.jpg
- finish\_icon.png
- fishes1.png
- fishes2.png
- fishes3.png
- fishes4.png
- fishes5.png
- icon\_next.png
- icon\_prev.png
- insects.jpg
- inverts1.png
- inverts2.png
- inverts3.png
- inverts4.png
- inverts5.png
- invertbg.jpg
- mammals1.png
- mammals2.png
- mammals3.png
- mammals4.png

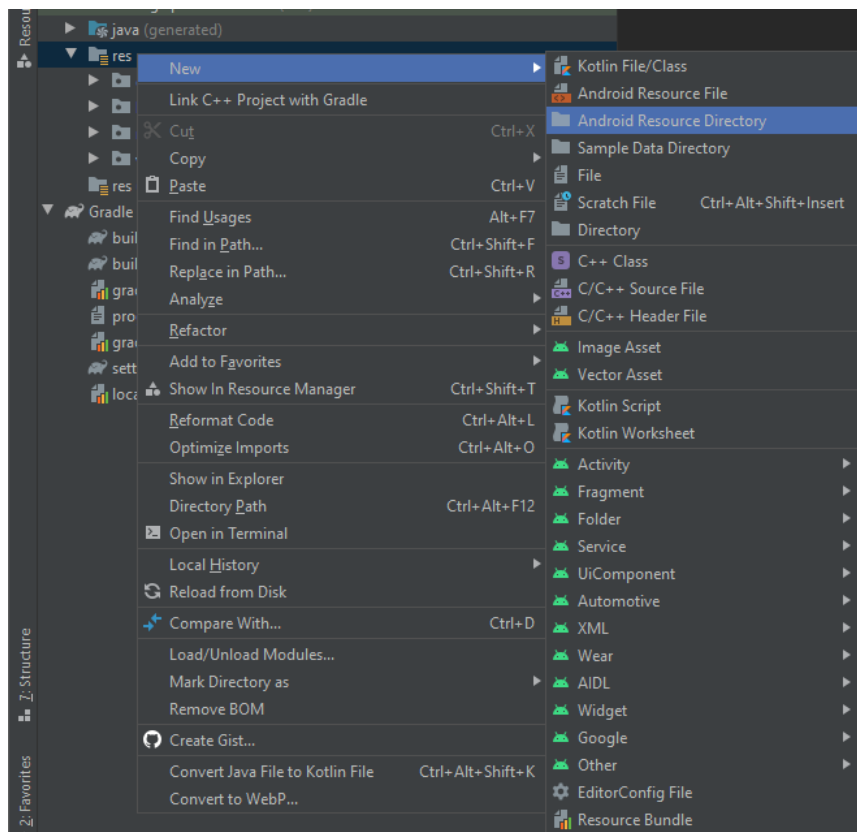


- mammals5.png
- molluscs.jpg
- reptiles1.png
- reptiles2.png
- reptiles3.png
- reptiles4.png
- reptiles5.png

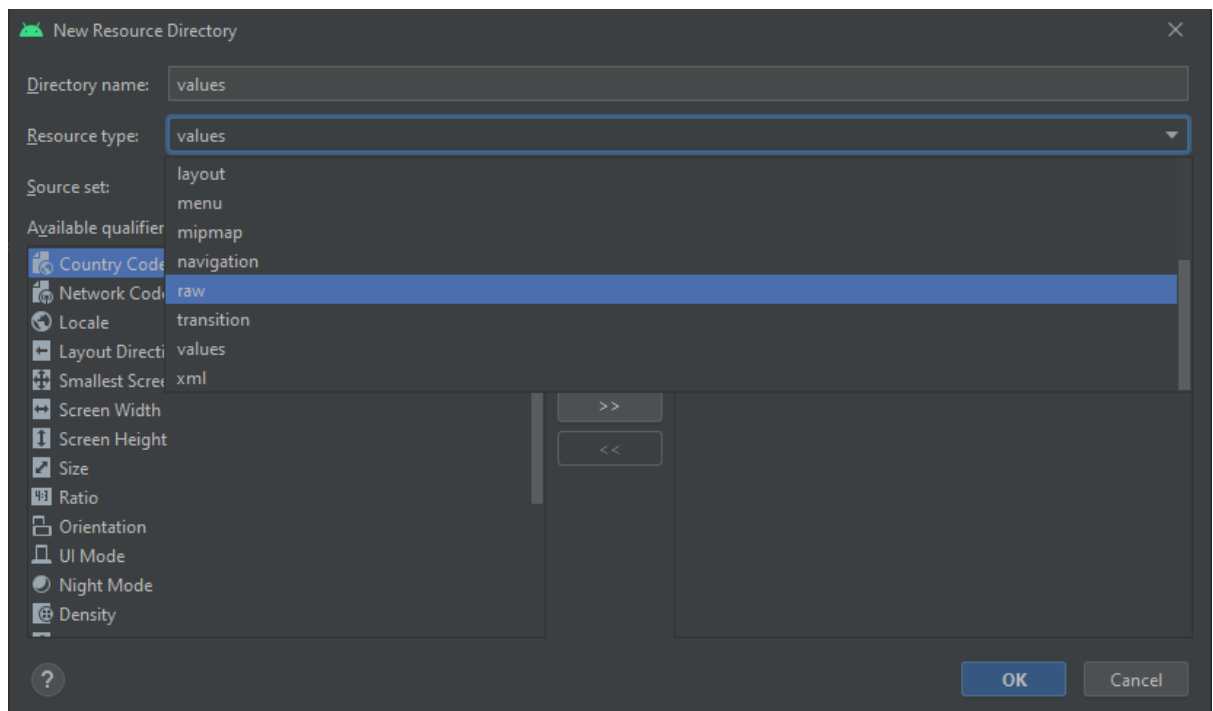
**Note: you can add other image/drawable resource definitions by yourself if necessary.**

#### 9. Configure the necessary raw resource(s).

In default raw resource is not created yet, we have to add a new resource directory.



Then choose Resource type = raw, like below, the click OK.

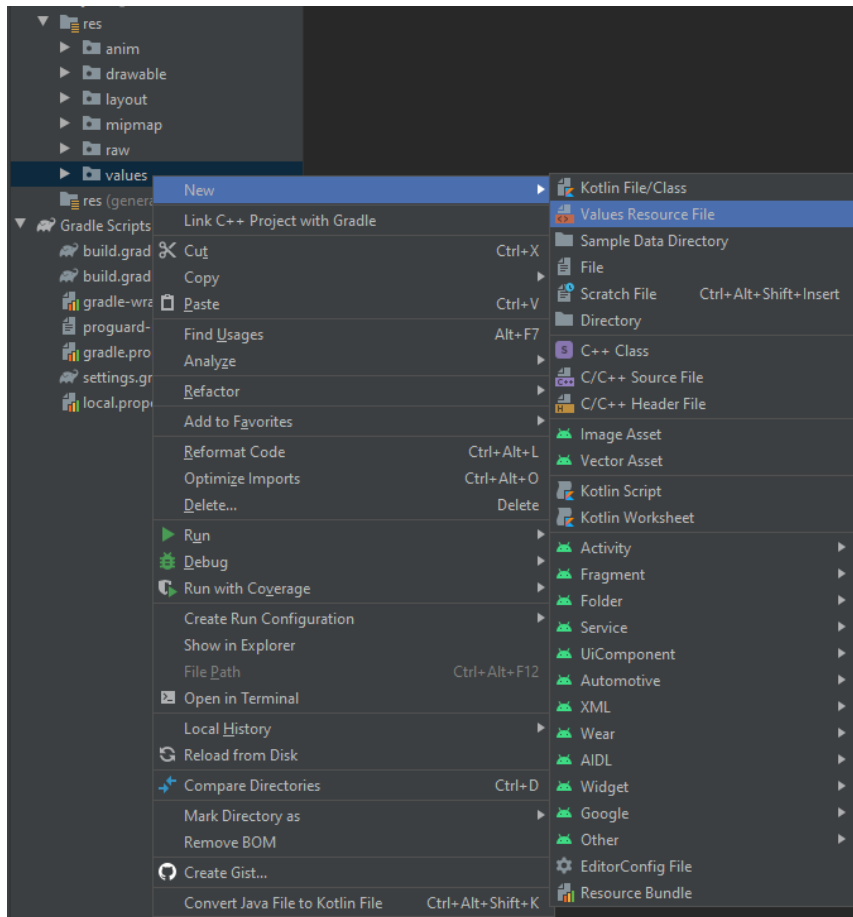


Copy all videos in supplement folder to raw resource folder in Android Studio:

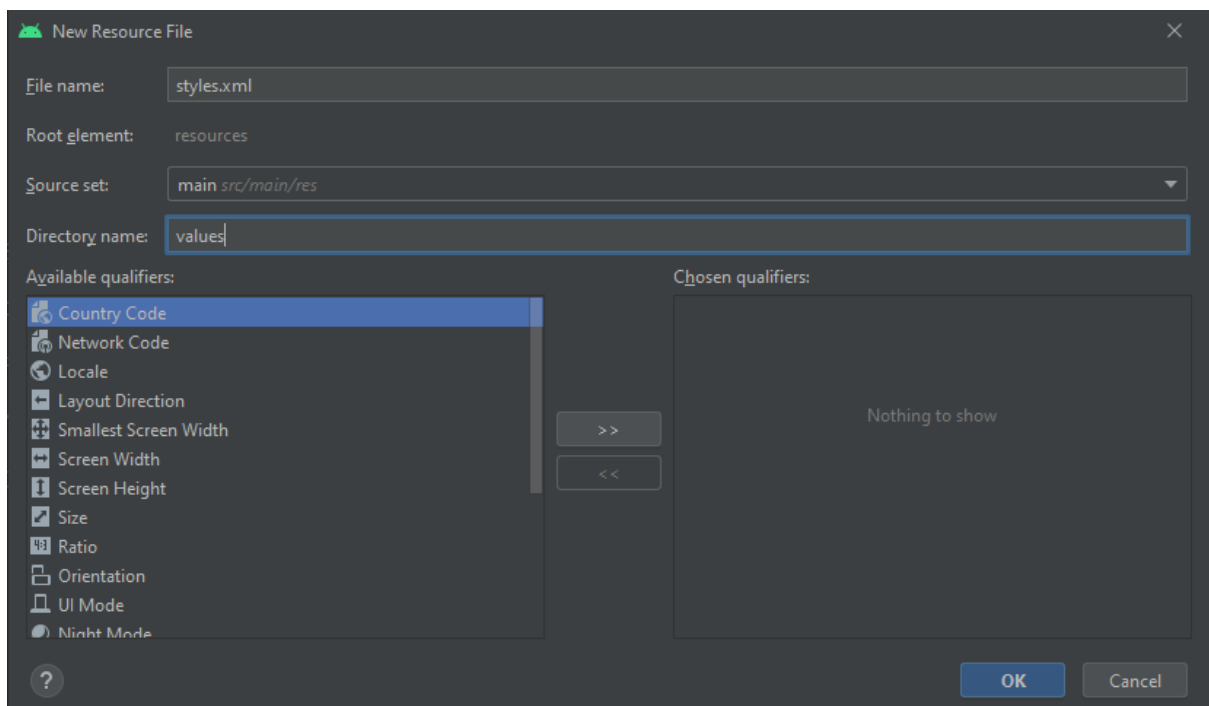
- videoamphibians.mp4
- videobirds.mp4
- videofishes.mp4
- videomammals.mp4
- videoreptiles.mp4

#### 10. Configure the style resource(s)

Add new value resource file with name 'style.xml' **if not exist**.



Fill like below



Inside 'resource' tag, insert a new style with name 'AppTheme' like below:

```
<style name="AppTheme" parent="Theme.MaterialComponents.DayNight.NoActionBar">
    <!-- Customize your theme here. -->
    <item name="colorPrimary">@color/colorPrimary</item>
    <item name="colorPrimaryDark">@color/colorPrimaryDark</item>
    <item name="colorAccent">@color/colorAccent</item>
    <item name="android:fontFamily">sans-serif-condensed</item>
    <item name="android:windowContentTransitions">true</item>
</style>
```

**Note: In this topic, you can modify the color and style of your application freely. You can apply your own taste of style/color combination for your own created application. Show your taste and be yourself !!**

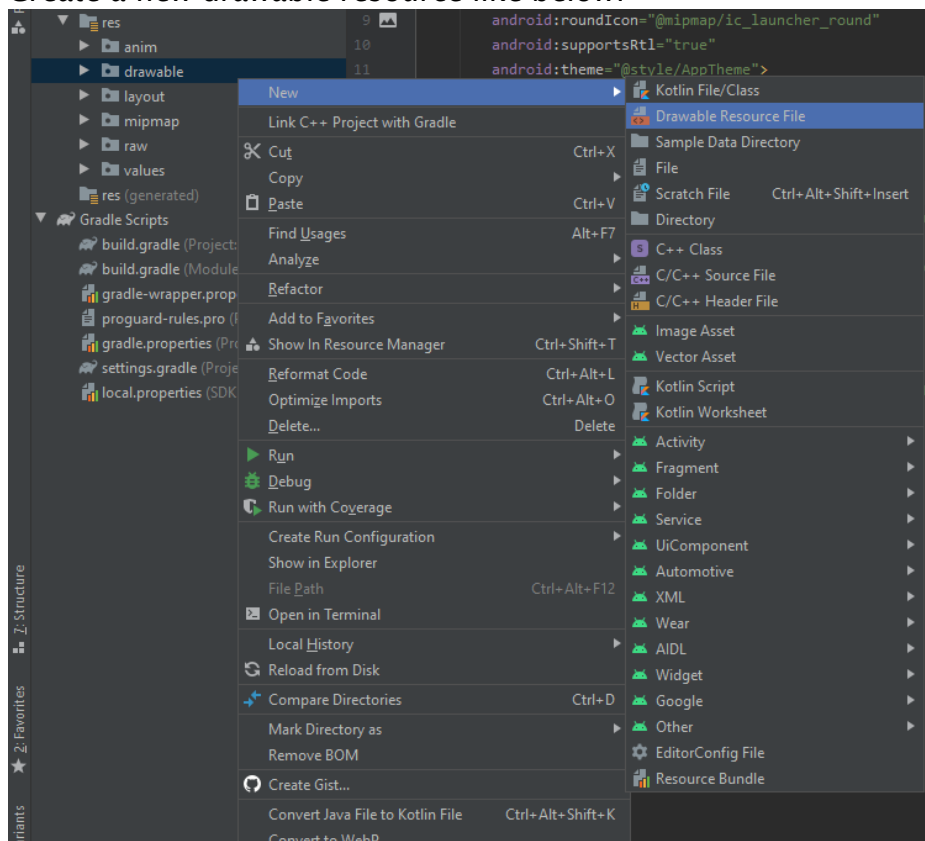
11. Set application Theme. Open the AndroidManifest.xml and change the 'android:theme' value become '@style/AppTheme'.

Set this application can access internet with adding this code in manifest file, outside 'application' tag:

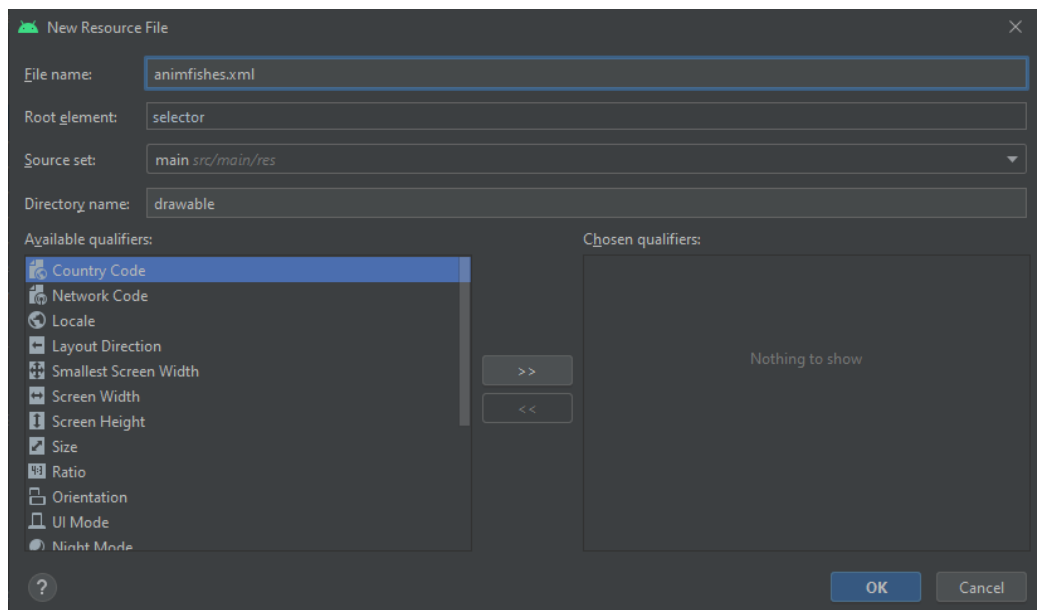
```
<uses-permission android:name="android.permission.INTERNET" />
```

12. Create drawable animation.

- Create a new drawable resource like below:



For animation of fish animal, use name 'animfishes.xml'



Put code like below in ‘animfishes.xml’:

```
<?xml version="1.0" encoding="utf-8"?>
<animation-list xmlns:android="http://schemas.android.com/apk/res/android"
    android:oneshot="false">
    <item android:drawable="@drawable/fishes1" android:duration="1000" />
    <item android:drawable="@drawable/fishes2" android:duration="1000" />
    <item android:drawable="@drawable/fishes3" android:duration="1000" />
    <item android:drawable="@drawable/fishes4" android:duration="1000" />
    <item android:drawable="@drawable/fishes5" android:duration="1000" />
</animation-list>
```

The code contains 5 images of fish animal. Use this template to create other animal animation.

- Create the drawable animation to bird, reptile, amphibian, mammal, and inverts animal with name ‘animbirds.xml’, ‘animreptiles.xml’, ‘animamphibians.xml’, ‘animmammals.xml’, and ‘animinverts.xml’.

13. Finally, change the content of “build.gradle (Module: app)” file like below, then **Sync it**.

```

plugins {
    id 'com.android.application'
}

android {
    compileSdkVersion 28
    testOptions.unitTests.includeAndroidResources = true

    defaultConfig {
        applicationId "org.aplas.animaltour"
        minSdkVersion 23
        targetSdkVersion 28
        versionCode 1
        versionName "1.0"
        testInstrumentationRunner "androidx.test.runner.AndroidJUnitRunner"
        testInstrumentationRunnerArguments clearPackageData: 'true'
        buildConfigField "int", "MIN_SDK_VERSION", "$minSdkVersion.apiLevel"
        buildConfigField "int", "TARGET_SDK_VERSION", "$targetSdkVersion.apiLevel"
    }

    buildTypes {
        release {
            minifyEnabled false
            proguardFiles getDefaultProguardFile('proguard-android-optimize.txt'),
'proguard-rules.pro'
        }
    }
    compileOptions {
        sourceCompatibility JavaVersion.VERSION_1_8
        targetCompatibility JavaVersion.VERSION_1_8
    }
    allprojects {
        tasks.withType(JavaCompile) {
            options.compilerArgs << "-Xlint:unchecked" << "-Xlint:deprecation"
        }
    }
    testOptions {
        execution 'ANDROIDX_TEST_ORCHESTRATOR'
    }
}

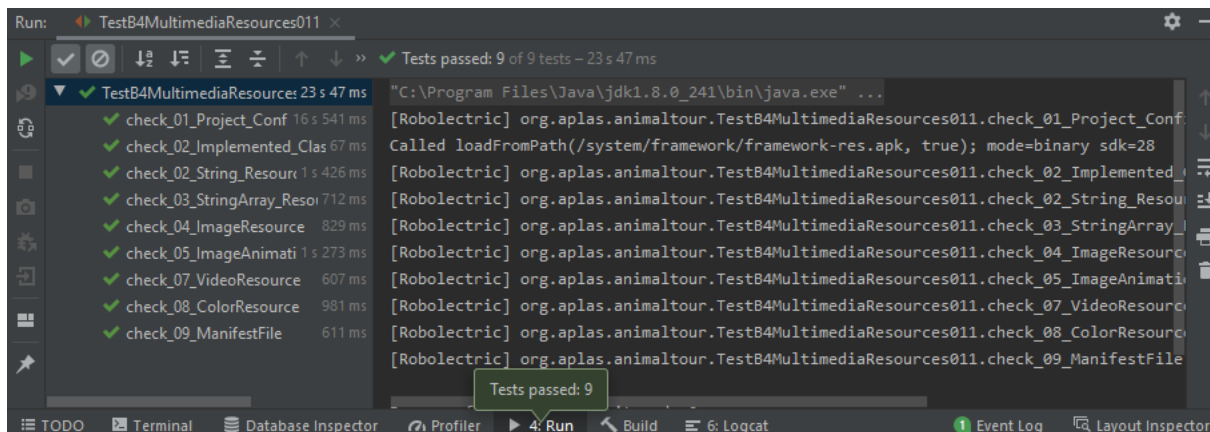
dependencies {
    implementation fileTree(dir: 'libs', include: ['*.jar'])
    implementation 'androidx.constraintlayout:constraintlayout:1.1.3'
    implementation 'androidx.appcompat:appcompat:1.2.0'
    implementation 'androidx.recyclerview:recyclerview:1.1.0'
    implementation 'androidx.cardview:cardview:1.0.0'

    testImplementation 'junit:junit:4.13.1'
    testImplementation 'org.robolectric:robolectric:4.2.1'
    testImplementation 'androidx.test:core:1.3.0'
    implementation 'com.google.android.material:material:1.2.1'
    implementation files('libs/YouTubeAndroidPlayerApi.jar')
}

```

## F. Testing.

1. Copy “ResourceTest.java”, “ViewTest.java”, “TestB4MultimediaResources011.java” file to “org.aplas.animaltour (test)” folder.
2. Right click on the “TestB4MultimediaResources 011.java” file then choose Run. It may take long time to execute.
3. Get the result of your task. If passed you will get green check like below. If the test failed, you will get orange check get the messages and you must check your work again.



**You have to try until get all green checks and continue to the next task.**