

Instructions for Lab 2b

CSE 162 - Mobile Computing - Lab



Start

New

Open

Save

Save As

Print

Share

Thumbnails

Close

Options

About

Pick a task...

New task

 New
Create a new blank image Open
Open an existing image

Screen Capture

Full-screen

Active Window

Window Control

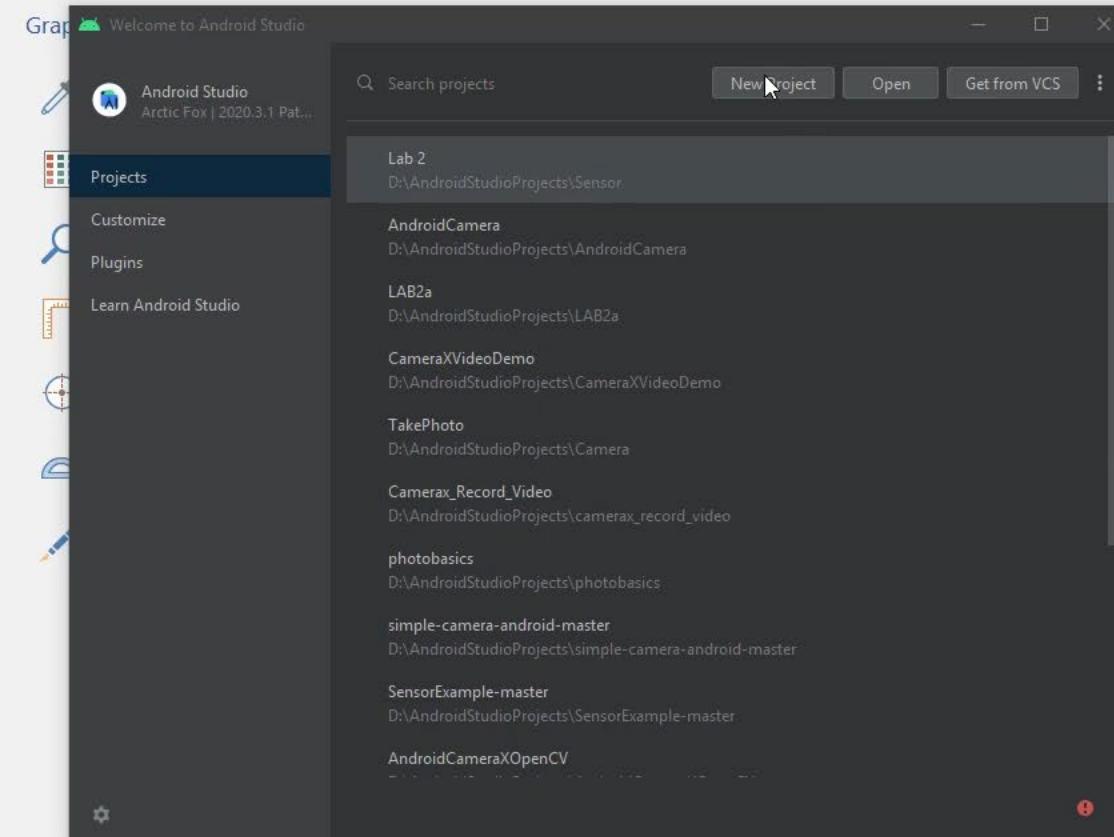
Scrolling Window

Region

Fixed Region

FreeHand

Repeat Last Capture





Start

New

Open

Save

Save As

Print

Share

Thumbnails

Close

Options

About

Pick a task...

New task

 New
Create a new blank image Open
Open an existing image

Screen Capture

Full-screen

Active Window

Window Control

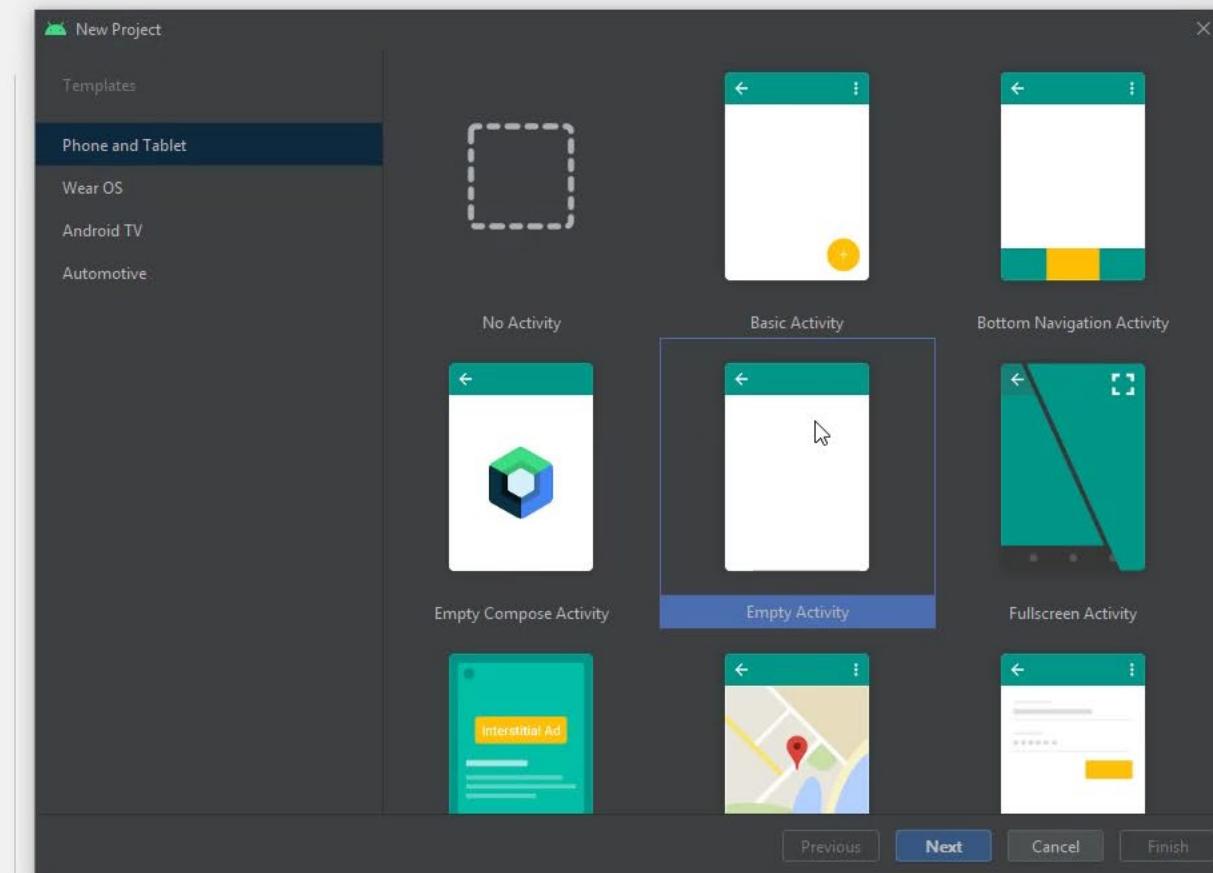
Scrolling Window

Region

Fixed Region

FreeHand

Repeat Last Capture





Start

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Open an existing image

Screen Capture

Full-screen

Active Window

Window Control

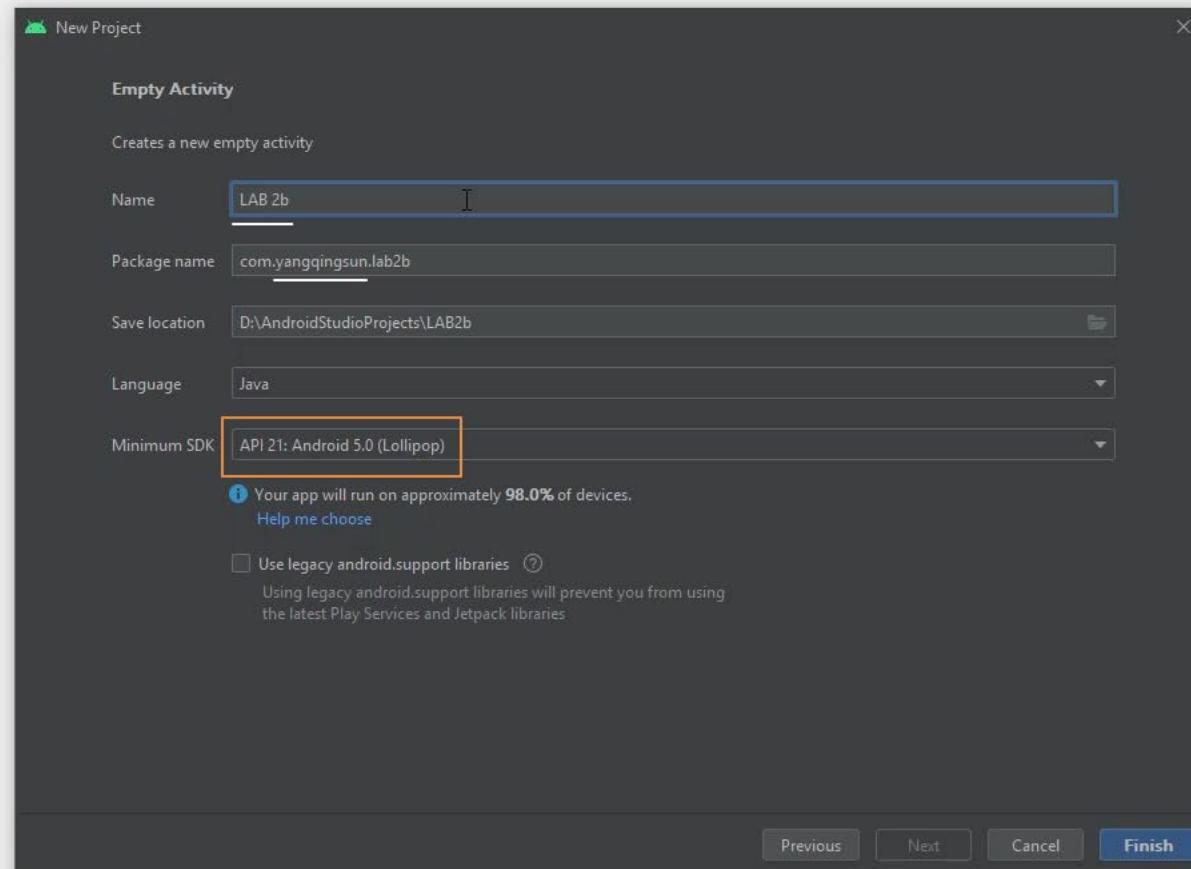
Scrolling Window

Region

Fixed Region

FreeHand

Repeat Last Capture



The screenshot shows the Android Studio interface with the following details:

- Top Bar:** File, Edit, View, Navigate, Code, Analyze, Refactor, Build, Run, Tools, VCS, Window, Help, LAB 2b - MainActivity.java [LAB_2b.app]
- Toolbar:** Includes icons for back, forward, search, and various developer tools.
- Project Navigational Bar:** LAB2b > app > src > main > java > com > yangqingsun > lab2b > MainActivity
- Project Tree (Left):** Shows the project structure under "app":
 - manifests
 - java
 - com.yangqingsun.lab2b
 - MainActivity
 - com.yangqingsun.lab2b (androidTest)
 - com.yangqingsun.lab2b (test)
 - res
 - Gradle Scripts
- Code Editor (Center):** Displays the MainActivity.java file with the following code:

```
1 package com.yangqingsun.lab2b;
2
3 import ...
4
5 public class MainActivity extends AppCompatActivity {
6
7     @Override
8     protected void onCreate(Bundle savedInstanceState) {
9         super.onCreate(savedInstanceState);
10        setContentView(R.layout.activity_main);
11    }
12}
```
- Right Side:** Shows "Syncing..." and other status indicators.
- Bottom Navigation Bar:** TODO, Problems, Terminal, Build, Logcat, Profiler, App Inspection, Event Log, Layout Inspector.

The screenshot shows the Android Studio interface with the following details:

- Top Bar:** File, Edit, View, Navigate, Code, Analyze, Refactor, Build, Run, Tools, VCS, Window, Help.
- Title Bar:** LAB 2b - activity_main.xml [LAB_2b.app]
- Project Tab:** Android, app, manifests, java, com.yangqingsun.lab2b (MainActivity selected), com.yangqingsun.lab2b (androidTest), com.yangqingsun.lab2b (test), res, Gradle Scripts.
- Code Editor (activity_main.xml):**

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello World!"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

</androidx.constraintlayout.widget.ConstraintLayout>
```
- Code Editor (MainActivity.java):** A partially visible Java file.
- Toolbar:** Back, Forward, Stop, Run, Build, Run, Device, Layout Validation, Analyzing...
- Side Panels:** Resource Manager, Structure, Favorites, Build Variants, Emulator, Device File Explorer.
- Bottom Navigation:** TODO, Problems, Terminal, Build, Logcat, Profiler, App Inspection, Event Log, Layout Inspector.

The screenshot shows the Android Studio interface with the following details:

- Top Bar:** File, Edit, View, Navigate, Code, Analyze, Refactor, Build, Run, Tools, VCS, Window, Help, LAB 2b - activity_main.xml [LAB_2b.app]
- Toolbar:** Includes icons for back, forward, search, and various tools.
- Project Tab:** Shows the project structure under "app".
- Resource Manager:** Shows "activity_main.xml" selected.
- Code Editor:** Displays the XML code for "activity_main.xml".

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello World!"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

</androidx.constraintlayout.widget.ConstraintLayout>
```
- Preview Tab:** Shows a preview of the layout.
- Bottom Navigation:** TODO, Problems, Terminal, Build, Logcat, Profiler, App Inspection, Event Log, Layout Inspector.

暂停

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help LAB 2b - activity_main.xml [LAB_2b.app]

LAB2b app src main res layout activity_main.xml

app Nexus 4 API 22

Project

app
manifests
java
com.yangqingsun.lab2b
MainActivity
com.yangqingsun.lab2b (androidTest)
com.yangqingsun.lab2b (test)
res
Gradle Scripts

Resource Manager

API

Gradle

Layout Validation

Structure

Favorites

Build Variants

Favorites

Build Variants

Build Variants

Build Variants

Build Variants

Build Variants

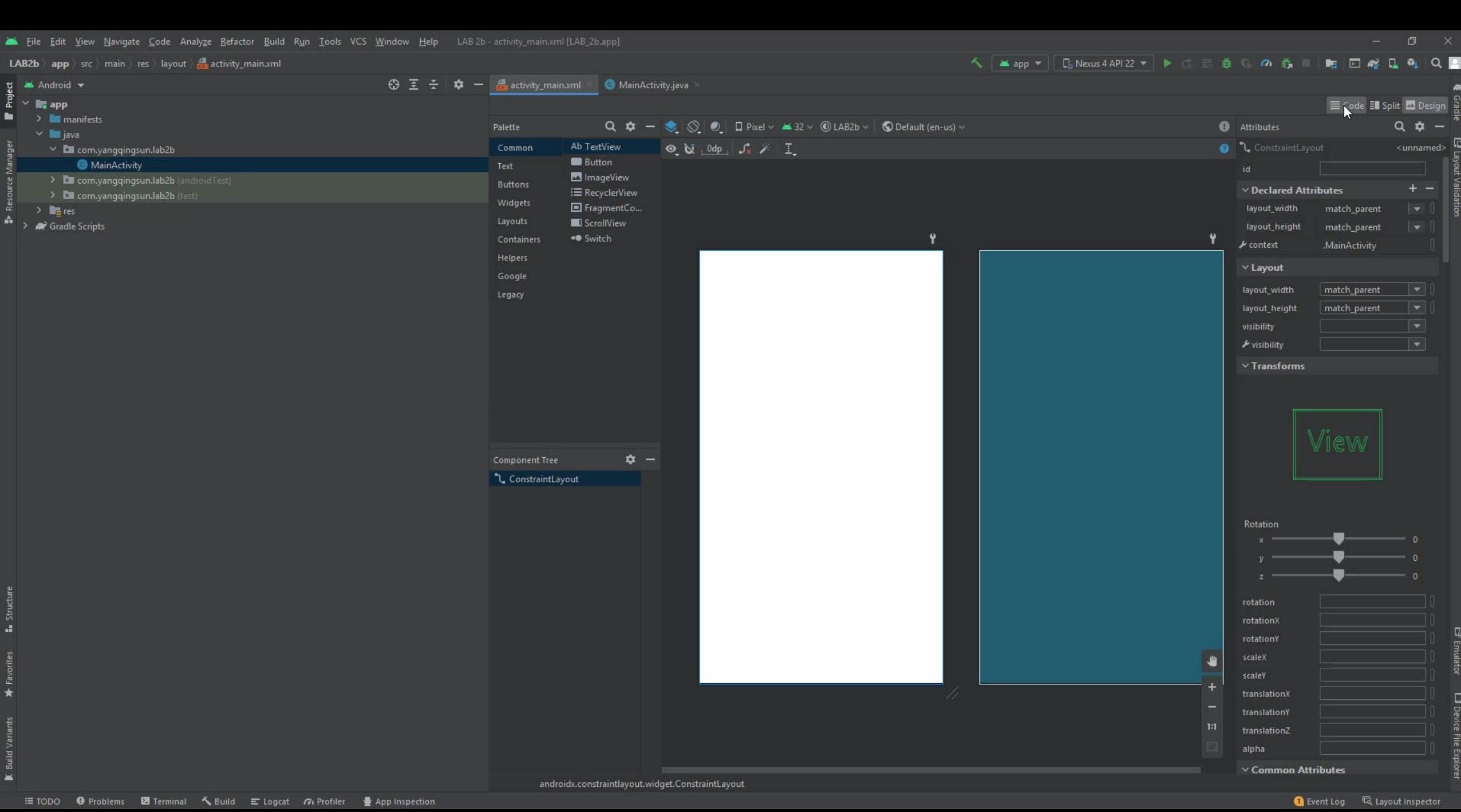
Build Variants

Code Split Design

androidx.constraintlayout.widget.ConstraintLayout

```
1 | <?xml version="1.0" encoding="utf-8"?>
2 | <androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"
3 |     xmlns:app="http://schemas.android.com/apk/res-auto"
4 |     xmlns:tools="http://schemas.android.com/tools"
5 |     android:layout_width="match_parent"
6 |     android:layout_height="match_parent"
7 |     tools:context=".MainActivity">
8 |
9 |     Delete <TextView>
10|
11| </androidx.constraintlayout.widget.ConstraintLayout>
```

Event Log Layout Inspector



暂停

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help LAB 2b - activity_main.xml [LAB_2b.app]

LAB2b app src main res layout activity_main.xml

Project

app
manifests
java
com.yangqingsun.lab2b
MainActivity
com.yangqingsun.lab2b (androidTest)
com.yangqingsun.lab2b (test)
res
Gradle Scripts

Resource Manager

Structure

Favorites

Build Variants

TODO

Problems

Terminal

Build

Logcat

Profiler

App Inspection

Navigation icons: back, forward, search, etc.

activity_main.xml MainActivity.java

```
1 <?xml version="1.0" encoding="utf-8"?>
2 <androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"
3     xmlns:app="http://schemas.android.com/apk/res-auto"
4     xmlns:tools="http://schemas.android.com/tools"
5     android:layout_width="match_parent"
6     android:layout_height="match_parent"
7     tools:context=".MainActivity">
8
9     <ImageView
10         android:id="@+id/imgPhotoTaken"
11         android:layout_width="0dp"
12         android:layout_height="0dp"
13         android:layout_marginTop="32dp"
14         android:layout_marginBottom="32dp"
15         android:contentDescription="@string/photoText"
16         app:layout_constraintBottom_toTopOf="@+id/btnTakePhoto"
17         app:layout_constraintEnd_toEndOf="parent"
18         app:layout_constraintHorizontal_bias="0.0"
19         app:layout_constraintStart_toStartOf="parent"
20         app:layout_constraintTop_toTopOf="parent"
21         app:layout_constraintVertical_bias="0.736" />
22
23
24
25 </androidx.constraintlayout.widget.ConstraintLayout>
```

Add <ImageView>

androidx.constraintlayout.widget.ConstraintLayout > ImageView

Event Log

Layout Inspector

Code Split Design

Gradle Layout Validation

Emulator Device File Explorer

The screenshot shows the Android Studio interface with the following details:

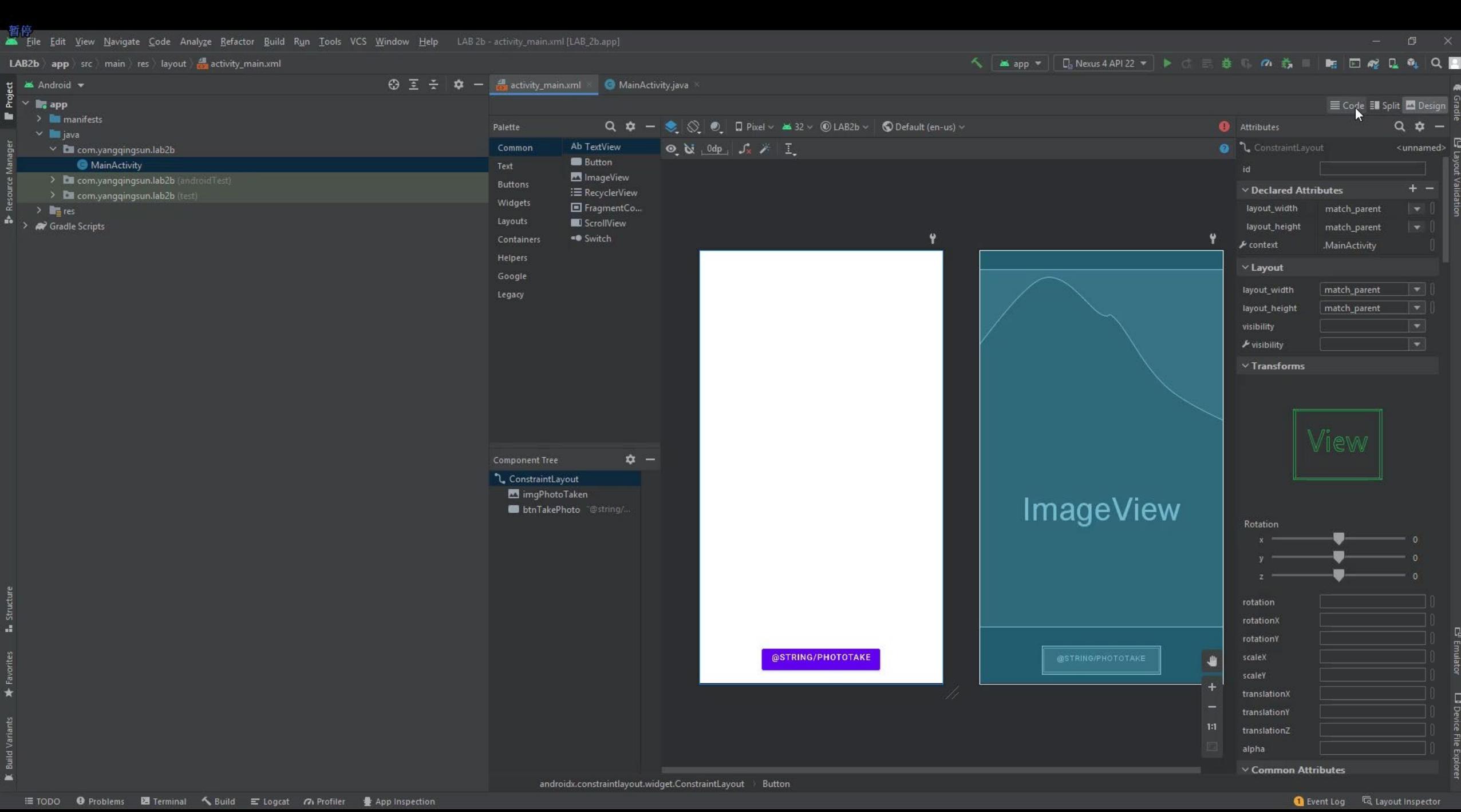
- Top Bar:** File, Edit, View, Navigate, Code, Analyze, Refactor, Build, Run, Tools, VCS, Window, Help, LAB 2b - activity_main.xml [LAB_2b.app]
- Project Tab:** Shows the project structure under "app":
 - manifests
 - java
 - com.yangqingsun.lab2b (selected)
 - MainActivity
 - com.yangqingsun.lab2b (androidTest)
 - com.yangqingsun.lab2b (test)
 - res
 - Gradle Scripts
- Code Editor:** Displays the XML code for activity_main.xml. The code defines a ConstraintLayout containing an ImageView and a Button.

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <ImageView
        android:id="@+id/imgPhotoTaken"
        android:layout_width="0dp"
        android:layout_height="0dp"
        android:layout_marginTop="32dp"
        android:layout_marginBottom="32dp"
        android:contentDescription="@string/photoText"
        app:layout_constraintBottom_toTopOf="@+id	btnTakePhoto"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.0"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.736" />

    <Button
        android:id="@+id	btnTakePhoto"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="16dp"
        android:gravity="center_horizontal"
        android:text="@string/photoTake"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent" />

</androidx.constraintlayout.widget.ConstraintLayout>
```
- Toolbars and Buttons:** Standard Android Studio toolbars for navigation, search, and file operations.
- Bottom Navigation:** TODO, Problems, Terminal, Build, Logcat, Profiler, App Inspection, Event Log, Layout Inspector.



暂停

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help LAB 2b - activity_main.xml [LAB_2b.app]

LAB2b app src main res layout activity_main.xml

Project

- app
 - manifests
 - java
 - com.yangqingsun.lab2b
 - MainActivity
 - com.yangqingsun.lab2b (androidTest)
 - com.yangqingsun.lab2b (test)
- res
- Gradle Scripts

Resource Manager

Structure

Favorites

Build Variants

Favorites

activity_main.xml x MainActivity.java x

```
1 <?xml version="1.0" encoding="utf-8"?>
2 <androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"
3     xmlns:app="http://schemas.android.com/apk/res-auto"
4     xmlns:tools="http://schemas.android.com/tools"
5     android:layout_width="match_parent"
6     android:layout_height="match_parent"
7     tools:context=".MainActivity">
8
9     <ImageView
10         android:id="@+id/imgPhotoTaken"
11         android:layout_width="0dp"
12         android:layout_height="0dp"
13         android:layout_marginTop="32dp"
14         android:layout_marginBottom="32dp"
15         android:contentDescription="@string/photoText"
16         app:layout_constraintBottom_toTopOf="@+id	btnTakePhoto"
17         app:layout_constraintEnd_toEndOf="parent"
18         app:layout_constraintHorizontal_bias="0.0"
19         app:layout_constraintStart_toStartOf="parent"
20         app:layout_constraintTop_toTopOf="parent"
21         app:layout_constraintVertical_bias="0.736" />
22
23     <Button
24         android:id="@+id	btnTakePhoto"
25         android:layout_width="wrap_content"
26         android:layout_height="wrap_content"
27         android:layout_marginBottom="16dp"
28         android:gravity="center_horizontal"
29         android:text="@string/photoTake"
30         app:layout_constraintBottom_toBottomOf="parent"
31         app:layout_constraintEnd_toEndOf="parent"
32         app:layout_constraintStart_toStartOf="parent" :>
33             Cannot resolve symbol '@string/photoTake'
34             Create string value resource 'photoTake' Alt+Shift+Enter More actions... Alt+Enter
35     </androidx.constraintlayout.widget.ConstraintLayout>
```

androidx.constraintlayout.widget.ConstraintLayout > Button

暂停

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help LAB 2b - activity_main.xml [LAB_2b.app]

LAB2b app src main res layout activity_main.xml

app Nexus 4 API 22

Project

- app
 - manifests
 - java
 - com.yangqingsun.lab2b
 - MainActivity
 - com.yangqingsun.lab2b (androidTest)
 - com.yangqingsun.lab2b (test)
- res
- Gradle Scripts

Resource Manager

Structure

Favorites

Build Variants

activity_main.xml MainActivity.java

```
1 <?xml version="1.0" encoding="utf-8"?>
2 <androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"
3     xmlns:app="http://schemas.android.com/apk/res-auto"
4     xmlns:tools="http://schemas.android.com/tools"
5     android:layout_width="match_parent"
6     android:layout_height="match_parent"
7     tools:context=".MainActivity">
8
9     <ImageView
10         android:id="@+id/imgPhotoTaken"
11         android:layout_width="0dp"
12         android:layout_height="0dp"
13         android:layout_marginTop="32dp"
14         android:layout_marginBottom="32dp"
15         android:contentDescription="@string/photoText"           Cannot resolve symbol '@string/photoText'
16         app:layout_constraintBottom_toTopOf="parent"            Create string value resource 'photoText' Alt+Shift+Enter
17         app:layout_constraintEnd_toEndOf="parent"               More actions... Alt+Enter
18         app:layout_constraintHorizontal_bias="0.736"          ...
19         app:layout_constraintStart_toStartOf="parent"
20         app:layout_constraintTop_toTopOf="parent"
21         app:layout_constraintVertical_bias="0.736" />
22
23     <Button
24         android:id="@+id	btnTakePhoto"
25         android:layout_width="wrap_content"
26         android:layout_height="wrap_content"
27         android:layout_marginBottom="16dp"
28         android:gravity="center_horizontal"
29         android:text="@string/photoTake"
30         app:layout_constraintBottom_toBottomOf="parent"
31         app:layout_constraintEnd_toEndOf="parent"
32         app:layout_constraintStart_toStartOf="parent" />
33
34 </androidx.constraintlayout.widget.ConstraintLayout>
```

androidx.constraintlayout.widget.ConstraintLayout > Button

TODO

Problems

Terminal

Build

Logcat

Profiler

App Inspection

Event Log

Layout Inspector

Code Split Design

Layout Validation

Emulator Device File Explorer

暂停

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help LAB 2b - activity_main.xml [LAB_2b.app]

LAB2b app src main java com yangqingsun lab2b MainActivity

Navigation Bar: Back, Forward, Home, Recent, Settings, Help, Layout Validation

Project Resource Manager Structure Favorites Build Variants

Android Java XML

app
manifests
java
com.yangqingsun.lab2b
MainActivity
com.yangqingsun.lab2b (androidTest)
com.yangqingsun.lab2b (test)
res
drawable
layout
mipmap
values
colors.xml
strings.xml
themes (2)

activity_main.xml MainActivity.java

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <ImageView
        android:id="@+id/imgPhotoTaken"
        android:layout_width="0dp"
        android:layout_height="0dp"
        android:layout_marginTop="32dp"
        android:layout_marginBottom="32dp"
        android:contentDescription="@string/photoText"
        app:layout_constraintBottom_toTopOf="@+id	btnTakePhoto"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.0"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.736" />

    <Button
        android:id="@+id	btnTakePhoto"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="16dp"
        android:gravity="center_horizontal"
        android:text="@string/photoTake"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent" />

</androidx.constraintlayout.widget.ConstraintLayout>
```

Code Split Design Gradle Layout Validation

TODO Problems Terminal Build Logcat Profiler App Inspection

Event Log Layout Inspector

暂停

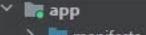
File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help LAB 2b - strings.xml [LAB_2b.app]

LAB2b app src main res values strings.xml

Navigation Bar: Back, Forward, Home, Recent, Settings, Device, Emulator, Layout Inspector, Find, Replace, Help

Project

Android



app



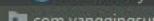
manifests



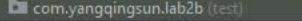
java



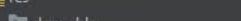
com.yangqingsun.lab2b



MainActivity



com.yangqingsun.lab2b (androidTest)



com.yangqingsun.lab2b (test)



res



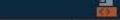
drawable



layout



mipmap



values



colors.xml



strings.xml



themes (2)



Gradle Scripts

activity_main.xml strings.xml MainActivity.java

Edit translations for all locales in the translations editor.

```
1 <resources>
2     <string name="app_name">LAB 2b</string>
3 </resources>
```

Open editor Hide notification

Gradle

Structure

Favorites

Build Variants

Favorites

Build Variants

Emulator

Device File Explorer

TODO

Problems

Terminal

Build

Logcat

Profiler

App Inspection

Event Log

Layout Inspector

The screenshot shows the Android Studio interface with the project 'LAB2b' open. The top navigation bar includes File, Edit, View, Navigate, Code, Analyze, Refactor, Build, Run, Tools, VCS, Window, Help, and LAB 2b - strings.xml [LAB_2b.app]. The toolbar has icons for back, forward, search, and other tools. The Project tab is selected in the left sidebar, showing the app module structure with Java and res folders. The Resource Manager tab is also visible. The main editor area displays the strings.xml file under the res/values folder. The code in strings.xml is:

```
<resources>
    <string name="app_name">LAB 2b</string>
    <string name="photoText">Here is the photo description</string>
    <string name="photoTake">Take a Photo by Y. Sun</string>
</resources>
```

The code editor has tabs for activity_main.xml, strings.xml (which is active), and MainActivity.java. The status bar at the bottom shows resources > string. The bottom navigation bar includes TODO, Problems, Terminal, Build, Logcat, Profiler, App Inspection, Event Log, and Layout Inspector.

The screenshot shows the Android Studio interface with the following details:

- Top Bar:** File, Edit, View, Navigate, Code, Analyze, Refactor, Build, Run, Tools, VCS, Window, Help, LAB 2b - strings.xml [LAB_2b.app]
- Toolbar:** Includes icons for Run, Stop, Build, Clean, and others.
- Project Tab:** Shows the project structure under "Android".
- Manifest Tab:** The file "AndroidManifest.xml" is selected and highlighted with a red border.
- Code Editor:** Displays the contents of "strings.xml".

```
<resources>
    <string name="app_name">LAB 2b</string>
    <string name="photoText">Here is the photo description</string>
    <string name="photoTake">Take a Photo by Y. Sun</string>
</resources>
```
- Toolbars:** Top right includes "Open editor", "Hide notification", and "Gradle". Bottom right includes "Emulator" and "Device File Explorer".
- Bottom Bar:** Includes tabs for TODO, Problems, Terminal, Build, Logcat, Profiler, App Inspection, Event Log, and Layout Inspector.

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help LAB 2b - AndroidManifest.xml [LAB_2b.app]

Project app src main AndroidManifest.xml

activity_main.xml strings.xml AndroidManifest.xml MainActivity.java

app Nexus 4 API 22

Gradle

Resource Manager

Project

app manifests

AndroidManifest.xml

Java com.yangqingsun.lab2b MainActivity

com.yangqingsun.lab2b (androidTest)

com.yangqingsun.lab2b (test)

res drawable layout mipmap

mipmap colors.xml strings.xml themes (2)

Gradle Scripts

Text Merged Manifest

TODO Problems Terminal Build Logcat Profiler App Inspection Event Log Layout Inspector

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.yangqingsun.lab2b">

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="LAB 2b"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.LAB2b">
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application>

</manifest>
```

暂停



File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help

LAB 2b - AndroidManifest.xml [LAB_2b.app]



LAB2b app src main AndroidManifest.xml

Project



Android



app

manifests

AndroidManifest.xml

java

com.yangqingsun.lab2b

MainActivity

com.yangqingsun.lab2b (androidTest)

com.yangqingsun.lab2b (test)

res

drawable

layout

mipmap

values

colors.xml

strings.xml

themes (2)

Gradle Scripts

Structure



Favorites



Build Variants



activity_main.xml strings.xml AndroidManifest.xml MainActivity.java



```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.yangqingsun.lab2b">

    <uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE"
        android:maxSdkVersion="18" />

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="LAB 2b"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.LAB2b">
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application>

</manifest>
```

WRITE_EXTERNAL_STORAGE

manifest uses-permission

Text

Merged Manifest

TODO

Problems

Terminal

Build

Logcat

Profiler

App Inspection

Event Log

Layout Inspector

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help LAB 2b - AndroidManifest.xml [LAB_2b.app]

Project app src main AndroidManifest.xml

activity_main.xml strings.xml AndroidManifest.xml MainActivity.java

app Nexus 4 API 22

Gradle

Resource Manager

Project

app manifests AndroidManifest.xml

java com.yangqingsun.lab2b MainActivity

com.yangqingsun.lab2b (androidTest)

com.yangqingsun.lab2b (test)

res drawable layout mipmap values colors.xml strings.xml themes (2)

Gradle Scripts

File Editor

File Provider

manifest > application > provider

Text Merged Manifest

TODO Problems Terminal Build Logcat Profiler App Inspection Event Log Layout Inspector

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.yangqingsun.lab2b">

    <uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE"
        android:maxSdkVersion="18" />

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="LAB 2b"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.LAB2b">
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
        <provider
            android:name="androidx.core.content.FileProvider"
            android:authorities="com.yangqingsun.android.fireproof"
            android:exported="false"
            android:grantUriPermissions="true">
            <meta-data
                android:name="android.support.FILE_PROVIDER_PATHS"
                android:resource="@xml/file_paths" />
        </provider>
    </application>
</manifest>
```

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help LAB 2b - AndroidManifest.xml [LAB_2b.app]

Project app src main AndroidManifest.xml

activity_main.xml strings.xml AndroidManifest.xml MainActivity.java

app Nexus 4 API 22

Gradle

Resource Manager

Project

app

manifests

AndroidManifest.xml

java

com.yangqingsun.lab2b

MainActivity

com.yangqingsun.lab2b (androidTest)

com.yangqingsun.lab2b (test)

res

drawable

layout

mipmap

values

colors.xml

strings.xml

themes (2)

Gradle Scripts

Structure

Favorites

Build Variants

hardware

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.yangqingsun.lab2b">

    <uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE"
        android:maxSdkVersion="18" />

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="LAB 2b"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.LAB2b">
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
        <provider
            android:name="androidx.core.content.FileProvider"
            android:authorities="com.yangqingsun.android.fireproof"
            android:exported="false"
            android:grantUriPermissions="true">
            <meta-data
                android:name="android.support.FILE_PROVIDER_PATHS"
                android:resource="@xml/file_paths" />
        </provider>
    </application>

    <uses-feature android:name="android.hardware.camera"
        android:required="true" />
</manifest>
```

manifest uses-feature

Text Merged Manifest

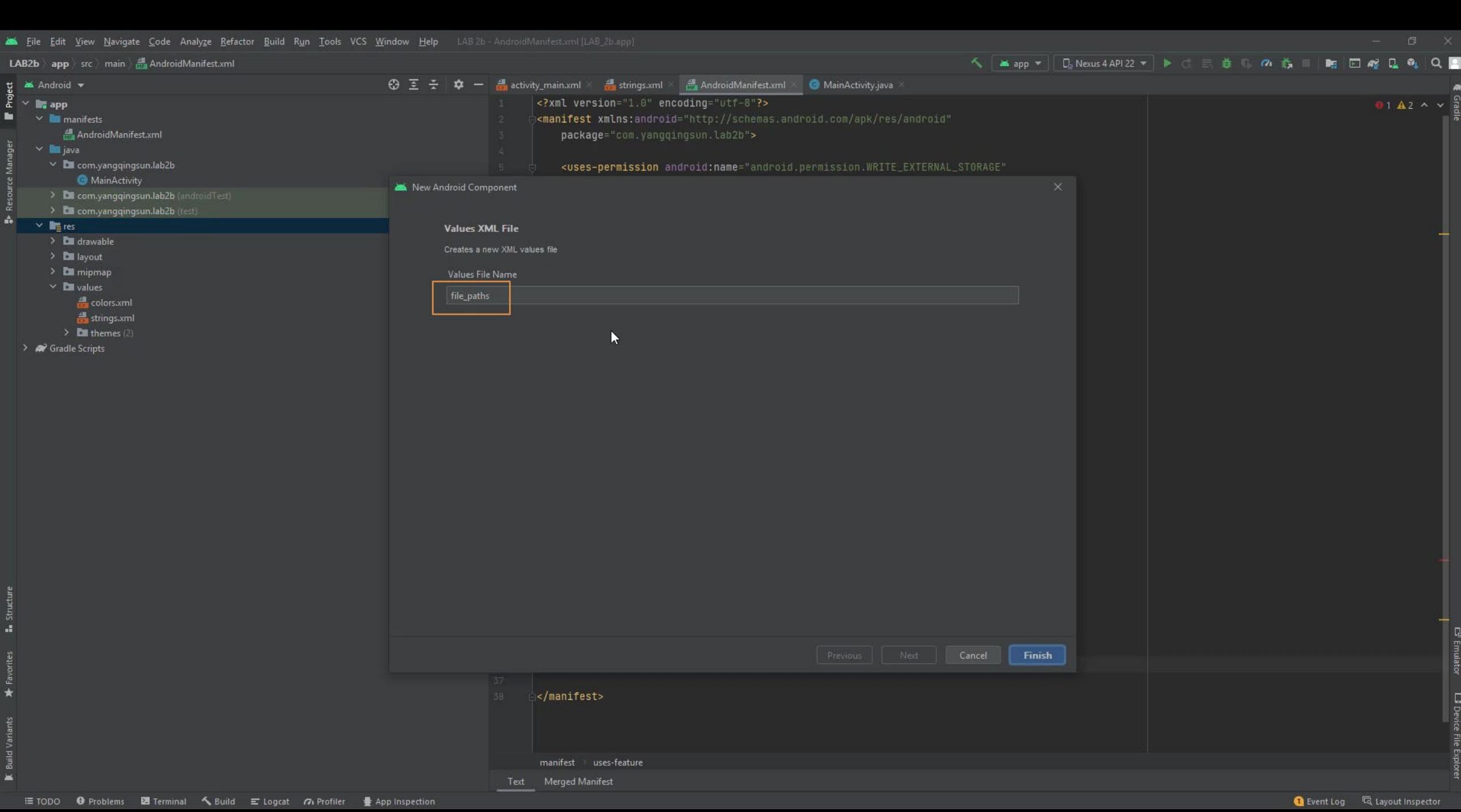
TODO Problems Terminal Build Logcat Profiler App Inspection Event Log Layout Inspector

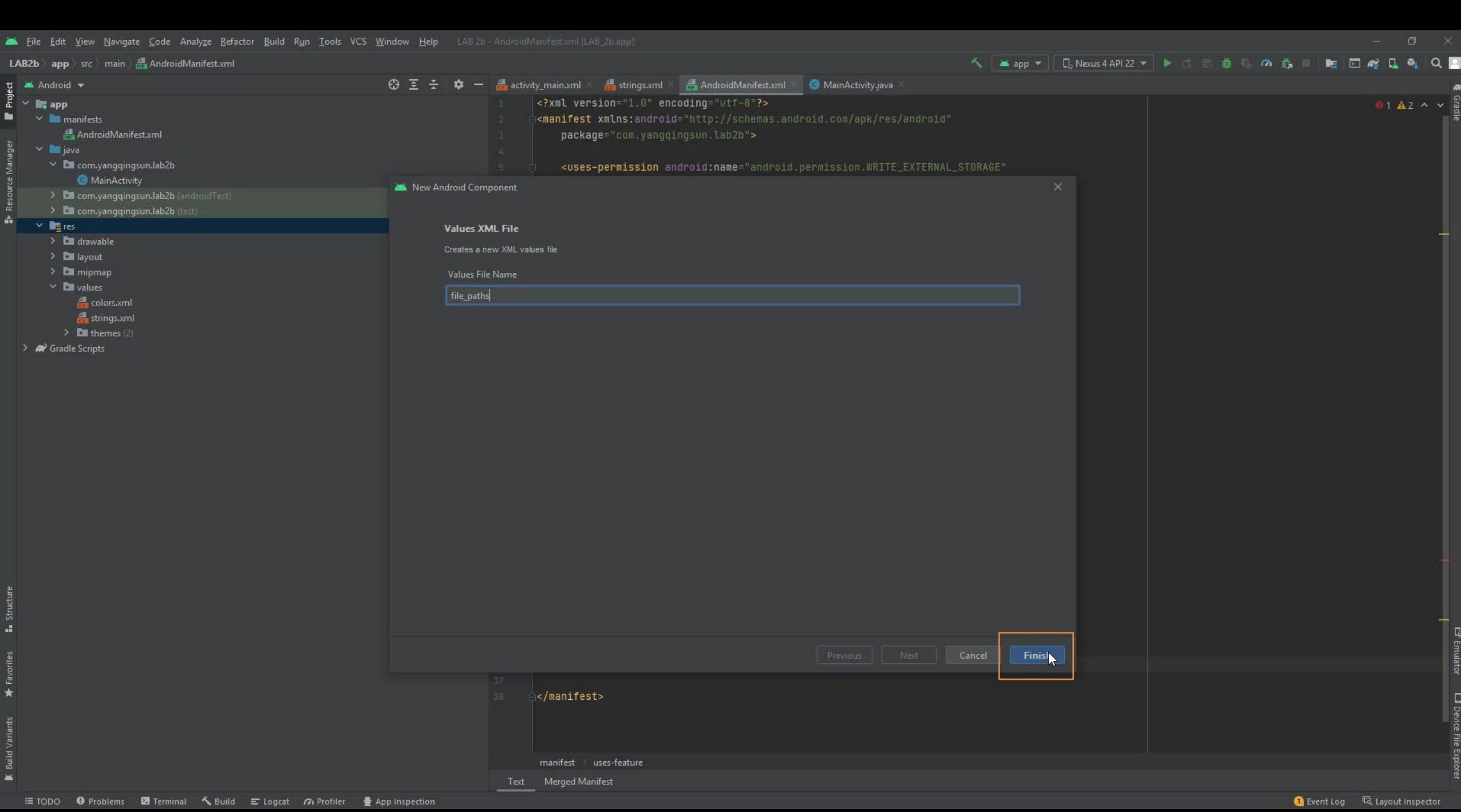
The screenshot shows the Android Studio interface with the project 'LAB2b' open. The 'app' module is selected in the Project tool window. The 'AndroidManifest.xml' file is open in the main editor area. A context menu is displayed over the manifest file, with a callout bubble pointing to the 'New' option under the 'File' menu. The 'Create a new XML file.' message is visible in the callout bubble. The 'XML' item in the 'New' submenu is highlighted.

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.yangqingsun.lab2b">

    <uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE"
        android:maxSdkVersion="18" />

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="LAB 2b"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.LAB2b">
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
        <provider
            android:name="androidx.core.content.FileProvider"
            android:authorities="com.yangqingsun.android.fireproof"
            android:exported="false"
            android:grantUriPermissions="true">
            <meta-data
                android:name="android.support.FILE_PROVIDER_PATHS"
                android:resource="@xml/file_paths" />
        </provider>
    </application>
    <uses-feature android:name="android.hardware.camera"
        android:required="true" />
</manifest>
```





暂停

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help LAB 2b - file_paths.xml [LAB_2b.app]

LAB2b app src main res values file_paths.xml

activity_main.xml strings.xml AndroidManifest.xml file_paths.xml MainActivity.java

Nexus 4 API 22

Project

Resource Manager

Android
app
manifests
AndroidManifest.xml

java
com.yangqingsun.lab2b
MainActivity
> com.yangqingsun.lab2b (androidTest)
> com.yangqingsun.lab2b (test)

res
> drawable
> layout
> mipmap
values
colors.xml
file_paths.xml
strings.xml
> themes (2)

Gradle Scripts

Gradle project sync in progress...

```
1 <?xml version="1.0" encoding="utf-8"?>
2 <resources></resources>
```

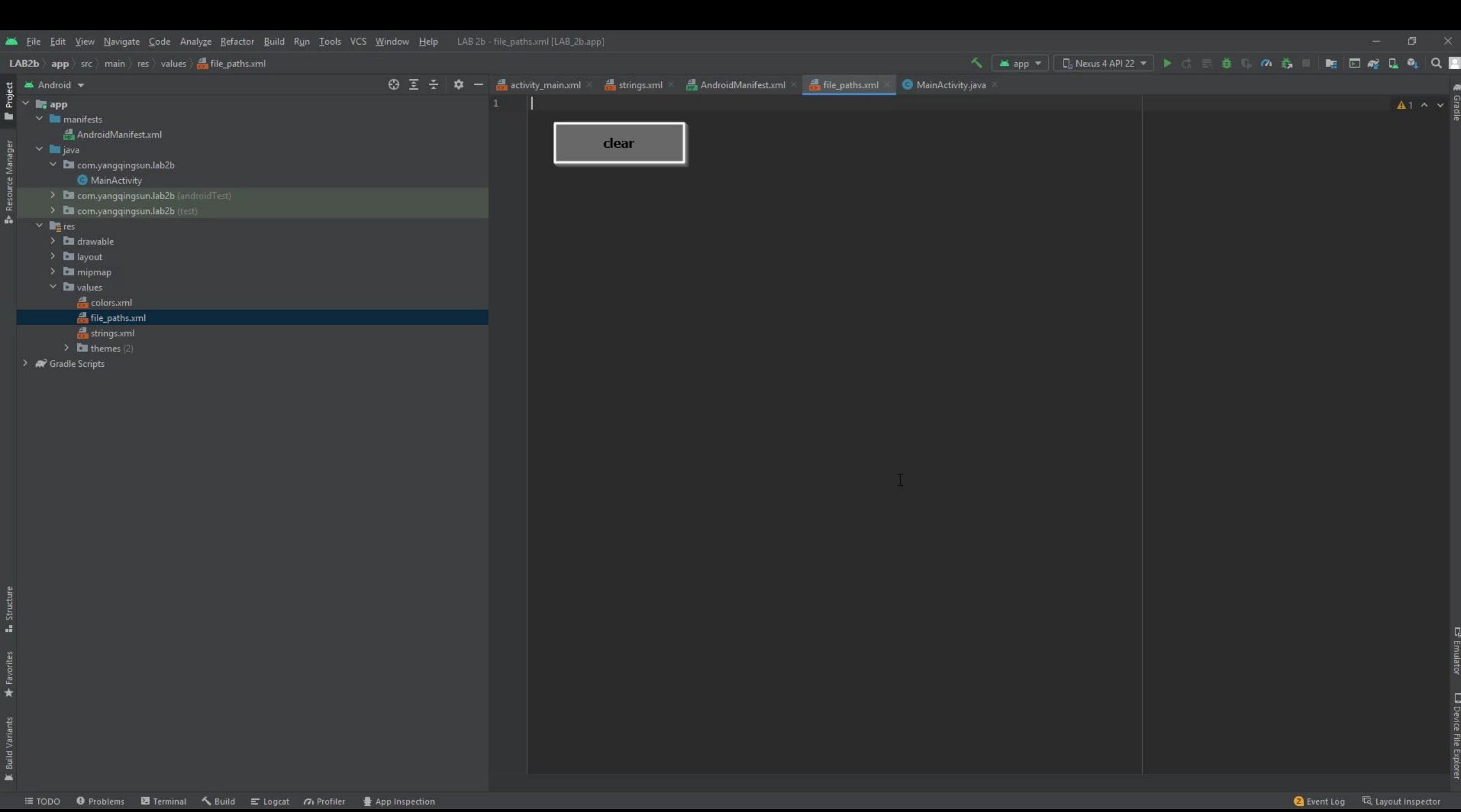
1

Structure Favorites Build Variants

Emulator Device File Explorer

TODO Problems Terminal Build Logcat Profiler App Inspection

Event Log Layout Inspector



暂停

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help LAB 2b - file_paths.xml [LAB_2b.app]

LAB2b app src main res values file_paths.xml

activity_main.xml strings.xml AndroidManifest.xml file_paths.xml MainActivity.java

① 3 ② 1 ✎

```
<?xml version="1.0" encoding="utf-8"?>
<paths xmlns:android="http://schemas.android.com/apk/res/android">
    <external-files-path name="my_images" path="Pictures" />
</paths>
```

Add the file path for pictures.

Project

app
manifests
AndroidManifest.xml
java
com.yangqingsun.lab2b
MainActivity
> com.yangqingsun.lab2b (androidTest)
> com.yangqingsun.lab2b (test)
res
drawable
layout
mipmap
values
colors.xml
file_paths.xml
strings.xml
> themes (2)
Gradle Scripts

Structure

Favorites

Build Variants

Gradle

Emulator Device File Explorer

paths

TODO Problems Terminal Build Logcat Profiler App Inspection

② Event Log Layout Inspector

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help LAB 2b - file_paths.xml [LAB_2b.app]

LAB2b app src main res values file_paths.xml

activity_main.xml strings.xml AndroidManifest.xml file_paths.xml MainActivity.java

app Nexus 4 API 22

Project

app

- manifests
- AndroidManifest.xml

java

- com.yangqingsun.lab2b
- MainActivity

com.yangqingsun.lab2b (androidTest)

com.yangqingsun.lab2b (test)

res

- drawable
- layout
- mipmap
- values
- colors.xml
- file_paths.xml
- strings.xml

themes (2)

Gradle Scripts

Resource Manager

Project Manager

Structure

Favorites

Build Variants

File Explorer

Emulator

Device File Explorer

TODO Problems Terminal Logcat Profiler App Inspection

Event Log Layout Inspector

<?xml version="1.0" encoding="utf-8"?>
<paths xmlns:android="http://schemas.android.com/apk/res/android">
 <paths> XML file should be in "xml", not "values".
 </paths>
 Element paths must be declared
 ...
 Move file to "xml" Alt+Shift+Enter More actions... Alt+Enter

The screenshot shows an Android Studio project named "LAB 2b". The "file_paths.xml" file is open in the code editor. A tooltip is displayed over the "paths" element, indicating that it should be moved to an "xml" file instead of a "values" file. The tooltip also states that the "Element paths must be declared". Below the tooltip, there are two options: "Move file to 'xml'" and "More actions...". The "Move file to 'xml'" option is highlighted with a mouse cursor. The "file_paths.xml" file is selected in the Project tool window under the "values" folder. The bottom navigation bar includes links for TODO, Problems, Terminal, Logcat, Profiler, App Inspection, Event Log, and Layout Inspector.

The screenshot shows the Android Studio interface with the project `LAB2b` open. The `file_paths.xml` file is selected in the top navigation bar. The code editor displays the following XML configuration:

```
<?xml version="1.0" encoding="utf-8"?>
<paths xmlns:android="http://schemas.android.com/apk/res/android">
    <external-files-path name="my_images" path="Pictures" />
</paths>
```

The Project tool window on the left shows the directory structure of the `app` module, including `AndroidManifest.xml`, `MainActivity.java`, and various resource folders like `drawable`, `layout`, `ipmap`, and `values`. The `values` folder contains `colors.xml`, `strings.xml`, and `themes` (2). The `xml` folder is highlighted with a red border. The Resource Manager and Build Variants tool windows are also visible.

The screenshot shows the Android Studio interface with the project `LAB2b` open. The `file_paths.xml` file is selected in the Project tool window under the `res/xml` directory. The code editor displays the XML configuration:

```
<?xml version="1.0" encoding="utf-8"?>
<paths xmlns:android="http://schemas.android.com/apk/res/android">
    <external-files-path name="my_images" path="Pictures" />
</paths>
```

The `file_paths.xml` file is highlighted with a yellow border in the Project tool window. The top navigation bar shows the current file as `LAB 2b - file_paths.xml [LAB_2b.app]`. The bottom navigation bar includes tabs for `TODO`, `Problems`, `Terminal`, `Build`, `Logcat`, `Profiler`, `App Inspection`, `Event Log`, and `Layout Inspector`.

The screenshot shows the Android Studio interface with the following details:

- Top Bar:** File, Edit, View, Navigate, Code, Analyze, Refactor, Build, Run, Tools, VCS, Window, Help, LAB 2b - MainActivity.java [LAB_2b.app]
- Toolbar:** Includes icons for back, forward, search, and various tools.
- Project Navigators:** Project (AndroidManifest.xml, strings.xml, AndroidManifest.xml, file_paths.xml, MainActivity.java), Resource Manager (res, values, themes, xml), and Structure (Build Variants, Favorites).
- Code Editor:** The main window displays the `MainActivity.java` file with the following code:

```
1 package com.yangqingsun.lab2b;
2
3 import ...
4
5 public class MainActivity extends AppCompatActivity {
6
7     @Override
8     protected void onCreate(Bundle savedInstanceState) {
9         super.onCreate(savedInstanceState);
10        setContentView(R.layout.activity_main);
11    }
12}
```
- Toolbars and Status:** Includes tabs for app, Nexus 4 API 22, and Gradle. A status bar at the bottom indicates "Analyzing..." and "Gradle".
- Bottom Bar:** Includes links for TODO, Problems, Terminal, Build, Logcat, Profiler, App Inspection, Event Log (2 items), and Layout Inspector.

The screenshot shows the Android Studio interface with the project 'LAB2b' open. The main window displays the Java code for `MainActivity`. The code defines a class `MainActivity` that extends `AppCompatActivity`. It overrides the `onCreate` method to call `super.onCreate` and set the content view to `R.layout.activity_main`.

```
1 package com.yangqingsun.lab2b;
2
3 import androidx.appcompat.app.AppCompatActivity;
4
5 import android.os.Bundle;
6
7 public class MainActivity extends AppCompatActivity {
8
9     @Override
10    protected void onCreate(Bundle savedInstanceState) {
11        super.onCreate(savedInstanceState);
12        setContentView(R.layout.activity_main);
13    }
14}
```

The Project tool window on the left shows the structure of the `app` module, including `AndroidManifest.xml`, `MainActivity.java`, and various resource files like `colors.xml` and `strings.xml`. The Resource Manager and Build Variants tool windows are also visible.

The screenshot shows the Android Studio interface with the project 'LAB2b' open. The main focus is the code editor displaying `MainActivity.java`. The code implements a camera functionality, including imports for `AppCompatActivity`, `Bundle`, and `ImageView`. It defines constants for image capture requests and declares objects for a button and an image view. The `onCreate` method sets the content view to `R.layout.activity_main`.

```
package com.yangqingsun.lab2b;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.Button;
import android.widget.ImageView;

public class MainActivity extends AppCompatActivity {

    static final int REQUEST_IMAGE_CAPTURE = 1;
    String currentPhotoPath;

    // Declare objects
    Button takePhoto;
    ImageView photo;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
}
```

The Project tool window on the left shows the app's directory structure, including `AndroidManifest.xml`, `MainActivity.java`, and various resource files like `drawable`, `layout`, and `values`. The `file_paths.xml` file is currently selected in the Project view.

The top navigation bar includes File, Edit, View, Navigate, Code, Analyze, Refactor, Build, Run, Tools, VCS, Window, Help, and LAB 2b - `MainActivity.java [LAB_2b.apk]`. The bottom navigation bar includes TODO, Problems, Terminal, Build, Logcat, Profiler, App Inspection, Event Log, and Layout Inspector.

The screenshot shows the Android Studio interface with the project 'LAB2b' open. The main window displays the Java code for 'MainActivity.java'.

Project Structure:

- app**:
 - manifests**: Contains 'AndroidManifest.xml'.
 - java**: Contains 'com.yangqingsun.lab2b' package with 'MainActivity' class.
 - res**: Contains 'drawable', 'layout', 'mipmap', 'values' (with 'colors.xml' and 'strings.xml'), and 'themes' (2).
 - xml**: Contains 'file_paths.xml'.
- Gradle Scripts**: Shows 'build.gradle' and 'gradle-wrapper.properties'.

MainActivity.java Code:

```
1 package com.yangqingsun.lab2b;
2
3 import androidx.appcompat.app.AppCompatActivity;
4
5 import android.os.Bundle;
6
7 public class MainActivity extends AppCompatActivity {
8
9     static final int REQUEST_IMAGE_CAPTURE = 1;
10    String currentPhotoPath;
11
12    // Declare objects
13    Button takePhoto;
14    ImageView photo;
15
16    @Override
17    protected void onCreate(Bundle savedInstanceState) {
18        super.onCreate(savedInstanceState);
19        setContentView(R.layout.activity_main);
20    }
21}
```

Toolbars and Status:

- Top bar: File, Edit, View, Navigate, Code, Analyze, Refactor, Build, Run, Tools, VCS, Window, Help, LAB 2b - MainActivity.java [LAB_2b.apk]
- Top right: app (selected), Nexus 4 API 22
- Bottom navigation: TODO, Problems, Terminal, Build, Logcat, Profiler, App Inspection, Event Log, Layout Inspector
- Bottom right: Emulator, Device File Explorer

The screenshot shows the Android Studio interface with the project `LAB2b` open. The `MainActivity.java` file is selected in the editor. A tooltip labeled `OnClickListener` is displayed over the `setOnItemClickListener` method call.

```
package com.yangqingsun.lab2b;  
import androidx.appcompat.app.AppCompatActivity;  
import android.os.Bundle;  
public class MainActivity extends AppCompatActivity {  
    static final int REQUEST_IMAGE_CAPTURE = 1;  
    String currentPhotoPath;  
    // Declare objects  
    Button takePhoto;  
    ImageView photo;  
    @Override  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_main);  
        // Get objects  
        takePhoto = findViewById(R.id.btnTakePhoto);  
        photo = findViewById(R.id.imgPhotoTaken);  
        // Add Click event to takephoto button object  
        takePhoto.setOnClickListener(new View.OnClickListener() {  
            @Override  
            public void onClick(View v) {  
                dispatchTakePictureIntent();  
            }  
        });  
    }  
}
```

The Project tool window on the left shows the app's directory structure, including `AndroidManifest.xml`, `MainActivity.java`, and various resource files like `colors.xml` and `strings.xml`. The Resource Manager and Build Variants tool windows are also visible on the far left. The bottom navigation bar includes links for `TODO`, `Problems`, `Terminal`, `Build`, `Logcat`, `Profiler`, `App Inspection`, `Event Log`, and `Layout Inspector`.

The screenshot shows the Android Studio interface with the following details:

- Top Bar:** File, Edit, View, Navigate, Code, Analyze, Refactor, Build, Run, Tools, VCS, Window, Help, LAB 2b - MainActivity.java [LAB_2b.app]
- Toolbar:** Includes icons for Build, Run, Stop, Refresh, and various inspection tools.
- Project Structure:** Shows the project tree under the app module:
 - manifests: AndroidManifest.xml
 - java: com.yangqingsun.lab2b (selected), MainActivity.java
 - res: drawable, layout, mipmap, values (colors.xml, strings.xml), themes (2)
 - xml: file_paths.xml
- Main Editor:** Displays the MainActivity.java code. A code completion tooltip is open over the `takePhoto.setOnClickListener` line, showing options like `@Override`, `public void onClick(View v) {`, and `dispatchTakePictureIntent()`.
- Bottom Navigation:** TODO, Problems, Terminal, Build, Logcat, Profiler, App Inspection, Event Log, Layout Inspector.
- Right Side:** Includes tabs for activity_main.xml, strings.xml, AndroidManifest.xml, file_paths.xml, and MainActivity.java. It also shows build variants (Nexus 4 API 22), Gradle status (7 errors, 4 warnings, 1 info), and links to Emulator and Device File Explorer.

The screenshot shows the Android Studio interface with the following details:

- Top Bar:** File, Edit, View, Navigate, Code, Analyze, Refactor, Build, Run, Tools, VCS, Window, Help, LAB 2b - MainActivity.java [LAB_2b.app]
- Toolbar:** Includes icons for Build, Run, Stop, Refresh, and Device Manager.
- Project Structure:** Shows the project tree under the "app" module:
 - manifests: AndroidManifest.xml
 - java: com.yangqingsun.lab2b (MainActivity)
 - res: drawable, layout, mipmap, values (colors.xml, strings.xml), themes (2)
 - xml: file_paths.xml
- Main Editor:** Displays the MainActivity.java code. The code handles button click events to take a photo and update an ImageView.

```
package com.yangqingsun.lab2b;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
public class MainActivity extends AppCompatActivity {

    static final int REQUEST_IMAGE_CAPTURE = 1;
    String currentPhotoPath;

    // Declare objects
    Button takePhoto;
    ImageView photo;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        // Get objects
        takePhoto = findViewById(R.id.btnTakePhoto);
        photo = findViewById(R.id.imgPhotoTaken);

        // Add Click event to takephoto button object
        takePhoto.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                dispatchTakePictureIntent();
            }
        });
    }
}
```
- Run Tab:** Shows build variants (app, test), device (Nexus 4 API 22), and configuration (CPU:armeabi-v7a, RAM: 1GB).
- Bottom Navigation:** TODO, Problems, Terminal, Build, Logcat, Profiler, App Inspection, Event Log, Layout Inspector.

暂停

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help LAB 2b - MainActivity.java [LAB_2b.apk]

Project

Resource Manager

Gradle

暂停

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help LAB 2b - MainActivity.java [LAB_2b.apk]

Project

app

- manifests
- java

 - com.yangqingsun.lab2b
 - MainActivity

- res
- layout
- mipmap
- values

 - colors.xml
 - strings.xml

- themes (2)
- xml

 - file_paths.xml

Gradle Scripts

activity_main.xml strings.xml AndroidManifest.xml file_paths.xml MainActivity.java

Nexus 4 API 22

0 22 5 1

暂停

暂停

```
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;

public class MainActivity extends AppCompatActivity {

    static final int REQUEST_IMAGE_CAPTURE = 1;
    String currentPhotoPath;

    // Declare objects
    Button takePhoto;
    ImageView photo;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        // Get objects
        takePhoto = findViewById(R.id.btnTakePhoto);
        photo = findViewById(R.id.imgPhotoTaken);

        // Add Click event to takephoto button object
        takePhoto.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                dispatchTakePictureIntent();
            }
        });
    }

    //Take photo with the camera application
    private void dispatchTakePictureIntent(){
        // Check device's camera availability and number of cameras
        checkCameraHardware(MainActivity.this);

        // A quick way to enable taking pictures or videos in your application without a lot of extra code
        // is to use an Intent to invoke an existing Android camera application
        Intent takePictureIntent = new Intent(MediaStore.ACTION_IMAGE_CAPTURE);
        // Ensure that there's a camera activity to handle the intent
        if(takePictureIntent.resolveActivity(getPackageManager()) != null){
            // Create a file where the photo should go
        }
    }
}
```

TODO Problems Terminal Build Logcat Profiler App Inspection Event Log Layout Inspector

The screenshot shows the Android Studio interface with the following details:

- Project Bar:** LAB2b > app > src > main > java > com > yangqingsun > lab2b > MainActivity
- Toolbars:** File, Edit, View, Navigate, Code, Analyze, Refactor, Build, Run, Tools, VCS, Window, Help, LAB 2b - MainActivity.java [LAB_2b.app]
- Code Editor:** The file MainActivity.java is open, showing Java code for handling camera operations. The code includes methods for taking photos and handling camera hardware.
- Project Explorer:** Shows the project structure with modules like app, manifests, java (containing com.yangqingsun.lab2b and MainActivity), res, and xml (containing file_paths.xml).
- Resource Manager:** Shows files like AndroidManifest.xml, strings.xml, and file_paths.xml.
- Bottom Navigation:** TODO, Problems, Terminal, Build, Logcat, Profiler, App Inspection, Event Log, Layout Inspector.

```
photo = findViewById(R.id.imgPhotoTaken);

// Add Click event to takephoto button object
takePhoto.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        dispatchTakePictureIntent();
    }
});

//Take photo with the camera application
private void dispatchTakePictureIntent(){
    // Check device's camera availability and number of cameras
    checkCameraHardware(MainActivity.this);

    // A quick way to enable taking pictures or videos in your application without a lot of extra code
    // is to use an Intent to invoke an existing Android camera application
    Intent takePictureIntent = new Intent(MediaStore.ACTION_IMAGE_CAPTURE);
    // Ensure that there's a camera activity to handle the intent
    if(takePictureIntent.resolveActivity(getPackageManager()) != null){
        // Create a file where the photo should go
        File photoFile = null;
        try{
            photoFile = createImageFile();
        }catch(IOException ex){
            Toast.makeText(MainActivity.this, ex.getMessage(), Toast.LENGTH_SHORT).show();
        }
        if(photoFile != null){
            // We are using getUriFromFile(Context, String, File) which returns a content URI.
            // For more recent apps targeting Android 7.0 (API level 24) and higher,
            // passing a file: URI across a package boundary causes a FileUriExposedException.
            // Therefore, we now present a more generic way of storing images using a FileProvider.
            Uri photoURI = FileProvider.getUriForFile(this, "com.yangqingsun.android.fireproof", photoFile);
            takePictureIntent.putExtra(MediaStore.EXTRA_OUTPUT, photoURI);
            startActivityForResult(takePictureIntent, REQUEST_IMAGE_CAPTURE);
        }
    }
}
```

暂停

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help LAB 2b - MainActivity.java [LAB_2b.app]

Project

Resource Manager

Structure

Favorites

Build Variants

暂停

Activity_main.xml strings.xml AndroidManifest.xml file_paths.xml MainActivity.java

Gradle

File Scripts

app src main java com yangqingsun lab2b MainActivity createImageFile

activity_main.xml strings.xml AndroidManifest.xml file_paths.xml MainActivity.java

30 4 2

26 takePhoto.setOnClickListener(new View.OnClickListener() {
27 @Override
28 public void onClick(View v) {
29 dispatchTakePictureIntent();
30 }
31 };
32 }
33 //Take photo with the camera application
34 private void dispatchTakePictureIntent(){
35 // Check device's camera availability and number of cameras
36 checkCameraHardware(MainActivity.this);
37
38 // A quick way to enable taking pictures or videos in your application without a lot of extra code
39 // is to use an Intent to invoke an existing Android camera application
40 Intent takePictureIntent = new Intent(MediaStore.ACTION_IMAGE_CAPTURE);
41 // Ensure that there's a camera activity to handle the intent
42 if(takePictureIntent.resolveActivity(getApplicationContext()) != null){
43 // Create a file where the photo should go
44 File photoFile = null;
45 try{
46 photoFile = createImageFile();
47 }catch(IOException ex){
48 Toast.makeText(MainActivity.this, ex.getMessage(), Toast.LENGTH_SHORT).show();
49 }
50 if(photoFile != null){
51 // We are using getUriFromFile(Context, String, File) which returns a content URI.
52 // For more recent apps targeting Android 7.0 (API level 24) and higher,
53 // passing a file: URI across a package boundary causes a FileUriExposedException.
54 // Therefore, we now present a more generic way of storing images using a FileProvider.
55 Uri photoURI = FileProvider.getUriForFile(this, "com.yangqingsun.android.fireproof", photoFile);
56 takePictureIntent.putExtra(MediaStore.EXTRA_OUTPUT, photoURI);
57 startActivityForResult(takePictureIntent, REQUEST_IMAGE_CAPTURE);
58 }
59 }
60 }
61 }
62 }
63 // Create a time-based file name
64 private File createImageFile() throws IOException{
65 // Create an image file name
66 String timeStamp = new SimpleDateFormat("yyyyMMdd_HHmmss").format(new Date());
67 String imageFileName = "JPEG_" + timeStamp + "_";
68 File storageDir = getExternalFilesDir(Environment.DIRECTORY_PICTURES);

TODO Problems Terminal Build Logcat Profiler App Inspection Event Log Layout Inspector

暂停

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help LAB 2b - MainActivity.java [LAB_2b.app]

Project

app

- manifests
- java
 - com.yangqingsun.lab2b
 - MainActivity
- res
 - drawable
 - layout
 - mipmap
 - values
 - colors.xml
 - strings.xml
 - themes (2)
- xml
 - file_paths.xml

Resource Manager

Gradle Scripts

Structure

Favorites

Build Variants

Activity_main.xml strings.xml AndroidManifest.xml file_paths.xml MainActivity.java

```
if(takePictureIntent.resolveActivity(getApplicationContext()) != null){  
    // Create a file where the photo should go  
    File photoFile = null;  
    try{  
        photoFile = createImageFile();  
    }catch(IOException ex){  
        Toast.makeText(MainActivity.this, ex.getMessage(), Toast.LENGTH_SHORT).show();  
    }  
    if(photoFile != null){  
        // We are using getUriFromFile(Context, String, File) which returns a content URI.  
        // For more recent apps targeting Android 7.0 (API level 24) and higher,  
        // passing a file: URI across a package boundary causes a FileUriExposedException.  
        // Therefore, we now present a more generic way of storing images using a FileProvider.  
        Uri photoURI = FileProvider.getUriFromFile(this, "com.yangqingsun.android.fireproof", photoFile);  
        takePictureIntent.putExtra(MediaStore.EXTRA_OUTPUT, photoURI);  
        startActivityForResult(takePictureIntent, REQUEST_IMAGE_CAPTURE);  
    }  
}  
  
// Create a time-based file name  
private File createImageFile() throws IOException{  
    // Create an image file name  
    String timeStamp = new SimpleDateFormat("yyyyMMdd_HHmmss").format(new Date());  
    String imageFileName = "JPEG_" + timeStamp + "_";  
    File storageDir = getExternalFilesDir(Environment.DIRECTORY_PICTURES);  
    File image = File.createTempFile(  
        imageFileName, /* prefix */  
        ".jpg", /* suffix */  
        storageDir /* directory */  
    );  
  
    // Save a file; path for use with ACTION_VIEW intents  
    currentPhotoPath = image.getAbsolutePath();  
    //Toast.makeText(MainActivity.this, currentPhotoPath,Toast.LENGTH_SHORT).show();  
    return image;  
}
```

TODO Problems Terminal Build Logcat Profiler App Inspection Event Log Layout Inspector

The screenshot shows the Android Studio interface with the project 'LAB2b' open. The main focus is on the 'MainActivity.java' file, which contains Java code for handling camera operations. The code includes methods for creating a photo file, taking a picture, and handling the result. It also includes a private method for creating a time-based file name and a protected override method for onActivityResult.

```
// Create a file where the photo should go
File photoFile = null;
try{
    photoFile = createImageFile();
} catch(IOException ex){
    Toast.makeText(MainActivity.this, ex.getMessage(), Toast.LENGTH_SHORT).show();
}
if(photoFile != null){
    // We are using getUriFromFile(Context, String, File) which returns a content URI.
    // For more recent apps targeting Android 7.0 (API level 24) and higher,
    // passing a file: URI across a package boundary causes a FileUriExposedException.
    // Therefore, we now present a more generic way of storing images using a FileProvider.
    Uri photoURI = FileProvider.getUriForFile(this, "com.yangqingsun.android.fireproof", photoFile);
    takePictureIntent.putExtra(MediaStore.EXTRA_OUTPUT, photoURI);
    startActivityForResult(takePictureIntent, REQUEST_IMAGE_CAPTURE);
}

// Create a time-based file name
private File createImageFile() throws IOException{
    // Create an image file name
    String timeStamp = new SimpleDateFormat("yyyyMMdd_HHmss").format(new Date());
    String imageFileName = "JPEG_" + timeStamp + "_";
    File storageDir = getExternalFilesDir(Environment.DIRECTORY_PICTURES);
    File image = File.createTempFile(
        imageFileName, /* prefix */
        ".jpg", /* suffix */
        storageDir /* directory */
    );
    // Save a file; path for use with ACTION_VIEW intents
    currentPhotoPath = image.getAbsolutePath();
    //Toast.makeText(MainActivity.this, currentPhotoPath, Toast.LENGTH_SHORT).show();
    return image;
}

// Get the thumbnail of image captured and store in photo object
// The Android Camera application encodes the photo in the return Intent
// delivered to onActivityResult() as a small Bitmap in the extras, under the key "data"
@SuppressLint("MissingSuperCall")
@Override
protected void onActivityResult(int requestCode, int resultCode, Intent data){
```

暂停

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help LAB 2b - MainActivity.java [LAB_2b.apk]

Project

Resource Manager

Gradle

暂停

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help LAB 2b - MainActivity.java [LAB_2b.apk]

Project

app

- manifests
- java

 - com.yangqingsun.lab2b
 - MainActivity

- com.yangqingsun.lab2b (androidTest)
- com.yangqingsun.lab2b (test)

res

- drawable
- layout
- mipmap
- values

 - colors.xml
 - strings.xml

- themes (2)

xml

- file_paths.xml

Gradle Scripts

activity_main.xml strings.xml AndroidManifest.xml file_paths.xml MainActivity.java

34 6 1 3

```
        }  
  
        // Create a time-based file name  
        private File createImageFile() throws IOException{  
            // Create an image file name  
            String timeStamp = new SimpleDateFormat("yyyyMMdd_HHmmss").format(new Date());  
            String imageFileName = "JPEG_" + timeStamp + "-";  
            File storageDir = getExternalFilesDir(Environment.DIRECTORY_PICTURES);  
            File image = File.createTempFile(  
                imageFileName, /* prefix */  
                ".jpg", /* suffix */  
                storageDir /* directory */  
            );  
  
            // Save a file; path for use with ACTION_VIEW intents  
            currentPhotoPath = image.getAbsolutePath();  
            //Toast.makeText(MainActivity.this, currentPhotoPath,Toast.LENGTH_SHORT).show();  
            return image;  
        }  
  
        // Get the thumbnail of image captured and store in photo object  
        // The Android Camera application encodes the photo in the return Intent  
        // delivered to onActivityResult() as a small Bitmap in the extras, under the key "data"  
        @SuppressLint("MissingSuperCall")  
        @Override  
        protected void onActivityResult(int requestCode, int resultCode, Intent data){  
            if(requestCode == REQUEST_IMAGE_CAPTURE && resultCode == RESULT_OK){  
                /*Bundle extras = data.getExtras();  
                Bitmap imageBitmap = (Bitmap) extras.get("data");  
                photo.setImageBitmap(imageBitmap);*/  
  
                // Invoke media'scanner  
                // galleryAddPic();  
  
                setPic();  
            }  
        }  
    }  
}
```

Structure

Favorites

Build Variants

Emulator

Device File Explorer

TODO Problems Terminal Build Logcat Profiler App Inspection Event Log Layout Inspector

暂停

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help LAB 2b - MainActivity.java [LAB_2b.app]

LAB2b app src main java com yangqingsun lab2b MainActivity setPic

Project

- app
 - manifests
 - AndroidManifest.xml
 - java
 - com.yangqingsun.lab2b
 - MainActivity
 - res
 - drawable
 - layout
 - mipmap
 - values
 - colors.xml
 - strings.xml
 - themes (2)
 - xml
 - file_paths.xml

> Gradle Scripts

Structure

Favorites

Build Variants

```
62 // Create a time-based file name
63 @
64     private File createImageFile() throws IOException{
65         // Create an image file name
66         String timeStamp = new SimpleDateFormat("yyyyMMdd_HHmss").format(new Date());
67         String imageFileName = "JPEG_" + timeStamp + "_";
68         File storageDir = getExternalFilesDir(Environment.DIRECTORY_PICTURES);
69         File image = File.createTempFile(
70             imageFileName, /* prefix */
71             ".jpg", /* suffix */
72             storageDir      /* directory */
73         );
74
75         // Save a file; path for use with ACTION_VIEW intents
76         currentPhotoPath = image.getAbsolutePath();
77         //Toast.makeText(MainActivity.this, currentPhotoPath,Toast.LENGTH_SHORT).show();
78         return image;
79     }
80
81     // Get the thumbnail of image captured and store in photo object
82     // The Android Camera application encodes the photo in the Intent
83     // delivered to onActivityResult() as a small Bitmap in the extras, under the key "data"
84     @SuppressLint("MissingSuperCall")
85     @Override
86     protected void onActivityResult(int requestCode, int resultCode, Intent data){
87         if(requestCode == REQUEST_IMAGE_CAPTURE && resultCode == RESULT_OK){
88             /*Bundle extras = data.getExtras();
89             Bitmap imageBitmap = (Bitmap) extras.get("data");
90             photo.setImageBitmap(imageBitmap);*/
91
92             // Invoke media'scanner
93             // galleryAddPic();
94
95             setPic();
96         }
97     }
98
99     //Set multiple full-sized images to be tricky with limited memory.
100    private void setPic() {
101        // Get the dimensions of the View
102        int targetW = photo.getWidth();
103        int targetH = photo.getHeight();
104
105        // Get the dimensions of the bitmap
```

47 6 1 3

app Nexus 4 API 22

Emulator Device File Explorer

TODO

Problems

Terminal

Build

Logcat

Profiler

App Inspection

Event Log

Layout Inspector

The screenshot shows the Android Studio interface with the project 'LAB2b' open. The main focus is on the code editor displaying `MainActivity.java`. The code implements a method `setPic()` to handle image loading from a bundle or file path. It includes logic for decoding the image using `BitmapFactory` and scaling it down if necessary. The code editor has syntax highlighting and a vertical scrollbar. The top navigation bar shows the current file as `LAB 2b - MainActivity.java [LAB_2b.app]`. The bottom navigation bar includes tabs for `TODO`, `Problems`, `Terminal`, `Build`, `Logcat`, `Profiler`, and `App Inspection`.

```
    /*Bundle extras = data.getExtras();
     Bitmap imageBitmap = (Bitmap) extras.get("data");
     photo.setImageBitmap(imageBitmap);*/}

     // Invoke media'scanner
     // galleryAddPic();

     setPic();

}

//Set multiple full-sized images to be tricky with limited memory.
private void setPic() {
    // Get the dimensions of the View
    int targetW = photo.getWidth();
    int targetH = photo.getHeight();

    // Get the dimensions of the bitmap
    BitmapFactory.Options bmOptions = new BitmapFactory.Options();
    bmOptions.inJustDecodeBounds = true;

    BitmapFactory.decodeFile(currentPhotoPath, bmOptions);

    int photoW = bmOptions.outWidth;
    int photoH = bmOptions.outHeight;

    // Determine how much to scale down the image
    int scaleFactor = Math.max(1, Math.min(photoW/targetW, photoH/targetH));

    // Decode the image file into a Bitmap sized to fill the View
    bmOptions.inJustDecodeBounds = false;
    bmOptions.inSampleSize = scaleFactor;
    bmOptions.inPurgeable = true;

    Bitmap bitmap = BitmapFactory.decodeFile(currentPhotoPath, bmOptions);
    photo.setImageBitmap(bitmap);
}
```

暂停

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help LAB 2b - MainActivity.java [LAB_2b.apk]

Project

Resource Manager

Structure

Favorites

Build Variants

Activity_main.xml strings.xml AndroidManifest.xml file_paths.xml MainActivity.java

app src main java com yangqingsun lab2b MainActivity

Nexus 4 API 22

Gradle

TODO Problems Terminal Build Logcat Profiler App Inspection Event Log Layout Inspector

```
photo.setImageBitmap(imageBitmap);*/  
  
        // Invoke media'scanner  
        // galleryAddPic();  
  
        setPic();  
    }  
  
    //Set multiple full-sized images to be tricky with limited memory.  
    private void setPic() {  
        // Get the dimensions of the View  
        int targetW = photo.getWidth();  
        int targetH = photo.getHeight();  
  
        // Get the dimensions of the bitmap  
        BitmapFactory.Options bmOptions = new BitmapFactory.Options();  
        bmOptions.inJustDecodeBounds = true;  
  
        BitmapFactory.decodeFile(currentPhotoPath, bmOptions);  
  
        int photoW = bmOptions.outWidth;  
        int photoH = bmOptions.outHeight;  
  
        // Determine how much to scale down the image  
        int scaleFactor = Math.max(1, Math.min(photoW/targetW, photoH/targetH));  
  
        // Decode the image file into a Bitmap sized to fill the View  
        bmOptions.inJustDecodeBounds = false;  
        bmOptions.inSampleSize = scaleFactor;  
        bmOptions.inPurgeable = true;  
  
        Bitmap bitmap = BitmapFactory.decodeFile(currentPhotoPath, bmOptions);  
        photo.setImageBitmap(bitmap);  
    }  
  
    // Check if this device has a camera  
    private boolean checkCameraHardware(Context context) {  
        if (context.getPackageManager().hasSystemFeature(PackageManager.FEATURE_CAMERA)){  
            // this device has a camera  
            Toast.makeText(context, "This device has a camera", Toast.LENGTH_SHORT).show();  
            // Check how many camera does it have  
            Toast.makeText(context, "This device has " + String.valueOf(Camera.getNumberOfCameras() + " cameras."), Toast.LENGTH_SHORT).show();  
        }  
    }  
}
```

The screenshot shows the Android Studio interface with the project 'LAB2b' open. The main window displays the Java code for 'MainActivity'. The code handles image decoding and camera hardware checking.

```
// Get the dimensions of the bitmap
BitmapFactory.Options bmOptions = new BitmapFactory.Options();
bmOptions.inJustDecodeBounds = true;

BitmapFactory.decodeFile(currentPhotoPath, bmOptions);

int photoW = bmOptions.outWidth;
int photoH = bmOptions.outHeight;

// Determine how much to scale down the image
int scaleFactor = Math.max(1, Math.min(photoW/targetW, photoH/targetH));

// Decode the image file into a Bitmap sized to fill the View
bmOptions.inJustDecodeBounds = false;
bmOptions.inSampleSize = scaleFactor;
bmOptions.inPurgeable = true;

Bitmap bitmap = BitmapFactory.decodeFile(currentPhotoPath, bmOptions);
photo.setImageBitmap(bitmap);

}

// Check if this device has a camera
private boolean checkCameraHardware(Context context) {
    if (context.getPackageManager().hasSystemFeature(PackageManager.FEATURE_CAMERA)){
        // this device has a camera
        Toast.makeText(context, "This device has a camera", Toast.LENGTH_SHORT).show();
        // Check how many camera does it have
        Toast.makeText(context, "This device has " + String.valueOf(Camera.getNumberOfCameras() + " cameras."), Toast.LENGTH_SHORT).show();
        return true;
    } else {
        // no camera on this device
        Toast.makeText(context, "This device has NO camera", Toast.LENGTH_SHORT).show();
        return false;
    }
}
```

The Project sidebar on the left shows the app structure, including manifest files, Java classes (MainActivity), and resource XML files like colors.xml and strings.xml. The bottom navigation bar includes tabs for TODO, Problems, Terminal, Build, Logcat, Profiler, App Inspection, Event Log, and Layout Inspector.

暂停

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help LAB 2b - MainActivity.java [LAB_2b.app]

Project

Resource Manager

Structure

Favorites

Build Variants

暂停

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help LAB 2b - MainActivity.java [LAB_2b.app]

app > src > main > java > com > yangqingsun > lab2b > MainActivity

activity_main.xml strings.xml AndroidManifest.xml file_paths.xml MainActivity.java

Nexus 4 API 22

Gradle

Import class Alt+Shift+Enter More actions... Alt+Enter

Import necessary classes.

```
package com.yangqingsun.lab2b;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
public class MainActivity extends AppCompatActivity {

    static final int REQUEST_IMAGE_CAPTURE = 1;
    String currentPhotoPath;

    // Declare objects
    Button takePhoto;
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        // Get objects
        takePhoto = findViewById(R.id.btnTakePhoto);
        photo = findViewById(R.id.imgPhotoTaken);

        // Add Click event to takephoto button object
        takePhoto.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                dispatchTakePictureIntent();
            }
        });
    }

    //Take photo with the camera application
    private void dispatchTakePictureIntent(){
        // Check device's camera availability and number of cameras
        checkCameraHardware(MainActivity.this);

        // A quick way to enable taking pictures or videos in your application without a lot of extra code
        // is to use an Intent to invoke an existing Android camera application
        Intent takePictureIntent = new Intent(MediaStore.ACTION_IMAGE_CAPTURE);
        // Ensure that there's a camera activity to handle the intent
        if(takePictureIntent.resolveActivity(getPackageManager()) != null){
            // Create a file where the photo should be
        }
    }
}
```

TODO Problems Terminal Build Logcat Profiler App Inspection Event Log Layout Inspector

暂停

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help LAB 2b - MainActivity.java [LAB_2b.app]

LAB2b app src main java com yangqingsun lab2b MainActivity checkCameraHardware

Project

app manifests AndroidManifest.xml Java com.yangqingsun.lab2b MainActivity res drawable layout mipmap values colors.xml strings.xml themes (2) xml file_paths.xml

Resource Manager

Gradle Scripts

Structure

Favorites

Build Variants

Activity_main.xml strings.xml AndroidManifest.xml file_paths.xml MainActivity.java

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```
// Get the dimensions of the bitmap
BitmapFactory.Options bmOptions = new BitmapFactory.Options();
bmOptions.inJustDecodeBounds = true;

BitmapFactory.decodeFile(currentPhotoPath, bmOptions);

int photoW = bmOptions.outWidth;
int photoH = bmOptions.outHeight;

// Determine how much to scale down the image
int scaleFactor = Math.max(1, Math.min(photoW/targetW, photoH/targetH));

// Decode the image file into a Bitmap sized to fill the View
bmOptions.inJustDecodeBounds = false;
bmOptions.inSampleSize = scaleFactor;
bmOptions.inPurgeable = true;

Bitmap bitmap = BitmapFactory.decodeFile(currentPhotoPath, bmOptions);
ph Cannot resolve symbol 'Bitmap' ...
Import class Alt+Shift+Enter More actions... Alt+Enter
```

// Check if this device has a camera

```
private boolean checkCameraHardware(Context context) {
    if (context.getPackageManager().hasSystemFeature(PackageManager.FEATURE_CAMERA)){
        // this device has a camera
        Toast.makeText(context, text: "This device has a camera", Toast.LENGTH_SHORT).show();
        // Check how many camera does it have
        Toast.makeText(context, text: "This device has " + String.valueOf(Camera.getNumberOfCameras() + " cameras."), Toast.LENGTH_SHORT).show();
        return true;
    } else {
        // no camera on this device
        Toast.makeText(context, text: "This device has NO camera", Toast.LENGTH_SHORT).show();
        return false;
    }
}
```

Import necessary classes.

Emulator Device File Explorer

TODO Problems Terminal Build Logcat Profiler App Inspection Event Log Layout Inspector

The screenshot shows the Android Studio interface with the project 'LAB2b' open. The code editor displays `MainActivity.java`, which contains Java code for handling camera operations. The code includes imports for `java.io.IOException`, `java.text.SimpleDateFormat`, and `java.util.Date`. It defines a static final integer `REQUEST_IMAGE_CAPTURE` and a string `currentPhotoPath`. The `onCreate` method initializes objects `takePhoto` and `photo`. It adds a click listener to the `takePhoto` button that calls `dispatchTakePictureIntent`. The `dispatchTakePictureIntent` method checks for camera availability, creates an intent for `ACTION_IMAGE_CAPTURE`, and tries to resolve it. The code editor has syntax highlighting and code completion features.

```
import java.io.IOException;
import java.text.SimpleDateFormat;
import java.util.Date;

public class MainActivity extends AppCompatActivity {

    static final int REQUEST_IMAGE_CAPTURE = 1;
    String currentPhotoPath;

    // Declare objects
    Button takePhoto;
    ImageView photo;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        // Get objects
        takePhoto = findViewById(R.id.btnTakePhoto);
        photo = findViewById(R.id.imgPhotoTaken);

        // Add Click event to takephoto button object
        takePhoto.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                dispatchTakePictureIntent();
            }
        });
    }

    //Take photo with the camera application
    private void dispatchTakePictureIntent(){
        // Check device's camera availability and number of cameras
        checkCameraHardware(context: MainActivity.this);

        // A quick way to enable taking pictures or videos in your application without a lot of extra code
        // is to use an Intent to invoke an existing Android camera application
        Intent takePictureIntent = new Intent(MediaStore.ACTION_IMAGE_CAPTURE);
        // Ensure that there's a camera activity to handle the intent
        if(takePictureIntent.resolveActivity(getApplicationContext()) != null){
            // Create a file where the photo should go
            File photoFile = null;
            try{

```

The screenshot shows the Android Studio interface with the following details:

- Project Bar:** LAB2b > app > src > main > java > com > yangqingsun > lab2b > MainActivity > setPic
- Toolbar:** Includes icons for File, Edit, View, Navigate, Code, Analyze, Refactor, Build, Run, Tools, VCS, Window, Help, and a search bar.
- Device Selection:** Nexus 4 API 22 is selected in the top right corner, highlighted with a red box.
- Code Editor:** The file MainActivity.java is open, showing Java code for handling camera operations. The code includes imports for Exception, SimpleDateFormat, Date, and various Android classes. It defines a static final integer REQUEST_IMAGE_CAPTURE, declares objects for a button and image view, and implements an OnClickListener for the button. The code also includes a private method dispatchTakePictureIntent() which checks camera availability and creates an Intent for ACTION_IMAGE_CAPTURE.
- Project Structure:** The left sidebar shows the project structure with modules like app, manifests, java, res, and xml.
- Toolbars:** Bottom toolbars include TODO, Problems, Terminal, Build, Logcat, Profiler, App Inspection, Event Log, and Layout Inspector.

The screenshot shows the Android Studio interface with the following details:

- Top Bar:** File, Edit, View, Navigate, Code, Analyze, Refactor, Build, Run, Tools, VCS, Window, Help, LAB 2b - MainActivity.java [LAB_2b.app]
- Toolbar:** Includes icons for Build, Run, Stop, Clean, Invalidate Caches, and others.
- Project Structure:** Shows the project structure under 'app':
 - manifests: AndroidManifest.xml
 - java: com.yangqingsun.lab2b (MainActivity)
 - res: drawable, layout, mipmap, values (colors.xml, strings.xml), themes (2)
 - xml: file_paths.xml
- Main Editor:** Displays the MainActivity.java code. The code handles button click events to take a photo using the camera application and save it to a file path. It includes imports for java.util.Date, java.text.SimpleDateFormat, and java.io.IOException.
- Status Bar:** Shows 'Waiting...' in a large gray box, indicating a pending operation or task.
- Bottom Navigation:** TODO, Problems, Terminal, Build, Logcat, Profiler, App Inspection, Event Log, Layout Inspector.

The screenshot shows the Android Studio interface with the project **LAB2b** open. The **MainActivity.java** file is the active code editor. The application's UI is displayed in the preview window, featuring a purple header bar with the text "LAB 2b" and a white content area containing a blue button labeled "TAKE A PHOTO BY Y. SUN". The code editor shows Java code for handling camera operations.

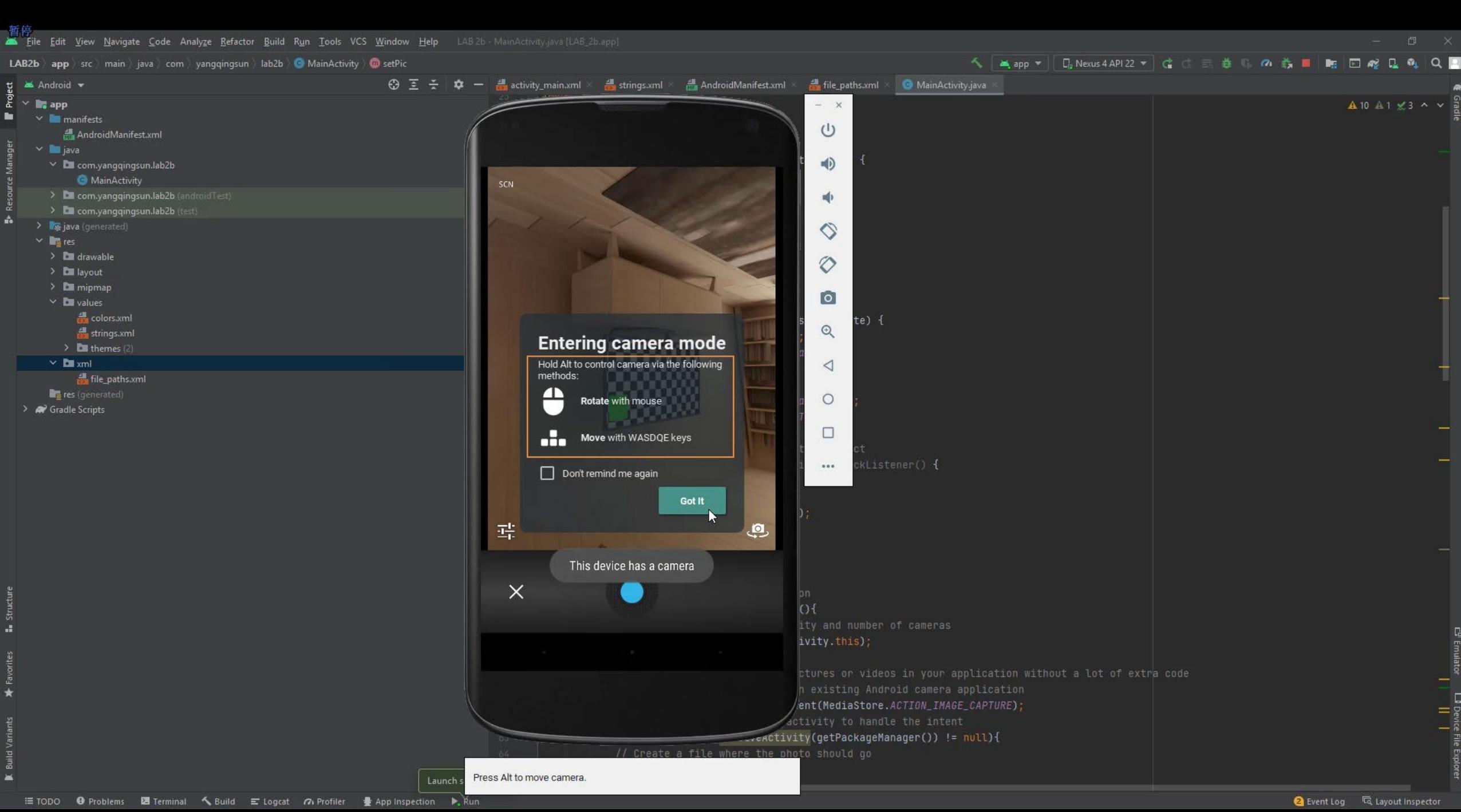
```
4G 12:52
LAB 2b
TAKE A PHOTO BY Y. SUN
Launch succeeded

activity_main.xml strings.xml AndroidManifest.xml file_paths.xml MainActivity.java

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help LAB 2b - MainActivity.java [LAB_2b.app]
app src main java com.yangqingsun.lab2b MainActivity setPic
Gradle
Project Resource Manager
Android
app
manifests
AndroidManifest.xml
java
com.yangqingsun.lab2b
MainActivity
com.yangqingsun.lab2b (androidTest)
com.yangqingsun.lab2b (test)
java (generated)
res
drawable
layout
mipmap
values
colors.xml
strings.xml
themes (?)
xml
file_paths.xml
res (generated)
Gradle Scripts
Structure
Favorites
Build Variants
Emulator
Device File Explorer
File Editor
activity_main.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="#fff"
    android:orientation="vertical">
    <include
        android:id="@+id/include1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"/>
    <Button
        android:id="@+id/button"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:background="#007bff"
        android:text="TAKE A PHOTO BY Y. SUN"/>

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round">
        <activity
            android:name=".MainActivity"
            android:label="@string/app_name">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        
    

```



```
activity_main.xml strings.xml AndroidManifest.xml file_paths.xml MainActivity.java
```

Project LAB2b app src main java com.yangqingsun.lab2b MainActivity setPic

Resource Manager

Gradle

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help LAB 2b - MainActivity.java [LAB_2b.app]

Android Project app manifests AndroidManifest.xml Java com.yangqingsun.lab2b MainActivity com.yangqingsun.lab2b (androidTest) com.yangqingsun.lab2b (test) java (generated) res drawable layout mipmap values colors.xml strings.xml themes (?) xml file_paths.xml res (generated) Gradle Scripts

Structure Favorites Build Variants

Launch s Press Alt to move camera.

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ictures or videos in your application without a lot of extra code
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n existing Android camera application
```

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ent(MediaStore.ACTION_IMAGE_CAPTURE);
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activity to handle the intent
```

```
activity(getPackageManager()) != null){
```

```
// Create a file where the photo should go
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TODO Problems Terminal Build Logcat Profiler App Inspection Run Event Log Layout Inspector

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help LAB 2b - MainActivity.java [LAB_2b.app]

LAB2b app src main java com yangqingsun lab2b MainActivity setPic

Project

app manifests AndroidManifest.xml

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Gradle Scripts

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activity_main.xml strings.xml AndroidManifest.xml file_paths.xml MainActivity.java

Nexus 4 API 22

10 1 3

Gradle

Emulator Device File Explorer

SCN

```
setPic.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View v) {  
        Intent intent = new Intent(MediaStore.ACTION_IMAGE_CAPTURE);  
        startActivityForResult(intent, 1);  
    }  
});  
  
if (getActivity().getPackageManager() != null){  
    // Create a file where the photo should go  
    File photoFile = null;  
    try{  
        photoFile = ...  
    } catch (Exception e){  
        Log.d("Image", "File creation failed: " + e.getMessage());  
    }  
}  
  
if (photoFile != null){  
    Intent intent = new Intent(Intent.ACTION_MEDIA_SCANNER_SCAN_FILE);  
    Uri uri = Uri.fromFile(photoFile);  
    intent.setData(uri);  
    getActivity().sendBroadcast(intent);  
}
```

Launch succeeded

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File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help LAB 2b - MainActivity.java [LAB_2b.app]

LAB2b app src main java com yangqingsun lab2b MainActivity setPic

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app manifests AndroidManifest.xml

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res (generated)

Gradle Scripts

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Nexus 4 API 22

10 1 3

Gradle

Emulator Device File Explorer

TAKE A PHOTO BY Y. SUN

Launch succeeded

4G 12:52

LAB 2b

Activity code:

```
onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);

    // Set the camera image path
    Uri imageUri = Uri.fromFile(new File(Environment.getExternalStorageDirectory(), "image.jpg"));

    Intent intent = new Intent(MediaStore.ACTION_IMAGE_CAPTURE);
    intent.putExtra(MediaStore.EXTRA_OUTPUT, imageUri);

    startActivityForResult(intent, REQUEST_CODE_CAMERA);
}

@Override
protected void onActivityResult(int requestCode, int resultCode, Intent data) {
    super.onActivityResult(requestCode, resultCode, data);

    if (requestCode == REQUEST_CODE_CAMERA) {
        if (resultCode == RESULT_OK) {
            // Create a file where the photo should go
            File photoFile = null;
            try {
                photoFile = ...
            } catch (IOException e) {
                Log.e("MainActivity", "Error creating photo file", e);
            }
        } else if (resultCode == RESULT_CANCELED) {
            Log.d("MainActivity", "User canceled camera capture");
        }
    }
}
```

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File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help LAB 2b - MainActivity.java [LAB_2b.app]

Project

Resource Manager

Gradle

app src main java com.yangqingsun.lab2b MainActivity setPic

activity_main.xml strings.xml AndroidManifest.xml file_paths.xml MainActivity.java

Nexus 4 API 22

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app manifests AndroidManifest.xml

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Gradle Scripts

TAKE A PHOTO BY Y. SUN

Launch succeeded

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n existing Android camera application
ent(MediaStore.ACTION_IMAGE_CAPTURE);
activity to handle the intent
activity(getApplicationContext()) != null){
// Create a file where the photo should go
File photoFile = null;
try{

Event Log Layout Inspector

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help LAB 2b - MainActivity.java [LAB_2b.app]

LAB2b app src main java com yangqingsun lab2b MainActivity setPic

Project

app manifests AndroidManifest.xml Java com.yangqingsun.lab2b MainActivity res drawable layout mipmap values colors.xml strings.xml themes (?) xml file_paths.xml res (generated) Gradle Scripts

activity_main.xml strings.xml AndroidManifest.xml file_paths.xml MainActivity.java

Nexus 4 API 22

10 1 3

Gradle

Resource Manager

Structure

Favorites

Build Variants

Launch s

Press Alt to move camera.

SCN

This device has a camera

X

Activity code:

```
setContentView(R.layout.activity_main);
Intent intent = new Intent(MediaStore.ACTION_IMAGE_CAPTURE);
startActivityForResult(intent, 0);
```

onActivityResult(int requestCode, int resultCode, Intent data) {

```
if (requestCode == 0 && resultCode == RESULT_OK) {
```

Uri uri = data.getData();

```
    if (uri != null) {
```

// Create a file where the photo should go

```
        File file = ...;
```

File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help LAB 2b - MainActivity.java [LAB_2b.apk]

LAB2b app src main java com yangqingsun lab2b MainActivity setPic

Project

app manifests AndroidManifest.xml

java com.yangqingsun.lab2b MainActivity

com.yangqingsun.lab2b (androidTest)

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xml file_paths.xml

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Gradle Scripts

Resource Manager

activity_main.xml strings.xml AndroidManifest.xml file_paths.xml MainActivity.java

Nexus 4 API 22

10 1 3

Gradle

Emulator Device File Explorer

SCN

This device has 2 cameras.

X

Launch succeeded

MainActivity.java

```
public class MainActivity extends AppCompatActivity {    private Camera camera;    private CameraPreview cameraPreview;    private CameraCaptureSession cameraCaptureSession;    private CameraCaptureSession.CaptureCallback cameraCaptureCallback;    private Intent mediaScanIntent;    private Uri photoURI;    private String photoFileName;    private File photoFile;    private Handler cameraHandler;    private Handler cameraPreviewHandler;    private Handler cameraCaptureHandler;    private Handler cameraCaptureSessionHandler;    private Handler cameraCaptureSessionHandler;
```

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ity and number of cameras

ivity.this);

ictures or videos in your application without a lot of extra code

n existing Android camera application

ent(MediaStore.ACTION_IMAGE_CAPTURE);

activity to handle the intent

// Create a file where the photo should go

File photoFile = null;

try{

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File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help LAB 2b - MainActivity.java [LAB_2b.app]

LAB2b app src main java com yangqingsun lab2b MainActivity setPic

Project

app manifests AndroidManifest.xml

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res drawable layout mipmap values colors.xml strings.xml themes (?) xml file_paths.xml res (generated)

Gradle Scripts

Resource Manager

activity_main.xml strings.xml AndroidManifest.xml file_paths.xml MainActivity.java

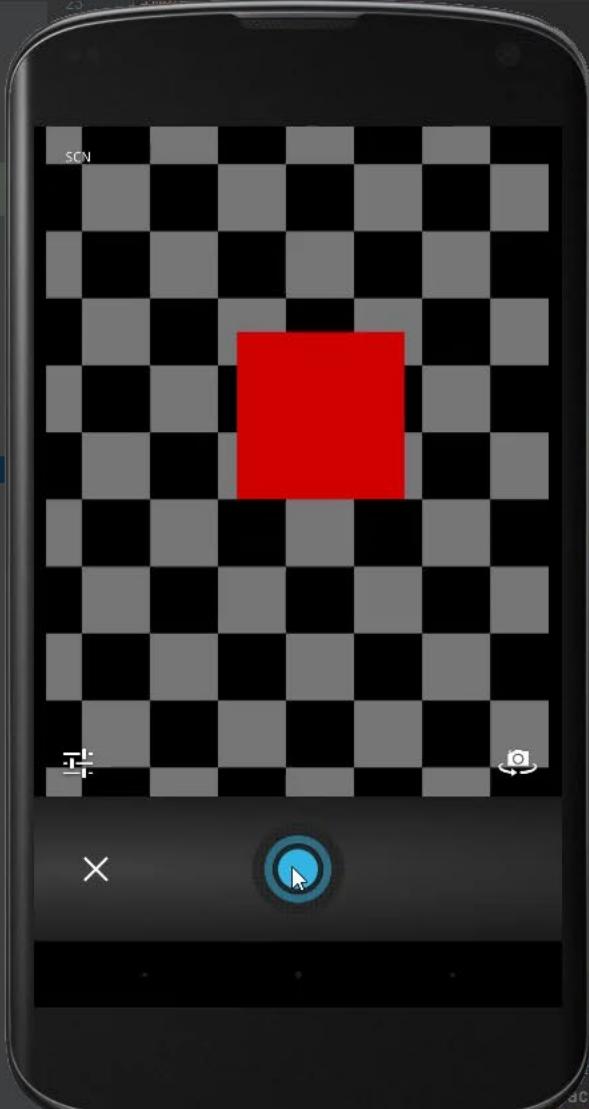
Nexus 4 API 22

10 1 3

Gradle

Emulator Device File Explorer

SCN



The application displays a 8x8 chessboard pattern. A single red square is positioned in the center of the board.

>MainActivity.java

```
setPic();
    ...
    Intent intent = new Intent(MediaStore.ACTION_IMAGE_CAPTURE);
    startActivityForResult(intent, REQUEST_IMAGE_CAPTURE);
}

@Override
protected void onActivityResult(int requestCode, int resultCode, Intent data) {
    if (requestCode == REQUEST_IMAGE_CAPTURE && resultCode == RESULT_OK) {
        Bundle extras = data.getExtras();
        Bitmap imageBitmap = (Bitmap) extras.get("data");
        ...
    }
}
```

Launch succeeded

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File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help LAB 2b - MainActivity.java [LAB_2b.app]

LAB2b app src main java com yangqingsun lab2b MainActivity setPic

Project

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manifests
AndroidManifest.xml
java
com.yangqingsun.lab2b
MainActivity
com.yangqingsun.lab2b (androidTest)
com.yangqingsun.lab2b (test)
java (generated)
res
drawable
layout
mipmap
values
colors.xml
strings.xml
themes (?)
xml
file_paths.xml
res (generated)
Gradle Scripts

Resource Manager

activity_main.xml strings.xml AndroidManifest.xml file_paths.xml MainActivity.java

Nexus 4 API 22

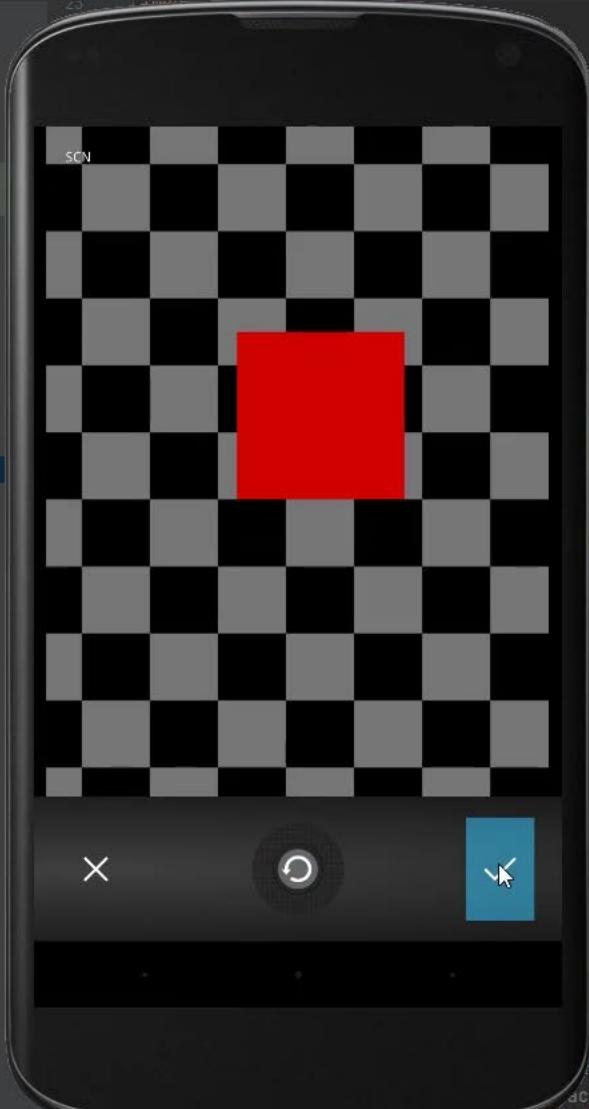
10 1 3

Gradle

Emulator

Device File Explorer

SCN



The application interface features a large chessboard grid in the center. A single red square is positioned in the middle of the board. At the bottom of the screen, there is a dark navigation bar with three icons: a white 'X' on the left, a circular arrow in the center, and a blue square with a white diagonal line on the right.

Launch succeeded

```
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        ... ckListener() {  
  
    };  
    on  
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ity and number of cameras  
ivity.this);  
  
ictures or videos in your application without a lot of extra code  
n existing Android camera application  
ent(MediaStore.ACTION_IMAGE_CAPTURE);  
  
activity to handle the intent  
    activity(getPackageManager()) != null){  
  
    // Create a file where the photo should go  
    File photoFile = null;  
    try{
```

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