

파일 처리

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파일 처리 기본

▶ 파일 처리 기본

▶ 내장 메모리 파일 처리

- ▶ 앱을 종료했다가 다음에 다시 실행할 때 사용한 곳부터 이어서 작업을 하고 싶은 경우가 있다. 이럴 때 내장 메모리에 파일을 저장하고 읽어오는 방식이 쓰임

▶ 내장 메모리 저장 위치

- ▶ `/data/data/패키지명/files` 폴더



▶ 파일 처리 절차





Create Android Project

Application name

Company domain

Project location



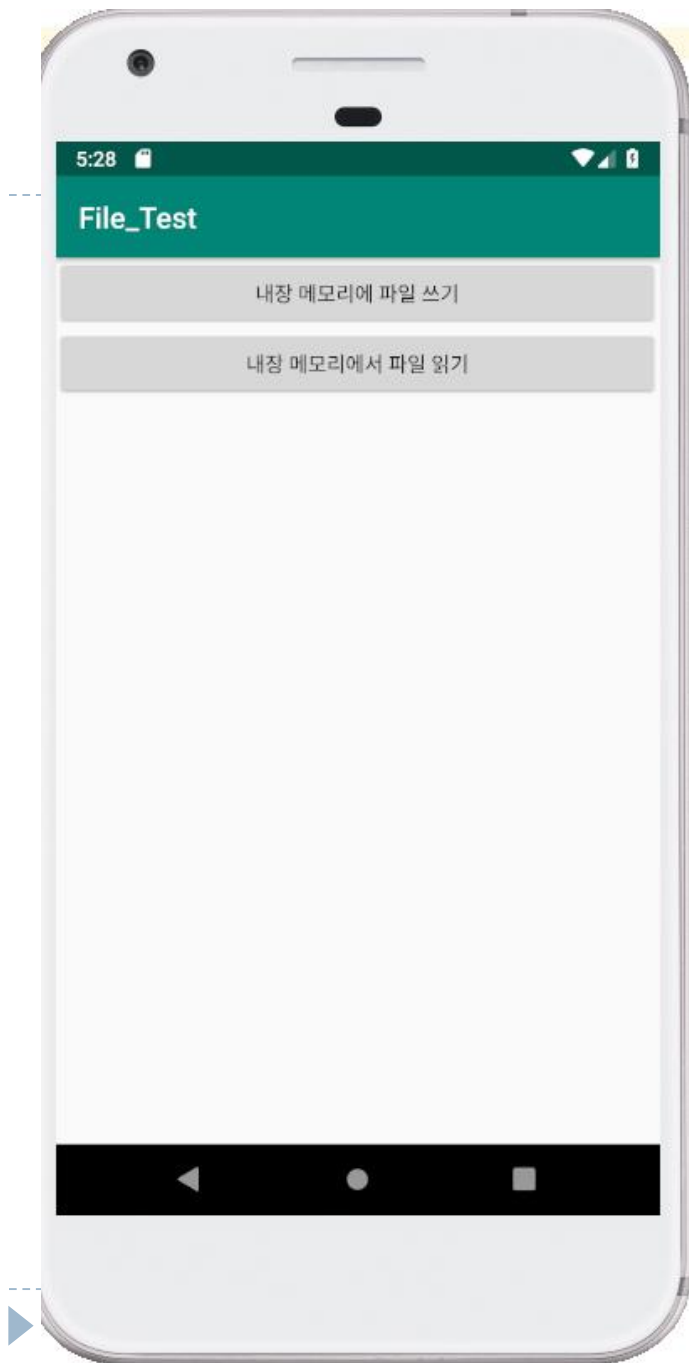
Package name

☐ Include C++ support☐ Include Kotlin support

```
1 <?xml version="1.0" encoding="utf-8"?>
2 <LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
3   xmlns:tools="http://schemas.android.com/tools"
4   android:layout_width="fill_parent"
5   android:layout_height="fill_parent"
6   android:orientation="vertical" >
7
8   <Button
9     android:id="@+id/btnWrite"
10    android:layout_width="match_parent"
11    android:layout_height="wrap_content"
12    android:text="내장 메모리에 파일 쓰기" />
13
14   <Button
15     android:id="@+id/btnRead"
16     android:layout_width="match_parent"
17     android:layout_height="wrap_content"
18     android:text="내장 메모리에서 파일 읽기" />
19
20 </LinearLayout>
```

@Override

```
protected void onCreate(Bundle savedInstanceState) {  
    super.onCreate(savedInstanceState);  
    setContentView(R.layout.activity_main);  
  
    Button btnRead, btnWrite;  
    btnRead = (Button) findViewById(R.id.btnRead);  
    btnWrite = (Button) findViewById(R.id.btnWrite);  
  
    btnWrite.setOnClickListener(new View.OnClickListener() {  
        public void onClick(View v) {  
            try {  
                FileOutputStream outFs = openFileOutput( name: "file.txt", Context.MODE_PRIVATE);  
                String str = "안드로이드 테스트";  
                outFs.write(str.getBytes());  
                outFs.close();  
                Toast.makeText(getApplicationContext(), text: "file.txt가 생성됨", Toast.LENGTH_SHORT).show();  
            } catch (IOException e) {  
            }  
        }  
    });  
  
    btnRead.setOnClickListener(new View.OnClickListener() {  
        public void onClick(View v) {  
            try {  
                FileInputStream inFs = openFileInput( name: "file.txt");  
                byte[] txt = new byte[30];  
                inFs.read(txt);  
                String str = new String(txt);  
                Toast.makeText(getApplicationContext(), str, Toast.LENGTH_SHORT).show();  
                inFs.close();  
            } catch (IOException e) {  
                Toast.makeText(getApplicationContext(), text: "파일 없음", Toast.LENGTH_SHORT).show();  
            }  
        }  
    });  
}
```



일기장 앱

▶ 날짜를 선택 → 일기 쓰기 → 일기 보기

Create New Project

Create Android Project

Application name
daily_Test

Company domain
pjoon.example.com

Project location
C:\Users\pjoon\AndroidStudioProjects\daily_Test

Package name
com.example.pjoon.daily_test Edit

☐ Include C++ support
☐ Include Kotlin support

i The application name for most apps begins with an uppercase letter

Previous Next Cancel Finish


```
1 <?xml version="1.0" encoding="utf-8"?>
2 <LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
3     xmlns:tools="http://schemas.android.com/tools"
4     android:layout_width="fill_parent"
5     android:layout_height="fill_parent"
6     android:gravity="center"
7     android:orientation="vertical" >
8
9     <DatePicker
10         android:datePickerMode="spinner"
11         android:id="@+id/datePicker1"
12         android:layout_width="wrap_content"
13         android:layout_height="wrap_content"
14         android:calendarViewShown="false" />
15
16     <EditText
17         android:layout_weight="1"
18         android:id="@+id/edtDiary"
19         android:layout_width="match_parent"
20         android:layout_height="wrap_content"
21         android:background="#00ff00"
22         android:lines="8" >
23
24     </EditText>
25
26     <Button
27         android:id="@+id/btnWrite"
28         android:layout_width="match_parent"
29         android:layout_height="wrap_content"
30         android:enabled="false"
31         android:text="Button" />
32 </LinearLayout>
```

```
9  public class MainActivity extends AppCompatActivity {
10      DatePicker dp;
11      EditText edtDiary;
12      Button btnWrite;
13      String fileName;
14
15      @Override
16      protected void onCreate(Bundle savedInstanceState) {
17          super.onCreate(savedInstanceState);
18          setContentView(R.layout.activity_main);
19          setTitle("간단 일기장");
20
21          dp = (DatePicker) findViewById(R.id.datePicker1);
22          edtDiary = (EditText) findViewById(R.id.edtDiary);
23          btnWrite = (Button) findViewById(R.id.btnWrite);
24      }
25  }
```

```

25
26 Calendar cal = Calendar.getInstance();
27 int cYear = cal.get(Calendar.YEAR);
28 int cMonth = cal.get(Calendar.MONTH);
29 int cDay = cal.get(Calendar.DAY_OF_MONTH);
30
31 dp.init(cYear, cMonth, cDay, new DatePicker.OnDateChangedListener() {
32     public void onDateChanged(DatePicker view, int year,
33                               int monthOfYear, int dayOfMonth) {
34         fileName = Integer.toString(year) + "_"
35                     + Integer.toString(monthOfYear + 1) + "_"
36                     + Integer.toString(dayOfMonth) + ".txt";
37         String str = readDiary(fileName);
38         edtDiary.setText(str);
39         btnWrite.setEnabled(true);
40     }
41 });

```

```
45     }
46
47     String readDiary(String fName) {
48         String diaryStr = null;
49         FileInputStream inFs;
50         try {
51             inFs = openFileInput(fName);
52             byte[] txt = new byte[500];
53             inFs.read(txt);
54             inFs.close();
55             diaryStr = (new String(txt)).trim();
56             btnWrite.setText("수정 하기");
57         } catch (IOException e) {
58             edtDiary.setHint("일기 없음");
59             btnWrite.setText("새로 저장");
60         }
61         return diaryStr;
62     }
```

▶ dp.init() 인터페이스 구현 아래 코딩

```
49
50 btnWrite.setOnClickListener(new View.OnClickListener() {
51     public void onClick(View v) {
52         try {
53             FileOutputStream outFs = openFileOutput(fileName,
54                 Context.MODE_PRIVATE);
55             String str = edtDiary.getText().toString();
56             outFs.write(str.getBytes());
57             outFs.close();
58             Toast.makeText(getApplicationContext(),
59                 text: fileName + " 이 저장됨", Toast.LENGTH_SHORT).show();
60         } catch (IOException e) {
61         }
62     }
63 });
64
65
66
```

6:05



간단 일기장

2018

1

24

2019

2

25

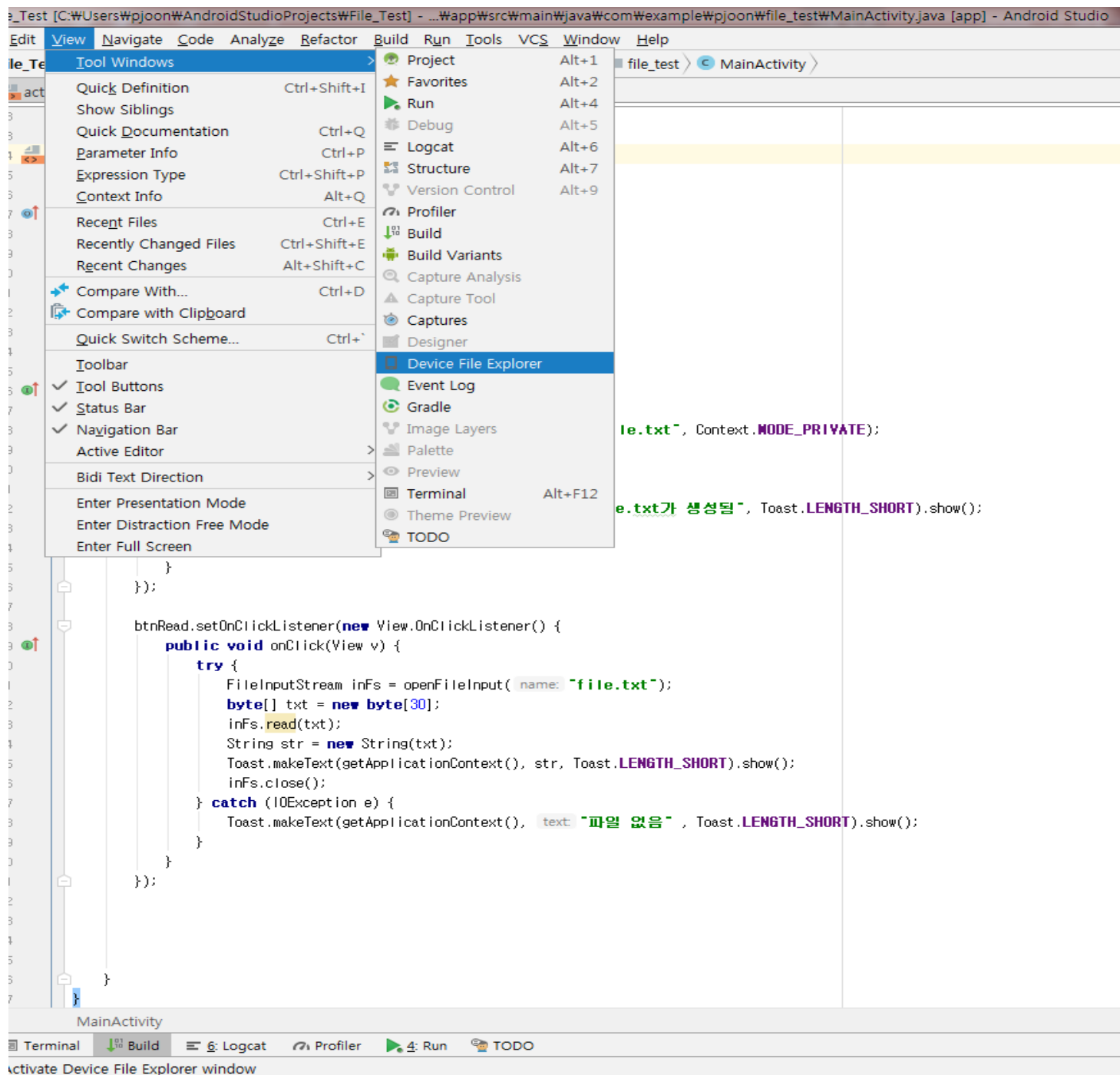
2020

3

26

test

새로 저장



activate Device File Explorer window

Name	Permissions	Date	Size
> com.android.storagemanager	drwx-----	2019-02-18 02:19	4 KB
> com.android.systemui	drwx-----	2019-02-18 02:19	4 KB
> com.android.systemui.theme.dark	drwx-----	2019-02-18 02:19	4 KB
> com.android.traceur	drwx-----	2019-02-18 02:19	4 KB
> com.android.vpndialogs	drwx-----	2019-02-18 02:19	4 KB
> com.android.wallpaper.livepicker	drwx-----	2019-02-18 02:19	4 KB
> com.android.wallpaperbackup	drwx-----	2019-02-18 02:19	4 KB
> com.android.wallpapercropper	drwx-----	2019-02-18 02:19	4 KB
> com.android.webview	drwx-----	2019-02-18 02:19	4 KB
> com.example.pjoon.autocomp	drwx-----	2019-02-18 02:19	4 KB
> com.example.pjoon.bar_test	drwx-----	2019-02-18 02:28	4 KB
> com.example.pjoon.contexttest	drwx-----	2019-02-22 01:38	4 KB
✓ com.example.pjoon.daily_test	drwx-----	2019-02-22 06:04	4 KB
> cache	drwxrws--x	2019-02-22 05:52	4 KB
> code_cache	drwxrws--x	2019-02-22 05:52	4 KB
✓ files	drwxrwx--x	2019-02-22 06:05	4 KB
2019_2_25.txt	-rw-rw----	2019-02-22 06:05	5 B
> com.example.pjoon.dialog_test	drwx-----	2019-02-22 01:56	4 KB
> com.example.pjoon.file_test	drwx-----	2019-02-22 05:28	4 KB
> com.example.pjoon.list_dialog	drwx-----	2019-02-22 02:28	4 KB
> com.example.pjoon.menu_test	drwx-----	2019-02-20 05:18	4 KB
> com.example.pjoon.sliding_drawer_test	drwx-----	2019-02-18 02:41	4 KB
> com.example.pjoon.tabhosttest	drwx-----	2019-02-18 03:53	4 KB
> com.example.pjoon.toast_test	drwx-----	2019-02-22 01:49	4 KB
> com.example.pjoon.userinfo	drwx-----	2019-02-22 04:52	4 KB
> com.example.pjoon.viewflippertest	drwx-----	2019-02-18 03:42	4 KB
> com.example.pjoon.webviewtest	drwx-----	2019-02-18 04:20	4 KB
> org.chromium.webview_shell	drwx-----	2019-02-18 02:19	4 KB
> drm	drwxrwx---	2019-02-18 02:19	4 KB
> local	drwxr-x--x	2019-02-18 02:19	4 KB
> lost+found	drwxrwx---	2019-02-18 02:19	4 KB

파일 처리

▶ Raw 폴더 파일 처리

- ▶ 프로젝트의 `/res/raw` 폴더에 필요한 파일을 저장해서 사용하는 방법
- ▶ Java 소스에서 소스에서 `openRawResource()` 메소드를 사용해서 접근할 수 있으며, `InputStream` 클래스를 사용
- ▶ 프로젝트의 `/res/raw` 폴더는 프로젝트에 포함된 폴더이므로 읽기 전용으로만 사용 가능
- ▶ 쓰기는 내장 메모리나 SD 카드를 사용





Create Android Project

Application name

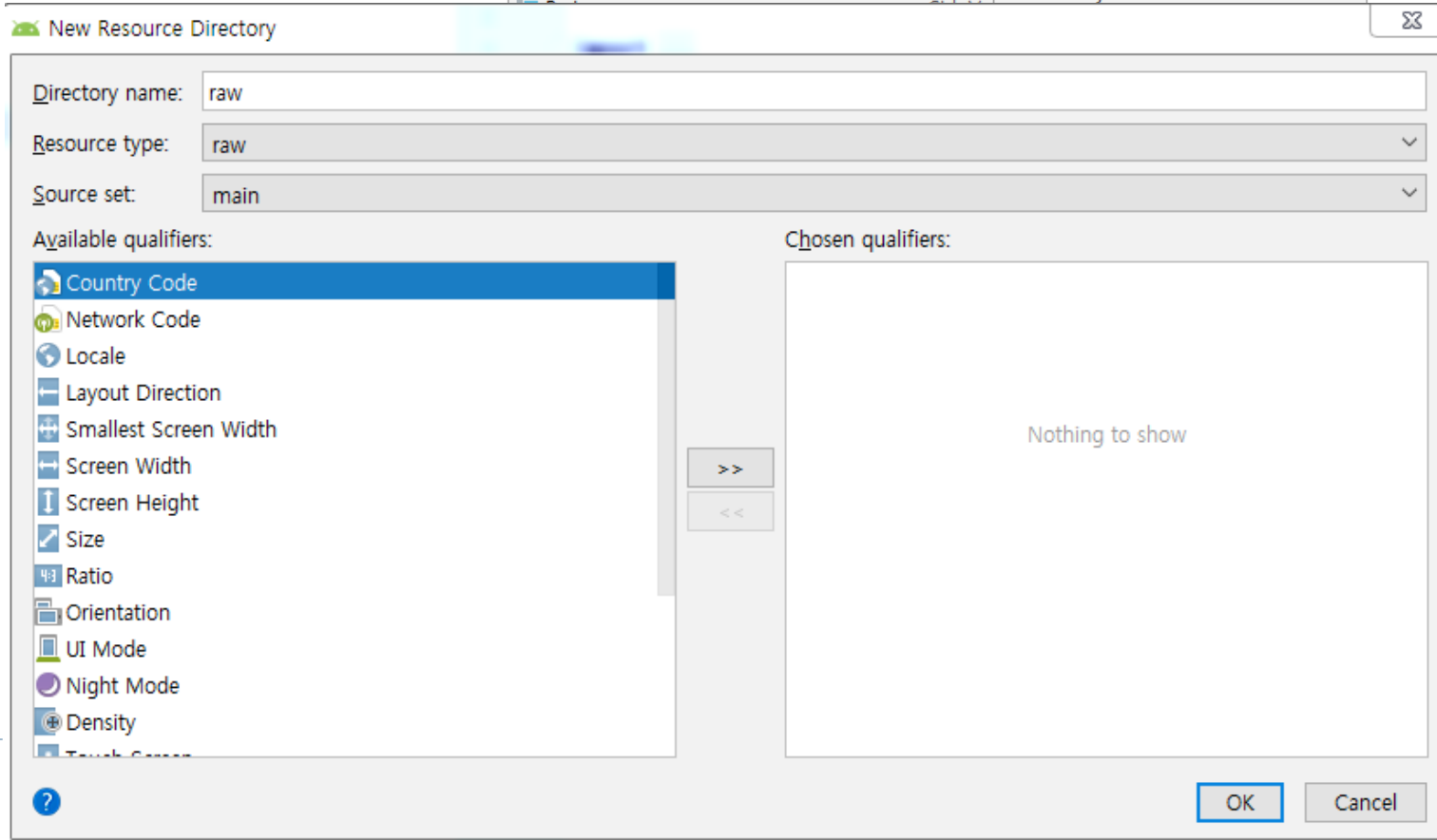
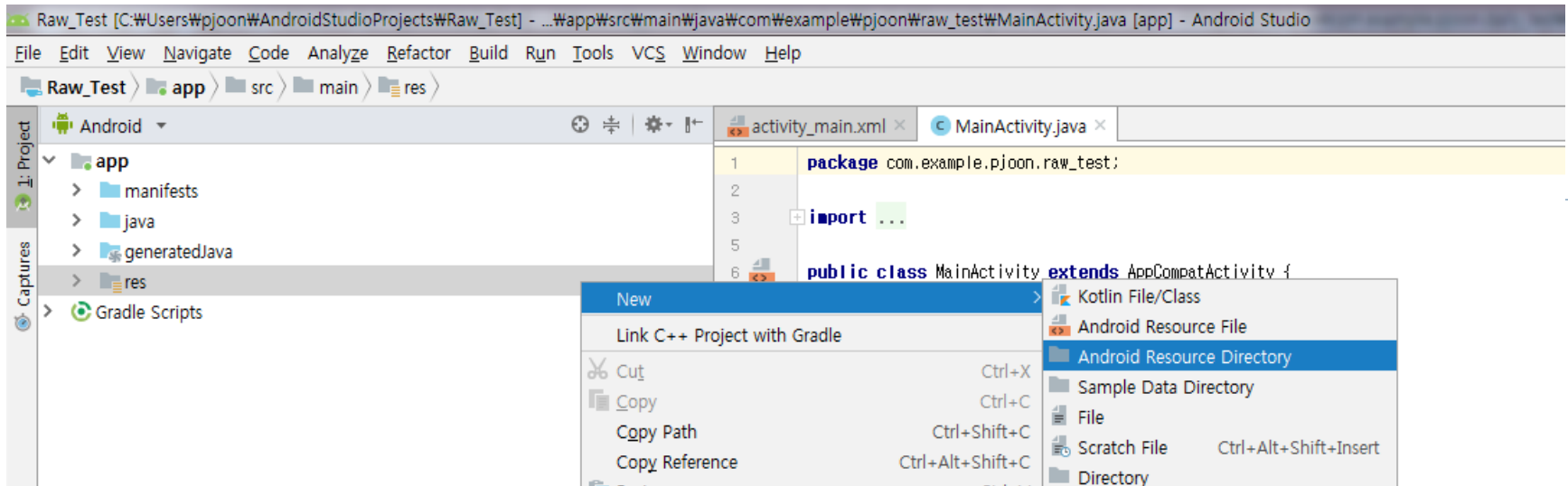
Company domain

Project location



Package name

- ☐ Include C++ support
- ☐ Include Kotlin support



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

Raw_Test > app > src > main > res > raw > raw_test >

Android

1: Project

Captures

> app

> manifests

> java

> generatedJava

> res

> drawable

> layout

> mipmap

> raw

raw_test

> values

> Gradle Scripts

activity_main.xml x

MainActivity.java x

raw_test x

1	aaa
2	
3	bbb
4	
5	ccc



```
1 <?xml version="1.0" encoding="utf-8"?>
2 <LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
3     xmlns:tools="http://schemas.android.com/tools"
4     android:layout_width="fill_parent"
5     android:layout_height="fill_parent"
6     android:orientation="vertical" >
7
8     <Button
9         android:id="@+id/btnRead"
10        android:layout_width="match_parent"
11        android:layout_height="wrap_content"
12        android:text="/res/raw 에서 파일 읽기" />
13
14    <EditText
15        android:id="@+id/edtRaw"
16        android:layout_width="match_parent"
17        android:layout_height="wrap_content"
18        android:lines="10" />
19
20 </LinearLayout>
```

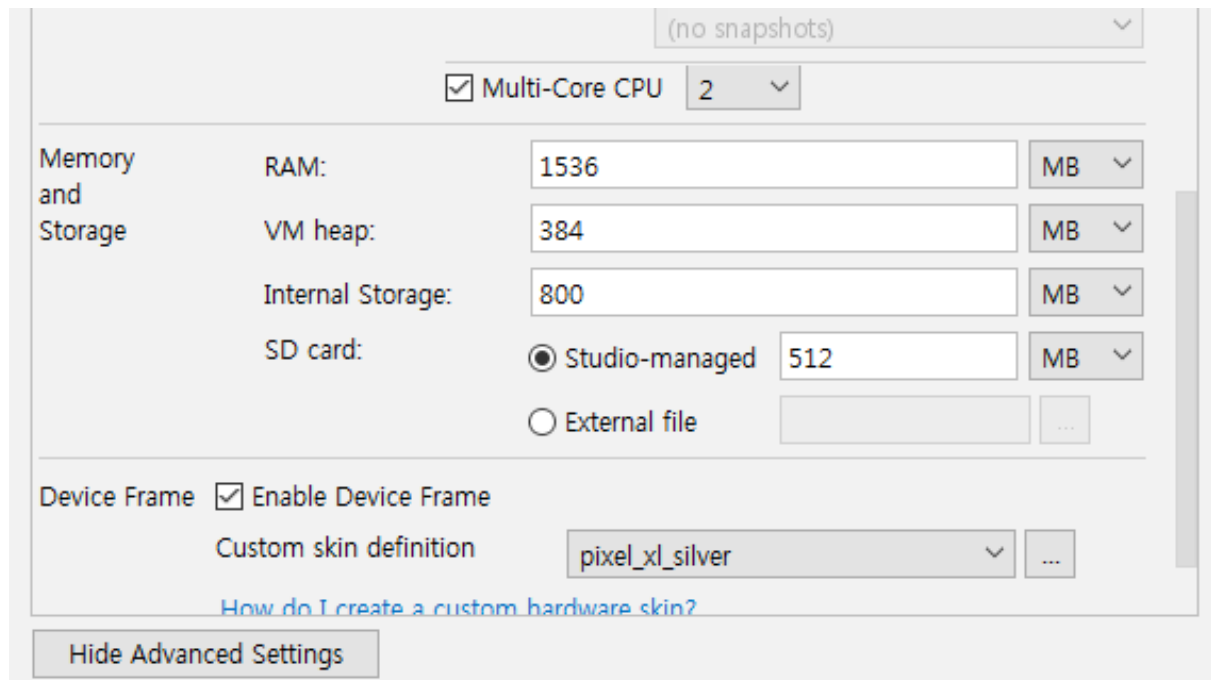
```
12 public class MainActivity extends AppCompatActivity {
13
14     @Override
15     protected void onCreate(Bundle savedInstanceState) {
16         super.onCreate(savedInstanceState);
17         setContentView(R.layout.activity_main);
18
19         Button btnRead;
20         final EditText edtRaw;
21         btnRead = (Button) findViewById(R.id.btnRead);
22         edtRaw = (EditText) findViewById(R.id.edtRaw);
23
24         btnRead.setOnClickListener(new View.OnClickListener() {
25             public void onClick(View v) {
26                 try {
27                     InputStream inputS = getResources().openRawResource(
28                         R.raw.raw_test);
29                     byte[] txt = new byte[inputS.available()];
30                     inputS.read(txt);
31                     edtRaw.setText(new String(txt));
32                     inputS.close();
33                 } catch (IOException e) {
34                 }
35             }
36         });
37
38
39 }
```



파일 처리 응용

▶ SD 카드 파일 읽기

- ▶ Tools → Android – AVD Manager → Edit 아이콘 클릭 → Show Advanced Settings 클릭
- ▶ 가상의 SD 카드를 확인



File Edit View Window Help

File Explorer: pjoon > raw_test > MainActivity

activity_main.xml MainActivity.java raw_test

```
1 package com.example.pjoon.raw_test;
2
3 import ...
11
12 public class MainActivity extends AppCompatActivity {
```

Select Path

C:\Windows\sd_test.txt

C:\Windows

- > I\$REGD
- > 0219
- > 3DP
- > a
 - 1.py
 - sd_test.txt
 - url.txt
- > APM_Setup
- > Documents and Settings
- > gpki
- > Kings
- > kumohsys
- > NVIDIA
- > PerfLogs
- > Program Files

Drag and drop a file into the space above to quickly locate it in the tree

OK Cancel

Device File Explorer

Emulator Pixel2 Android 9, API 28

Name	Permissi...	Date	Size
> acct	dr-xr-xr-x	2019-02-18 02:1	0 B
> bin	lrw-r--r--	2018-07-31 18:1	11 B
> cache	drwxrwx---	2018-07-31 17:5	4 KB
> config	drwxr-xr-x	2019-02-18 02:1	0 B
> d	lrw-r--r--	2018-07-31 18:1	17 B
> data	drwxrwx--x	2019-02-18 02:1	4 KB
> dev	drwxr-xr-x	2019-02-18 02:1	2.5 KB
> etc	lrw-r--r--	2018-07-31 18:1	11 B
> lost+found	drwx-----	2018-07-31 18:1	16 KB
> metadata	drwxr-xr-x	2018-07-31 17:5	4 KB
> mnt	drwxr-xr-x	2019-02-18 02:1	240 B
> odm	drwxr-xr-x	2018-07-31 17:5	4 KB
> oem	drwxr-xr-x	2018-07-31 17:5	4 KB
> proc	dr-xr-xr-x	2019-02-18 02:1	0 B
> product	lrw-r--r--	2018-07-31 18:1	15 B
> sbin	drwxr-x---	2018-07-31 18:0	4 KB
> sdcard	lrw-r--r--	2018-07-31 18:1	21 B
> Alarms	drwxrwx--x	2019-02-18 02:1	4 KB
> DCIM	drwxrwx--x	2019-02-18 02:1	4 KB
> Download	drwxrwx--x	2019-02-18 02:1	4 KB
> Movies	drwxrwx--x	2019-02-18 02:1	4 KB
> Music	drwxrwx--x	2019-02-18 02:1	4 KB
> Notifications	drwxrwx--x	2019-02-18 02:1	4 KB
> Pictures	drwxrwx--x	2019-02-18 02:1	4 KB
> Podcasts	drwxrwx--x	2019-02-18 02:1	4 KB
> Ringtones	drwxrwx--x	2019-02-18 02:1	4 KB
> storage	drwxr-xr-x	2019-02-18 02:1	100 B
> sys	dr-xr-xr-x	2019-02-18 02:1	0 B
> system	drwxr-xr-x	2018-07-31 18:1	4 KB
> vendor	drwxr-xr-x	2018-07-31 18:0	4 KB



Create Android Project

Application name

SD_Test

Company domain

pjoon.example.com

Project location

C:\Users\pjoon\AndroidStudioProjects\SD_Test



Package name

com.example.pjoon.sd_test

Edit

☐ Include C++ support

☐ Include Kotlin support

Previous

Next

Cancel

Finish

```
1 <?xml version="1.0" encoding="utf-8"?>
2 <LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
3     xmlns:tools="http://schemas.android.com/tools"
4     android:layout_width="fill_parent"
5     android:layout_height="fill_parent"
6     android:orientation="vertical" >
7
8     <Button
9         android:id="@+id/btnRead"
10        android:layout_width="match_parent"
11        android:layout_height="wrap_content"
12        android:text="SD 카드에서 파일 읽기" />
13
14    <EditText
15        android:id="@+id/edtSD"
16        android:layout_width="match_parent"
17        android:layout_height="wrap_content"
18        android:lines="10" />
19
20 </LinearLayout>
```

activity_main.xml x MainActivity.java x AndroidManifest.xml x

```
1 <?xml version="1.0" encoding="utf-8"?>
2 <manifest xmlns:android="http://schemas.android.com/apk/res/android"
3     package="com.example.pjoon.sd_test">
4
5     <uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE"/>
6
7     <application
8         android:allowBackup="true"
9         android:icon="@mipmap/ic_launcher"
10        android:label="SD_Test"
11        android:roundIcon="@mipmap/ic_launcher_round"
12        android:supportRtl="true"
13        android:theme="@style/AppTheme"
14    >
15        <activity android:name=".MainActivity">
16            <intent-filter>
17                <action android:name="android.intent.action.MAIN" />
18
19                <category android:name="android.intent.category.LAUNCHER" />
20            </intent-filter>
21        </activity>
22    </application>
23
24 </manifest>
```

```

16 protected void onCreate(Bundle savedInstanceState) {
17     super.onCreate(savedInstanceState);
18     setContentView(R.layout.activity_main);
19
20     ActivityCompat.requestPermissions(activity.this, new String[] {android.Manifest.permission.WRITE_EXTERNAL_STORAGE},MODE_PRIVATE);
21
22     Button btnRead;
23     final EditText edtSD;
24     btnRead = (Button) findViewById(R.id.btnRead);
25     edtSD = (EditText) findViewById(R.id.edtSD);
26
27     btnRead.setOnClickListener(new View.OnClickListener() {
28         public void onClick(View v) {
29             try {
30                 FileInputStream inFs = new FileInputStream( name: "~/storage/emulated/0/sd_test.txt");
31                 byte[] txt = new byte[inFs.available()];
32                 inFs.read(txt);
33                 edtSD.setText(new String(txt));
34                 inFs.close();
35             } catch (IOException e) {
36             }
37         }
38     });
39

```



파일 처리 응용

- ▶ SD 카드에 폴더 및 파일 생성
 - ▶ Environment 클래스의 정적 메소드를 이용해 SD카드의 동작 여부 및 관련 폴더 경로를 구함
 - ▶ AndroidManifest.xml 파일에 SD카드에 쓰기가 가능하도록 퍼미션을 지정

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





Create Android Project

Application name


Company domain

Project location

...

Package name

☐ Include C++ support☐ Include Kotlin support

 The application name for most apps begins with an uppercase letter

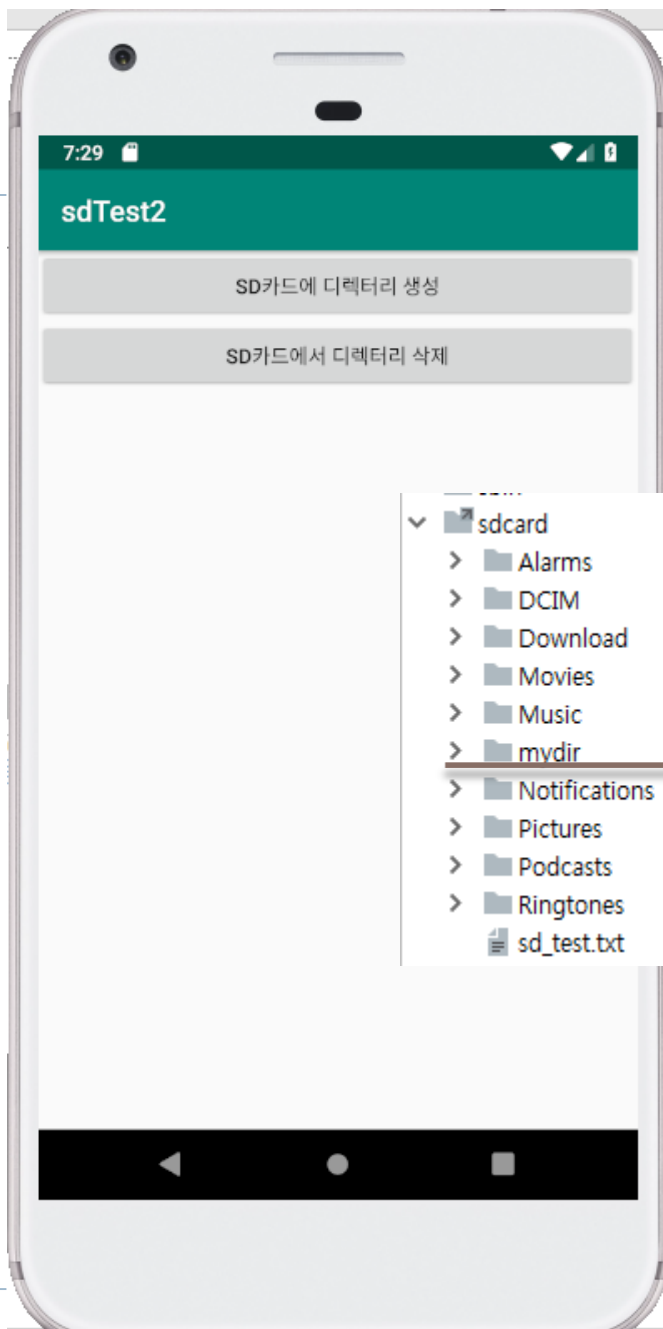

```
1 <?xml version="1.0" encoding="utf-8"?>
2 <LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
3   xmlns:tools="http://schemas.android.com/tools"
4   android:layout_width="fill_parent"
5   android:layout_height="fill_parent"
6   android:orientation="vertical" >
7
8   <Button
9     android:id="@+id/btnMkdir"
10    android:layout_width="match_parent"
11    android:layout_height="wrap_content"
12    android:text="SD카드에 디렉터리 생성" />
13
14   <Button
15     android:id="@+id/btnRmdir"
16     android:layout_width="match_parent"
17     android:layout_height="wrap_content"
18     android:text="SD카드에서 디렉터리 삭제" />
19
20 </LinearLayout>
```

```
activity_main.xml x MainActivity.java x AndroidManifest.xml x R.java x
1 <?xml version="1.0" encoding="utf-8"?>
2 <manifest xmlns:android="http://schemas.android.com/apk/res/android"
3     package="com.example.pjoon.sdtest2">
4
5     <uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE" />
6     <application
7         android:allowBackup="true"
8         android:icon="@mipmap/ic_launcher"
9         android:label="sdTest2"
10        android:roundIcon="@mipmap/ic_launcher_round"
11        android:supportRtl="true"
12        android:theme="@style/AppTheme">
13        <activity android:name=".MainActivity">
14            <intent-filter>
15                <action android:name="android.intent.action.MAIN" />
16
17                <category android:name="android.intent.category.LAUNCHER" />
18            </intent-filter>
19        </activity>
20    </application>
21
22 </manifest>
```

```

15 protected void onCreate(Bundle savedInstanceState) {
16     super.onCreate(savedInstanceState);
17     setContentView(R.layout.activity_main);
18
19     ActivityCompat.requestPermissions( activity: this, new String[] {android.Manifest.permission.WRITE_EXTERNAL_STORAGE},MODE_PRIVATE);
20
21     Button btnMkdir, btnRmdir;
22     btnMkdir = (Button) findViewById(R.id.btnMkdir);
23     btnRmdir = (Button) findViewById(R.id.btnRmdir);
24
25     final String strSDpath = Environment.getExternalStorageDirectory()
26         .getAbsolutePath();
27     final File myDir = new File( pathname: strSDpath + "/" + myDir);
28
29     btnMkdir.setOnClickListener(new View.OnClickListener() {
30         public void onClick(View v) {
31             myDir.mkdir();
32         }
33     });
34
35     btnRmdir.setOnClickListener(new View.OnClickListener() {
36         public void onClick(View v) {
37             myDir.delete();
38         }
39     });

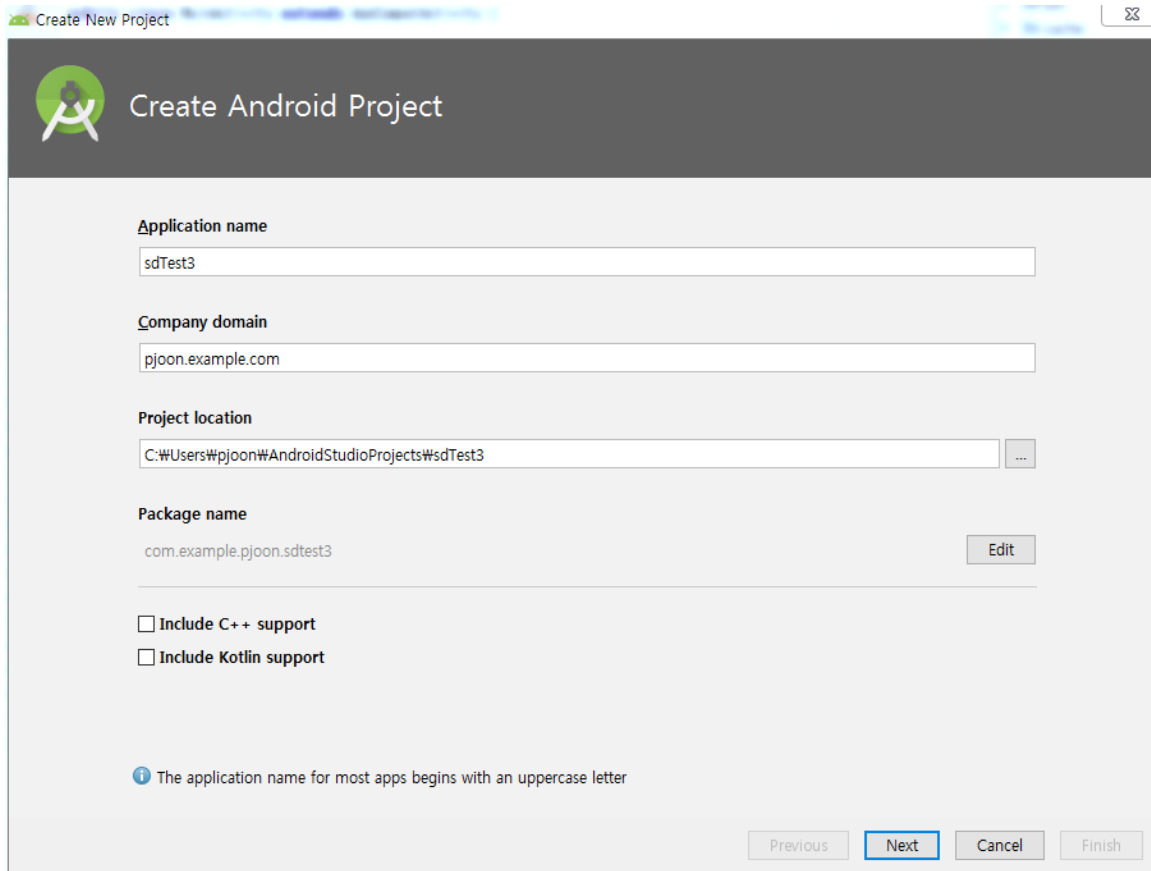
```



lrw-r--r--	2018-07-31 18:16	21 B
drwxrwx--x	2019-02-18 02:19	4 KB
drwxrwx--x	2019-02-18 02:19	4 KB
drwxrwx--x	2019-02-18 02:19	4 KB
drwxrwx--x	2019-02-18 02:19	4 KB
drwxrwx--x	2019-02-18 02:19	4 KB
drwxrwx--x	2019-02-22 07:28	4 KB
drwxrwx--x	2019-02-18 02:19	4 KB
drwxrwx--x	2019-02-18 02:19	4 KB
drwxrwx--x	2019-02-18 02:19	4 KB
drwxrwx--x	2019-02-18 02:19	4 KB
-rw-rw----	2019-02-22 06:48	45 B

파일처리 응용

- ▶ 특정 폴더의 하위 폴더 및 파일 목록 접근
 - ▶ File.listFiles() 메소드 사용



Create New Project

Create Android Project

Application name
sdTest3

Company domain
pjoon.example.com

Project location
C:\Users\pjoon\AndroidStudioProjects\sdTest3

Package name
com.example.pjoon.sdtest3 Edit

☐ Include C++ support
☐ Include Kotlin support

i The application name for most apps begins with an uppercase letter

Previous Next Cancel Finish

```
1 <?xml version="1.0" encoding="utf-8"?>
2 <LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
3     xmlns:tools="http://schemas.android.com/tools"
4     android:layout_width="fill_parent"
5     android:layout_height="fill_parent"
6     android:orientation="vertical" >
7
8     <Button
9         android:id="@+id/btnFileList"
10        android:layout_width="match_parent"
11        android:layout_height="wrap_content"
12        android:text="시스템 폴더의 폴더/파일 목록" />
13
14    <EditText
15        android:id="@+id/edtFileList"
16        android:layout_width="match_parent"
17        android:layout_height="wrap_content" />
18
19 </LinearLayout>
```

```

15  protected void onCreate(Bundle savedInstanceState) {
16      super.onCreate(savedInstanceState);
17      setContentView(R.layout.activity_main);
18
19      Button btnFileList;
20      final EditText edtFileList;
21      btnFileList = (Button) findViewById(R.id.btnFileList);
22      edtFileList = (EditText) findViewById(R.id.edtFileList);
23
24      btnFileList.setOnClickListener(new View.OnClickListener() {
25          public void onClick(View v) {
26              String sysDir = Environment.getRootDirectory().getAbsolutePath();
27              File[] sysFiles = (new File(sysDir).listFiles());
28
29              String strFname;
30              for (int i = 0; i < sysFiles.length; i++) {
31                  if (sysFiles[i].isDirectory() == true)
32                      strFname = "<폴더> " + sysFiles[i].toString();
33                  else
34                      strFname = "<파일> " + sysFiles[i].toString();
35
36                  edtFileList.setText(edtFileList.getText() + "\n" + strFname);
37              }
38          }
39      });

```

7:36



sdTest3

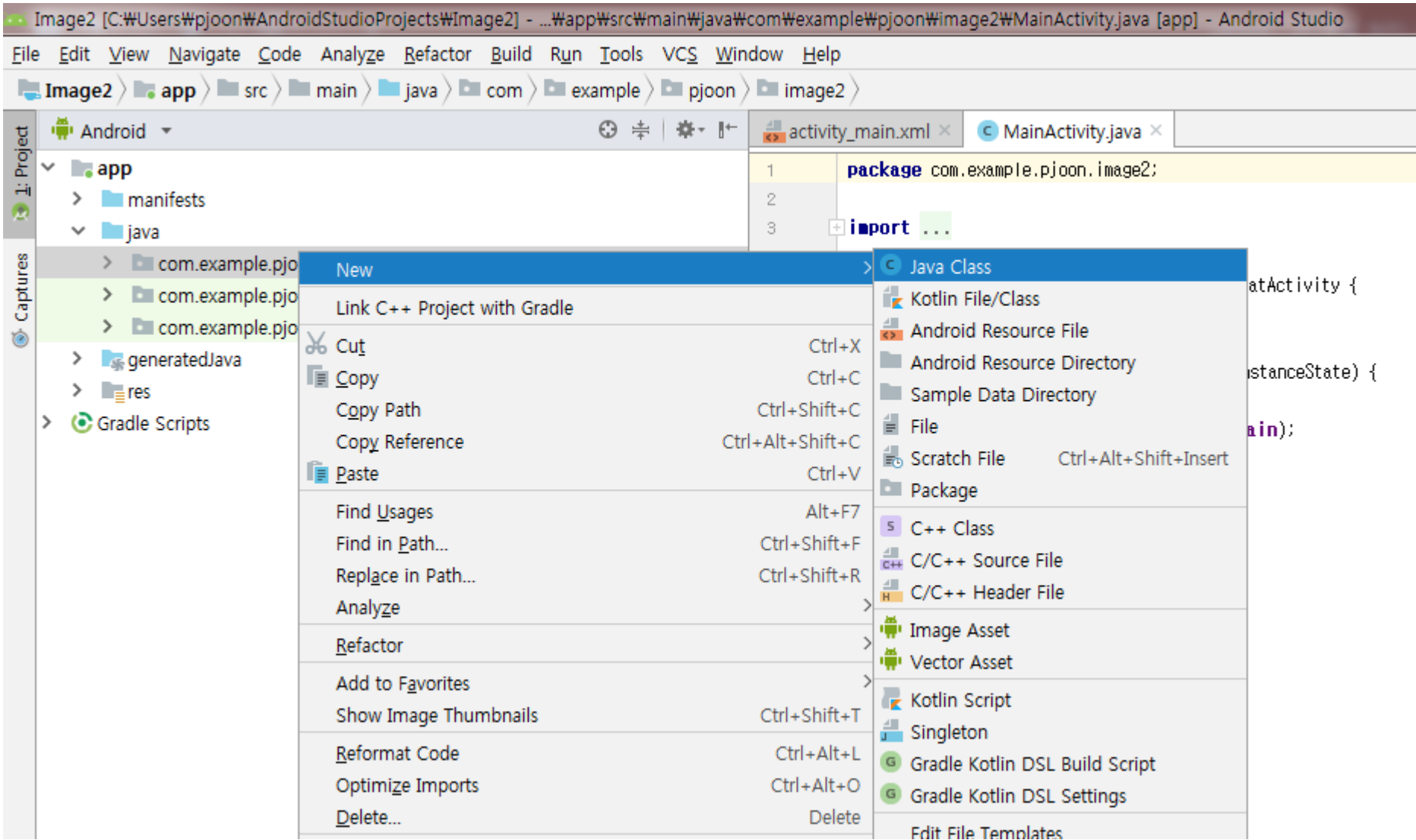
시스템 폴더의 폴더/파일 목록

<폴더> /system/fonts
<파일> /system/build.prop
<폴더> /system/app
<폴더> /system/priv-app
<폴더> /system/fake-libs
<폴더> /system/product
<폴더> /system/xbin
<폴더> /system/media
<폴더> /system/etc
<폴더> /system/lib
<폴더> /system/framework
<파일> /system/compatibility_matrix.xml
<폴더> /system/bin
<폴더> /system/vendor
<폴더> /system/usr



이미지 뷰어 만들기

```
1  <?xml version="1.0" encoding="utf-8"?>
2  <manifest xmlns:android="http://schemas.android.com/apk/res/android"
3    package="com.example.pjoon.image2">
4
5    <uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE" />
6
7    <application
8        android:allowBackup="true"
9        android:icon="@mipmap/ic_launcher"
10       android:label="@string/app_name"
11       android:roundIcon="@mipmap/ic_launcher_round"
12       android:supportRtl="true"
13       android:theme="@style/AppTheme">
14        <activity android:name=".MainActivity">
15            <intent-filter>
16                <action android:name="android.intent.action.MAIN" />
17
18                <category android:name="android.intent.category.LAUNCHER" />
19            </intent-filter>
20        </activity>
21    </application>
22
23 </manifest>
```



activity_main.xml × MainActivity.java × myPictureView.java ×

1 package com.example.pjoon.image2;

2

3 import android.view.View;

4

5 public class myPictureView extends View {

6

7

8 }

9

myPictureView

Select Methods to Override/Implement

↓% ↓a/z ↺ ↻ ↕ ↖

m showContextMenu(x:float, y:float):boolean

m startActionMode(callback:Callback):ActionMode

m startActionMode(callback:Callback, type:int):ActionMode

m startAnimation(animation:Animation):void

m startNestedScroll(axes:int):boolean

m stopNestedScroll():void

m toString():String

m unscheduleDrawable(who:Drawable):void

m unscheduleDrawable(who:Drawable, what:Runnable):void

m verifyDrawable(who:Drawable):boolean

m View(context:Context)

m View(context:Context, attrs:AttributeSet)

m View(context:Context, attrs:AttributeSet, defStyleAttr:int)

m View(context:Context, attrs:AttributeSet, defStyleAttr:int, defStyleRes:int)

m willNotCacheDrawing():boolean

m willNotDraw():boolean

java.lang.Object

m clone():Object

m equals(obj:Object):boolean

m finalize():void

m hashCode():int

☐ Copy JavaDoc

☒ Insert @Override

OK

Cancel

activity_main.xml x MainActivity.java x myPictureView.java x

```
1 package com.example.pjoon.image2;
2
3 import android.content.Context;
4 import android.util.AttributeSet;
5 import android.view.View;
6
7 public class myPictureView extends View {
8
9     public myPictureView(Context context, @an
10         super(context, attrs);
11 }
12
13
14 }
15
```

myPictureView

Select Methods to Override/Implement

- offsetTopAndBottom(offset:int):void
- onAnimationEnd():void
- onAnimationStart():void
- onApplyWindowInsets(insets:WindowInsets):WindowInsets
- onAttachedToWindow():void
- onCancelPendingInputEvents():void
- onCapturedPointerEvent(event:MotionEvent):boolean
- onCheckIsTextEditor():boolean
- onConfigurationChanged(newConfig:Configuration):void
- onCreateContextMenu(menu:ContextMenu):void
- onCreateDrawableState(extraSpace:int):int[]
- onCreateInputConnection(outAttrs:EditorInfo):InputConnection
- onDetachedFromWindow():void
- onDisplayHint(hint:int):void
- onDragEvent(event:DragEvent):boolean
- onDraw(canvas:Canvas):void**
- onDrawForeground(canvas:Canvas):void
- onFilterTouchEventForSecurity(event:MotionEvent):boolean
- onFinishInflate():void
- onFinishTemporaryDetach():void
- onFocusChanged(gainFocus:boolean, direction:int, previouslyFocusedRect:Rect):void

☐ Copy Javadoc
☒ Insert @Override

OK Cancel

```
1  package com.example.pjoon.image2;
2
3  import ...
4
5
6
7
8
9
10 public class myPictureView extends View {
11
12     //추가
13     String imagePath = null;
14
15     public myPictureView(Context context, AttributeSet attrs) { super(context, attrs); }
16
17
18
19     @Override
20     protected void onDraw(Canvas canvas) {
21         super.onDraw(canvas);
22
23         if (imagePath != null) {
24             Bitmap bitmap = BitmapFactory.decodeFile(imagePath);
25             canvas.scale( sx 2, sy 2, px 0, py 0);
26             canvas.drawBitmap(bitmap, left 0, top 0, paint null);
27             bitmap.recycle();
28         }
29     }
30 }
31
```

```

1  <?xml version="1.0" encoding="utf-8"?>
2  <LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
3      xmlns:tools="http://schemas.android.com/tools"
4      android:layout_width="match_parent"
5      android:layout_height="match_parent"
6      android:orientation="vertical" >
7
8      <LinearLayout
9          android:layout_width="match_parent"
10         android:layout_height="wrap_content"
11         android:orientation="horizontal" >
12
13         <Button
14             android:id="@+id/btnPrev"
15             android:layout_width="wrap_content"
16             android:layout_height="wrap_content"
17             android:layout_weight="1"
18             android:text="이전 그림" />
19
20         <Button
21             android:id="@+id/btnNext"
22             android:layout_width="wrap_content"
23             android:layout_height="wrap_content"
24             android:layout_weight="1"
25             android:text="다음 그림" />
26     </LinearLayout>
27
28     <com.example.pjoon.image2.myPictureView
29         android:id="@+id/myPictureView1"
30         android:layout_width="wrap_content"
31         android:layout_height="wrap_content" />
32
33 </LinearLayout>

```

Device File Explorer ⚙️ →				
Emulator Pixel2 Android 9, API 28 ▼				
Name	Permissions	Date	Size	
> acct	dr-xr-xr-x	2019-02-18 02:19	0 B	
> bin	lrw-r--r--	2018-07-31 18:16	11 B	
> cache	drwxrwx---	2018-07-31 17:53	4 KB	
> config	drwxr-xr-x	2019-02-18 02:19	0 B	
> d	lrw-r--r--	2018-07-31 18:16	17 B	
> data	drwxrwx--x	2019-02-18 02:19	4 KB	
> dev	drwxr-xr-x	2019-02-18 02:19	2.5 KB	
> etc	lrw-r--r--	2018-07-31 18:16	11 B	
> lost+found	drwx-----	2018-07-31 18:16	16 KB	
> metadata	drwxr-xr-x	2018-07-31 17:53	4 KB	
> mnt	drwxr-xr-x	2019-02-18 02:19	240 B	
> odm	drwxr-xr-x	2018-07-31 17:53	4 KB	
> oem	drwxr-xr-x	2018-07-31 17:53	4 KB	
> proc	dr-xr-xr-x	2019-02-18 02:19	0 B	
> product	lrw-r--r--	2018-07-31 18:16	15 B	
> sbin	drwxr-x---	2018-07-31 18:07	4 KB	
▼ sdcard	lrw-r--r--	2018-07-31 18:16	21 B	
> Alarms	drwxrwx--x	2019-02-18 02:19	4 KB	
> DCIM	drwxrwx--x	2019-02-18 02:19	4 KB	
> Download	drwxrwx--x	2019-02-18 02:19	4 KB	
> Movies	drwxrwx--x	2019-02-18 02:19	4 KB	
> Music	drwxrwx--x	2019-02-18 02:19	4 KB	
> mydir	drwxrwx--x	2019-02-22 07:28	4 KB	
> Notifications	drwxrwx--x	2019-02-18 02:19	4 KB	
▼ Pictures	drwxrwx--x	2019-02-25 02:46	4 KB	
renoir01.png	-rw-rw----	2018-10-09 08:51	213 KB	
renoir02.png	-rw-rw----	2018-10-09 08:51	217 KB	
renoir03.png	-rw-rw----	2018-10-09 08:51	156.6 KB	
renoir04.png	-rw-rw----	2018-10-09 08:51	101.3 KB	
renoir05.png	-rw-rw----	2018-10-09 08:51	94.3 KB	
> Podcasts	drwxrwx--x	2019-02-18 02:19	4 KB	

```
10  <> public class MainActivity extends AppCompatActivity {
11
12      Button btnPrev, btnNext;
13      myPictureView myPicture;
14      int curNum;
15      File[] imageFiles;
16      String imageFname;
17
18      @Override
19      protected void onCreate(Bundle savedInstanceState) {
20          super.onCreate(savedInstanceState);
21          setContentView(R.layout.activity_main);
22
23          setTitle("간단 이미지 뷰어");
24          ActivityCompat.requestPermissions( activity: this, new String[] {android.Manifest.permission.WRITE_EXTERNAL_STORAGE},MODE_PRIVATE);
25
26          btnPrev = (Button) findViewById(R.id.btnPrev);
27          btnNext = (Button) findViewById(R.id.btnNext);
28          myPicture = (myPictureView) findViewById(R.id.myPictureView1);
29
30      }
31  }
32
33
```



```
32
33 imageFiles = new File( pathname: Environment.getExternalStorageDirectory().getAbsolutePath()+"/Pictures").listFiles();
34 imageFname = imageFiles[0].toString();
35 myPicture.imagePath=imageFname;
```

```
36
37
38 btnPrev.setOnClickListener(new View.OnClickListener() {
39     public void onClick(View v) {
40         if (curNum <= 0) {
41             Toast.makeText(getApplicationContext(), text "첫번째 그림입니다", Toast.LENGTH_SHORT)
42                 .show();
43         } else {
44             curNum--;
45             imageFname = imageFiles[curNum].toString();
46             myPicture.imagePath = imageFname;
47             myPicture.invalidate();
48         }
49     }
50 });
```

```
51
52 btnNext.setOnClickListener(new View.OnClickListener() {
53     public void onClick(View v) {
54         if (curNum >= imageFiles.length - 1) {
55             Toast.makeText(getApplicationContext(), text "마지막 그림입니다", Toast.LENGTH_SHORT)
56                 .show();
57         } else {
58             curNum++;
59             imageFname = imageFiles[curNum].toString();
60             myPicture.imagePath = imageFname;
61             myPicture.invalidate();
62         }
63     }
64 });
```

