برنامه نویسی دستگاه های سیار (CE364)

جلسه پنجم:
اضافه کردن یک دکمه

سجاد شیرعلی شهرضا

پاییز 1401

شنبه، 30 مهر 1401

اطلاع رسانی

- بخشهای مرتبط با این جلسه:
- Unit 1 Kotlin Basics:
- Pathway 4: Add a button to an app
- تمرین اول:
  - کارت شناسایی دیجیتال: تغییر یافته برنامه ساده هفته گذشته
  - مهلت ارسال:
- ارائه پیشنهاد پروژه
  - انتقال روز ارائه پیشنهاد پروژه به شنبه هفته آینده (7 آبان 1401)
  - انتقال مهلت ارسال پیشنهاد پروژه به همان روز

سوال؟

آشنایی بیشتر با کاتلین

شبیه سازی پرتاب تاس

```
fun main() {
    val diceRange = 1..6
    val randomNumber = diceRange.random()
    println("Random number: ${randomNumber}")
}
```

- تعریف یک بازه اعداد صحیح
- انتخاب عدد تصادفی
- چاپ عدد انتخاب شده

تعریف کلاس و ایجاد یک نمونه از آن

```
fun main() {
    val myFirstDice = Dice()
    println(myFirstDice.sides)
    myFirstDice.roll()
}

class Dice {
    var sides = 6

    fun roll() {
        val randomNumber = (1..6).random()
        println(randomNumber)
    }
}
```

بازگرداندن مقدار از تابع

```
fun main() {
    val myFirstDice = Dice()
    val diceRoll = myFirstDice.roll()
    println("Your ${myFirstDice.sides} sided dice rolled ${diceRoll}!")
}


class Dice {
    var sides = 6

    fun roll(): Int {
        val randomNumber = (1..6).random()
        return randomNumber
    }
}
```

تعداد وجه های متغیر برای تاس

```
fun main() {

    val myFirstDice = Dice()
    val diceRoll = myFirstDice.roll()
    println("Your ${myFirstDice.sides} sided dice rolled ${diceRoll}!")

    myFirstDice.sides = 20
    println("Your ${myFirstDice.sides} sided dice rolled ${myFirstDice.roll()}!")
}

class Dice {
    var sides = 6

    fun roll(): Int {
        val randomNumber = (1..sides).random()
        return randomNumber
    }
}
```

ارسال اطلاعات موقع ایجاد شیء

```
fun main() {
    val myFirstDice = Dice(6)
    val diceRoll = myFirstDice.roll()
    println("Your ${myFirstDice.numSides} sided dice rolled ${diceRoll}!")

    val mySecondDice = Dice(20)
    println("Your ${mySecondDice.numSides} sided dice rolled ${mySecondDice.roll()}!")
}

class Dice (val numSides: Int) {

    fun roll(): Int {
        val randomNumber = (1..numSides).random()
        return randomNumber
    }
}
```

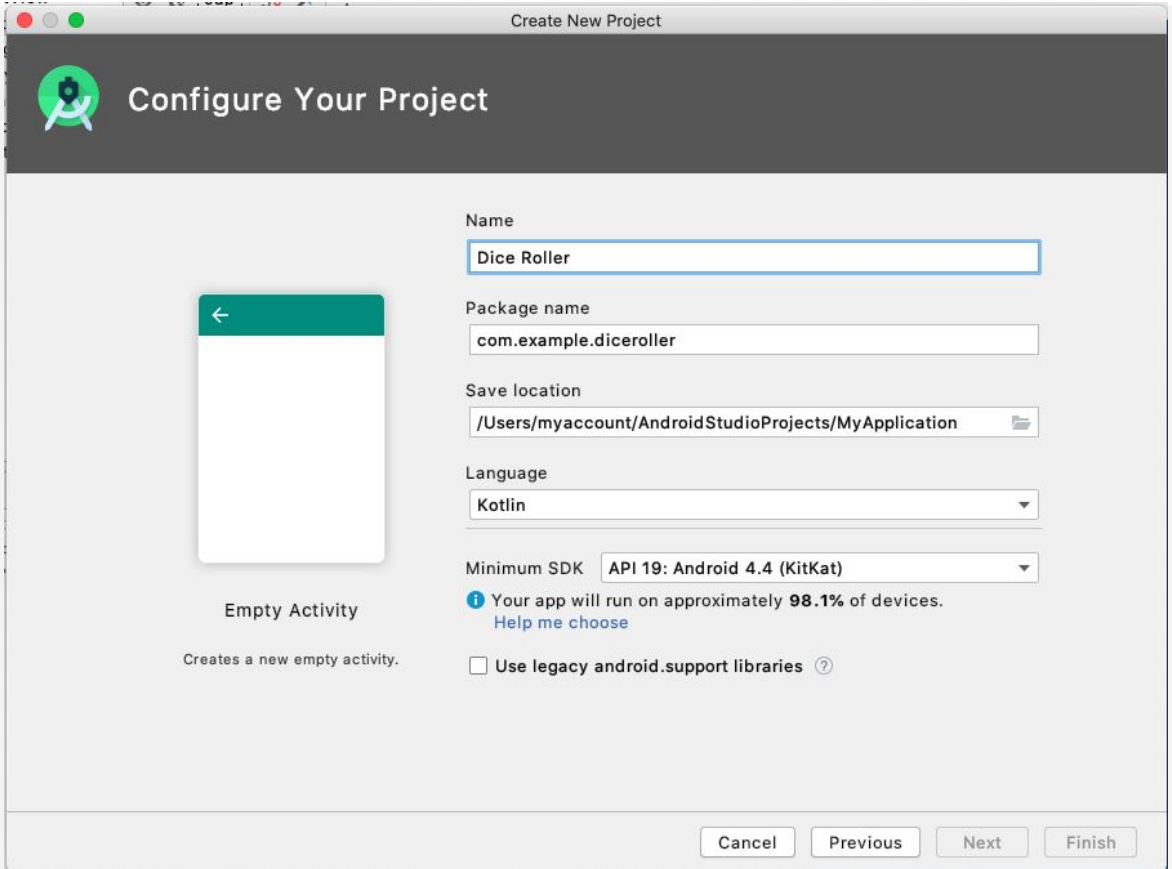
بهبود کد

```
fun main() {
    val myFirstDice = Dice(6)
    println("Your ${myFirstDice.numSides} sided dice rolled ${myFirstDice.roll()}!")

    val mySecondDice = Dice(20)
    println("Your ${mySecondDice.numSides} sided dice rolled ${mySecondDice.roll()}!")
}

class Dice (val numSides: Int) {

    fun roll(): Int {
        return (1..numSides).random()
    }
}
```

سوال؟

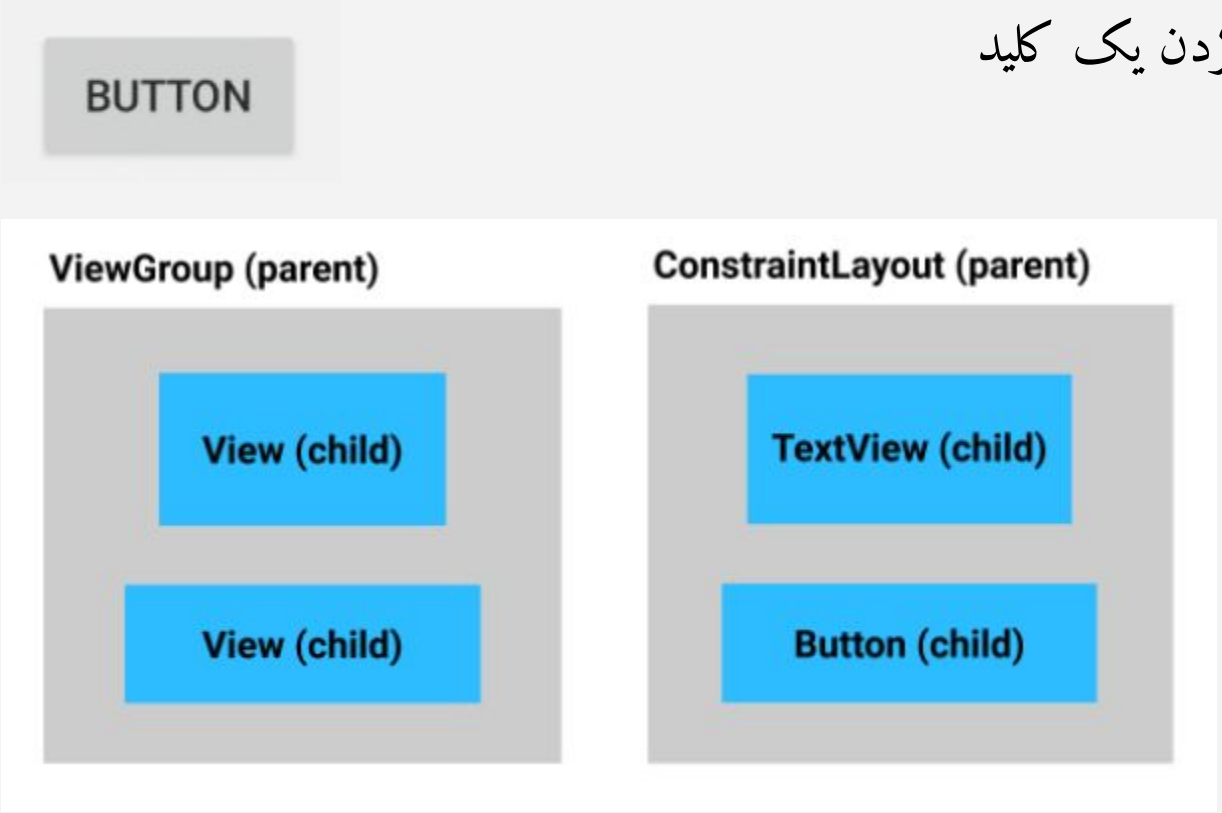
برنامه انداختن تاس

درست کردن پروژه

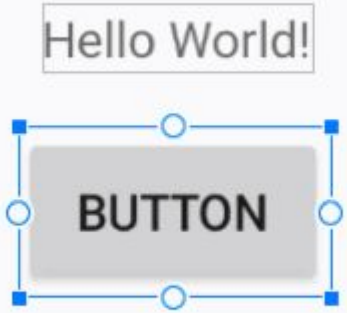


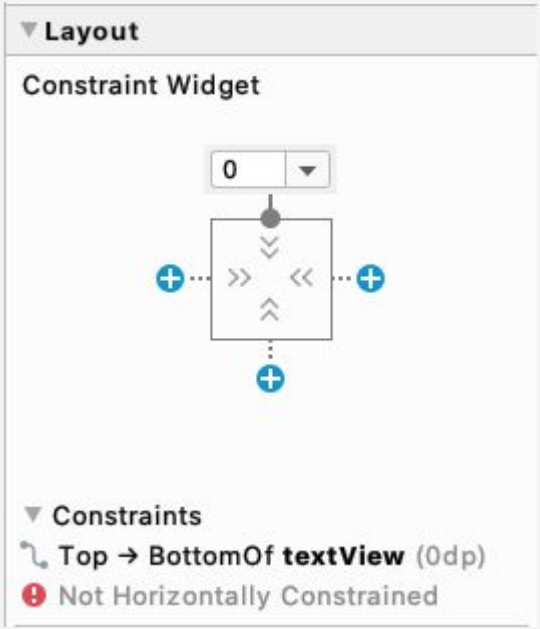
رابطه والد/فرزندی بین نماها

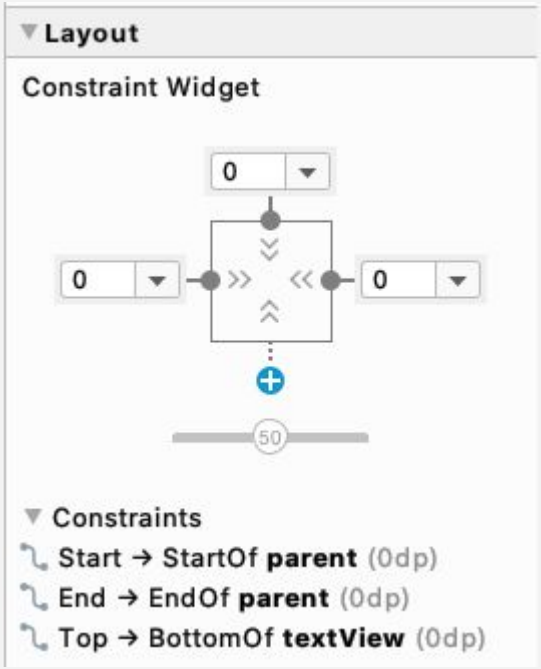
- اضافه کردن یک کلید



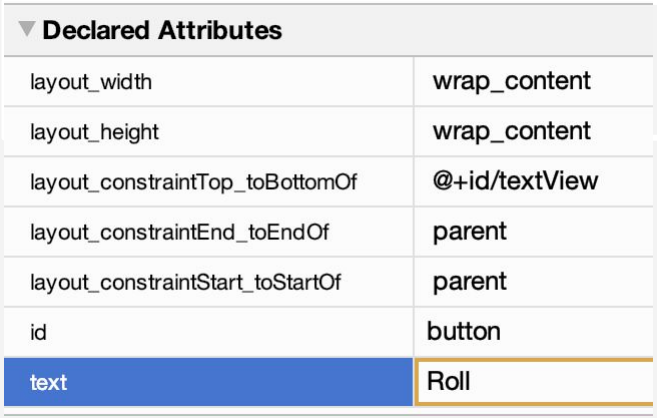
قرار دادن دکمه زیر متن

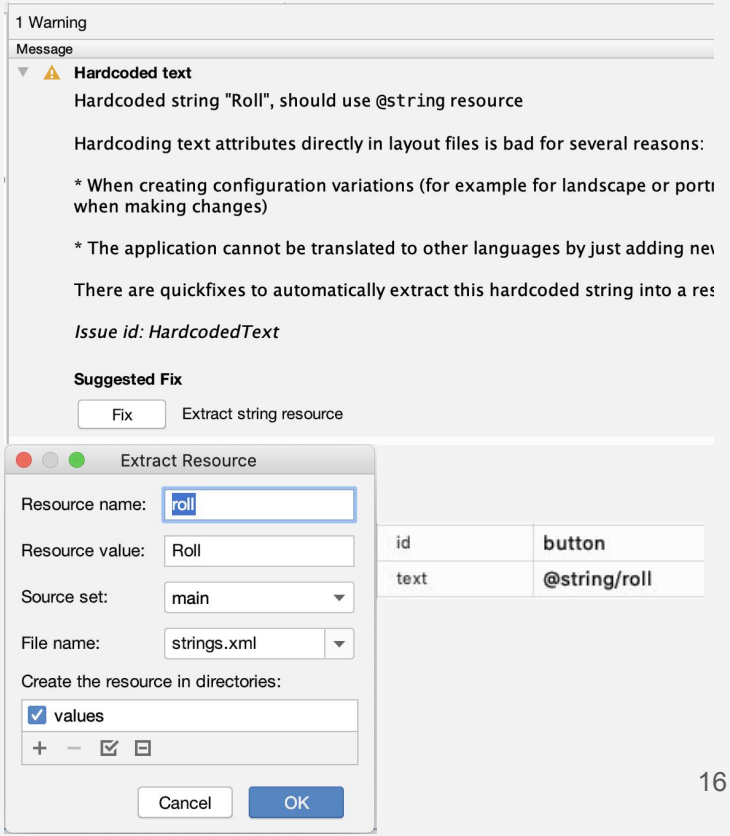




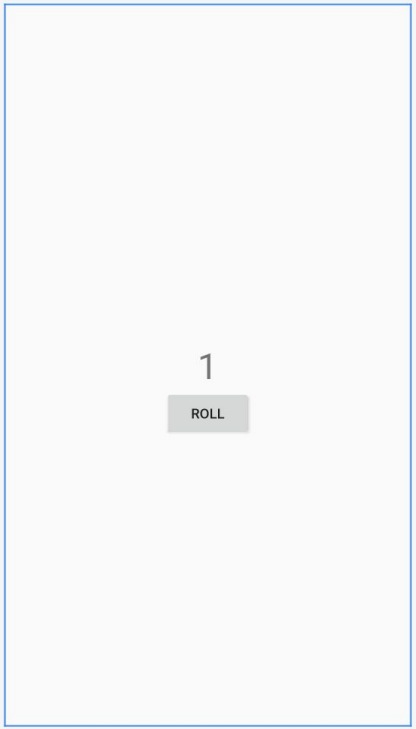


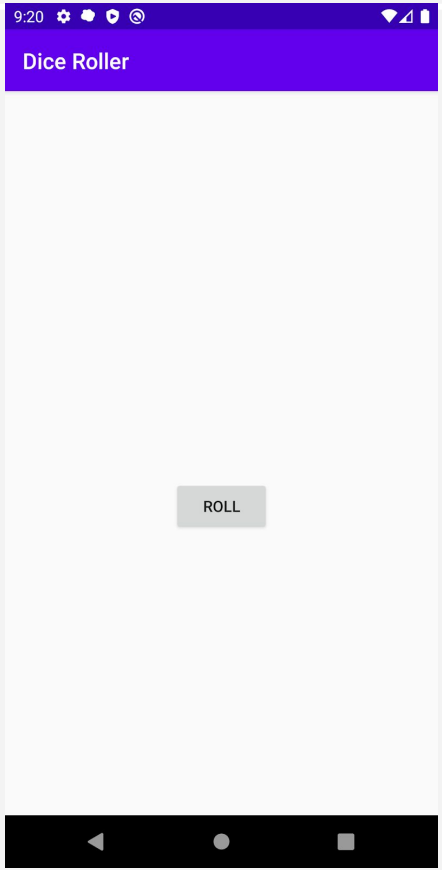
عوض کردن متن دکمه





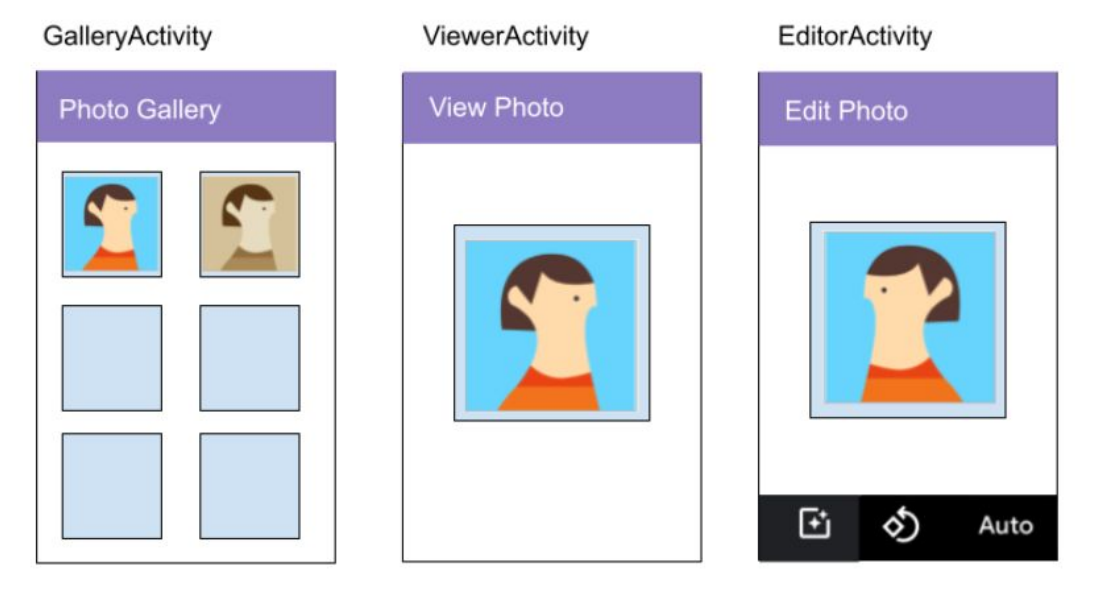
مقدار اولیه برای متن





فعالیت

- پنجره ای که به کاربر نمایش داده میشود
- اولین فعالیت معمولا MainActivity نام دارد

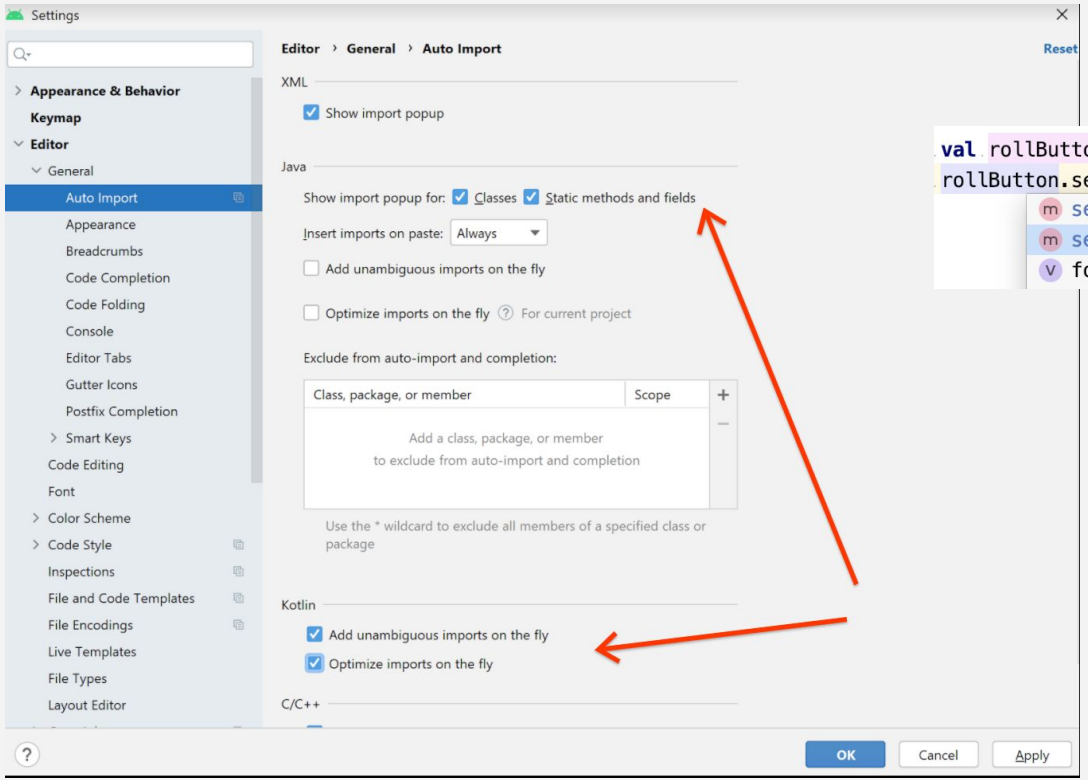


MainActivity.kt

- در ابتدا، تابع onCreate فعالیت اصلی اجرا میشود

```
package com.example.diceroller

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

class MainActivity : AppCompatActivity() {

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)
    }
}
```

فعال کردن درج خودکار import و تکمیل خودکار کد



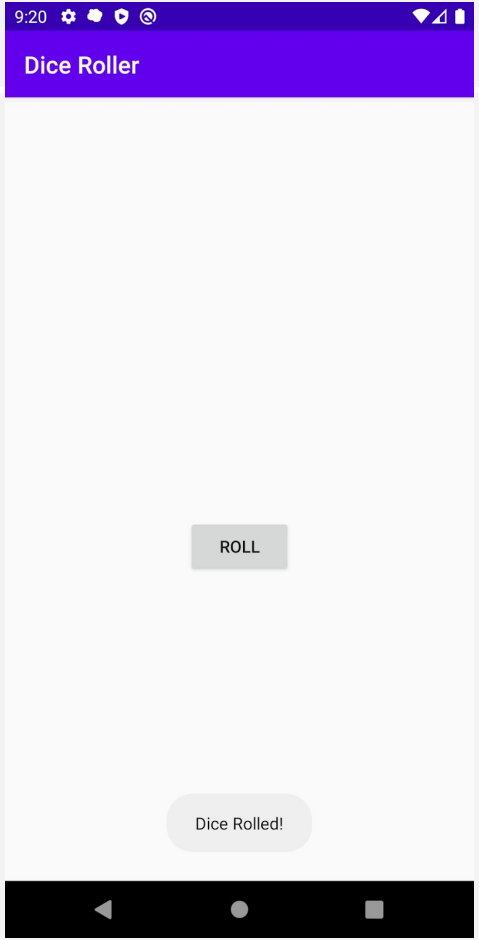

```
val rollButton: Button = findViewById(R.id.button)
rollButton.set
```

```
setOnClickListener(l: View.OnClickListener?)                Unit
setOnClickListener {...} (l: ((View!) -> Unit)?)            Unit
fontFeatureSettings (from getFontFeatureSettings()/setF…    String?
```

نمایش یک پیغام در پی فشردن دکمه

```
class MainActivity : AppCompatActivity() {

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)

        val rollButton: Button = findViewById(R.id.button)
        rollButton.setOnClickListener {
            val toast = Toast.makeText(this, "Dice Rolled!", Toast.LENGTH_SHORT)
            toast.show()
        }
    }
}
```

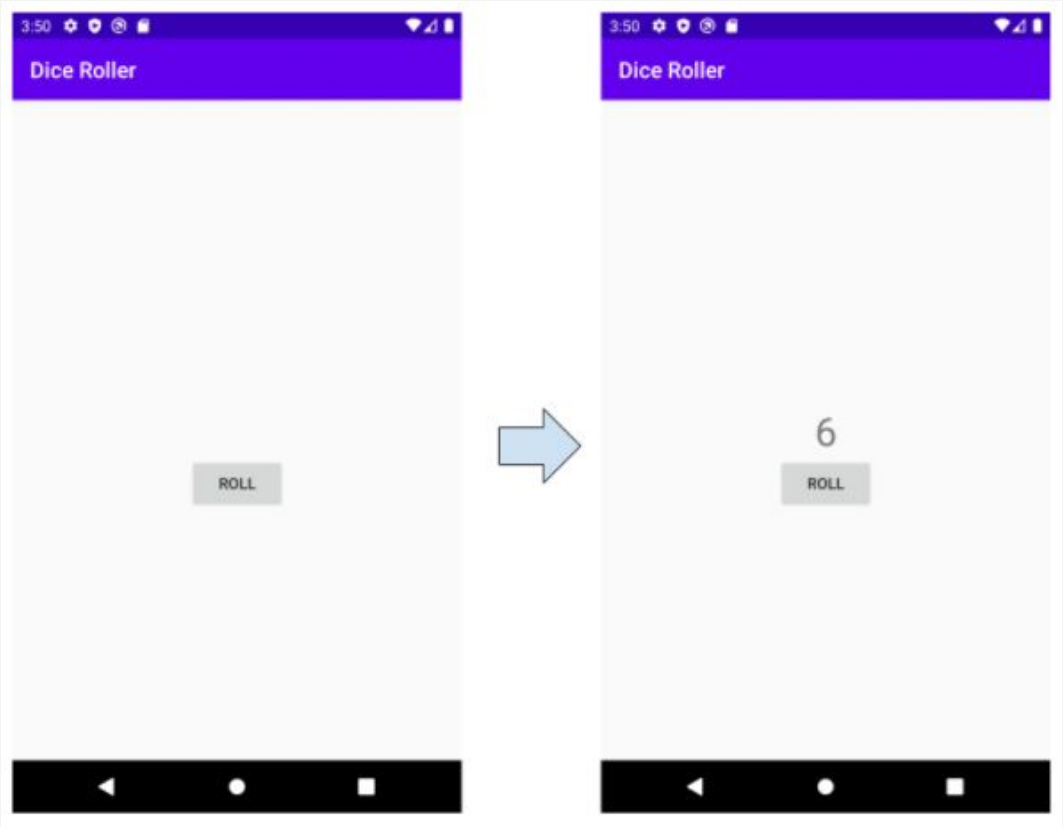
برنامه در عمل!



نمایش دادن مقدار تاس

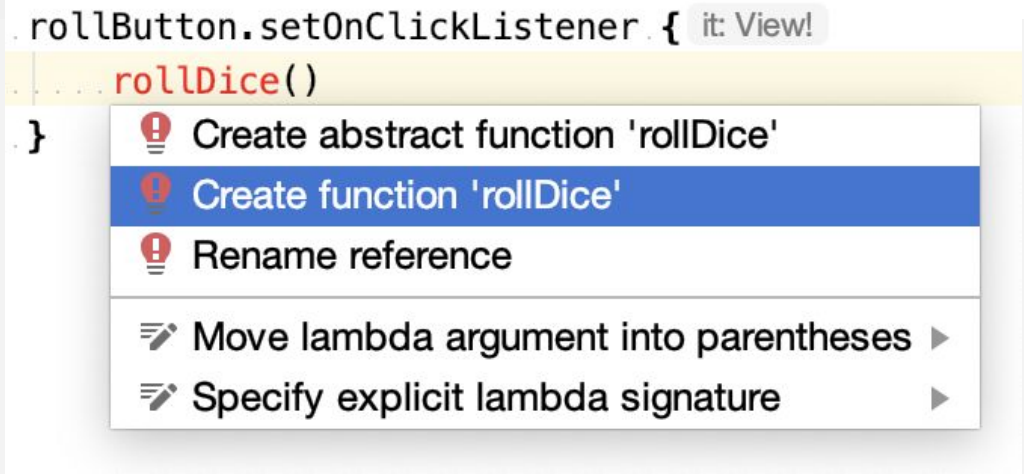
```
class MainActivity : AppCompatActivity() {

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)

        val rollButton: Button = findViewById(R.id.button)
        rollButton.setOnClickListener {
            val resultTextView: TextView = findViewById(R.id.textView)
            resultTextView.text = "6"
        }
    }
}
```

برنامه در عمل!



تعریف متغیرهای کلاس به صورت خصوصی

اضافه کردن تابع تعریف نشده



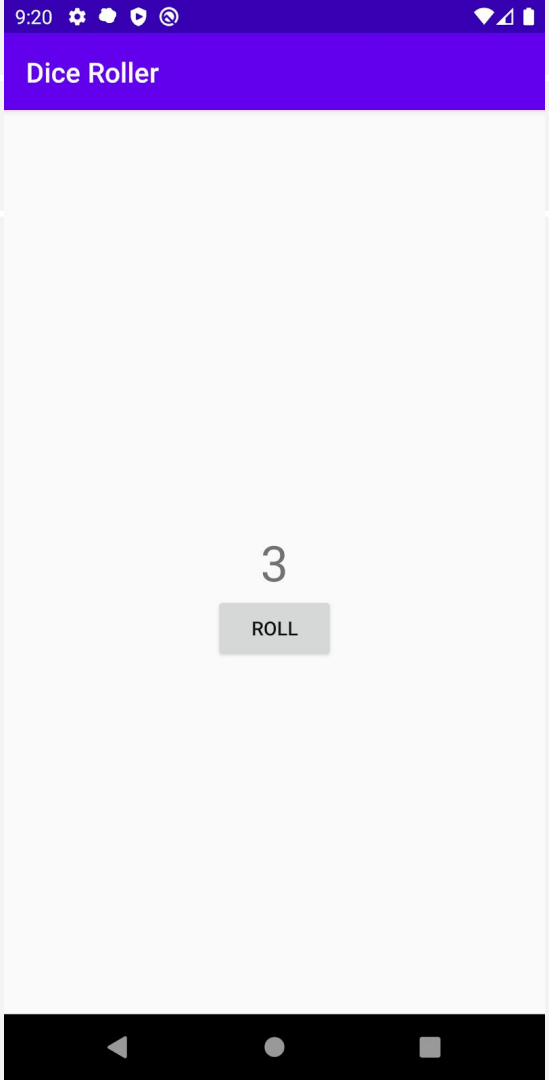
تعریف توابع اضافه برای انداختن تاس

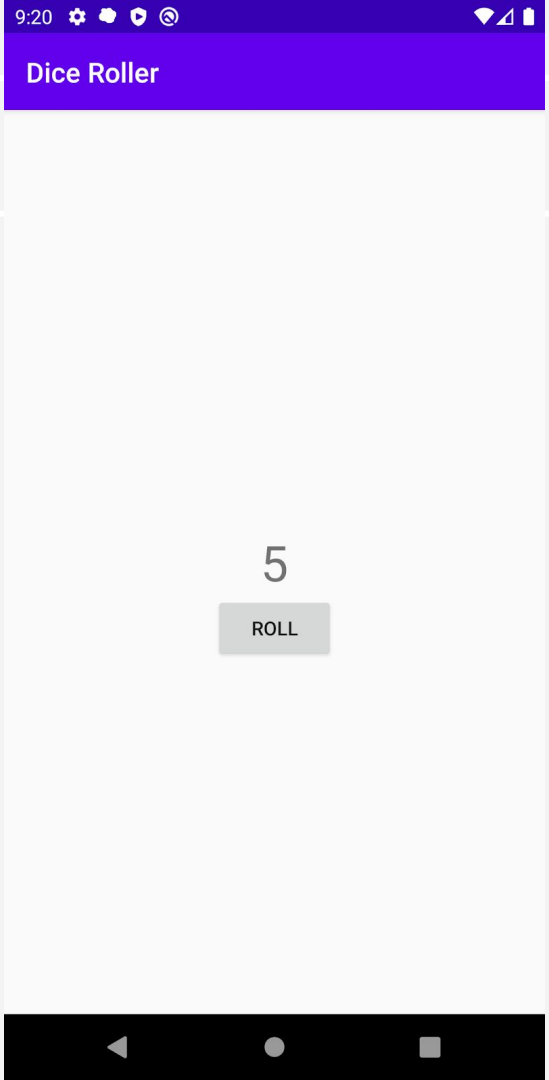
```
class Dice(val numSides: Int) {

    fun roll(): Int {
        return (1..numSides).random()
    }
}
```

```
rollButton.setOnClickListener {
    rollDice()
}
```

```
private fun rollDice() {
    val dice = Dice(6)
    val diceRoll = dice.roll()
    val resultTextView: TextView = findViewById(R.id.textView)
    resultTextView.text = diceRoll.toString()
}
```

برنامه در عمل





نمایش جمله بر مبنای نتیجه پرتاب با استفاده از if-else

```
fun main() {
    val myFirstDice = Dice(6)
    val rollResult = myFirstDice.roll()
    val luckyNumber = 4

    if (rollResult == luckyNumber) {
        println("You win!")
    } else if (rollResult == 1) {
        println("So sorry! You rolled a 1. Try again!")
    } else if (rollResult == 2) {
        println("Sadly, you rolled a 2. Try again!")
    } else if (rollResult == 3) {
        println("Unfortunately, you rolled a 3. Try again!")
    } else if (rollResult == 5) {
        println("Don't cry! You rolled a 5. Try again!")
    } else {
        println("Apologies! You rolled a 6. Try again!")
    }
}
```

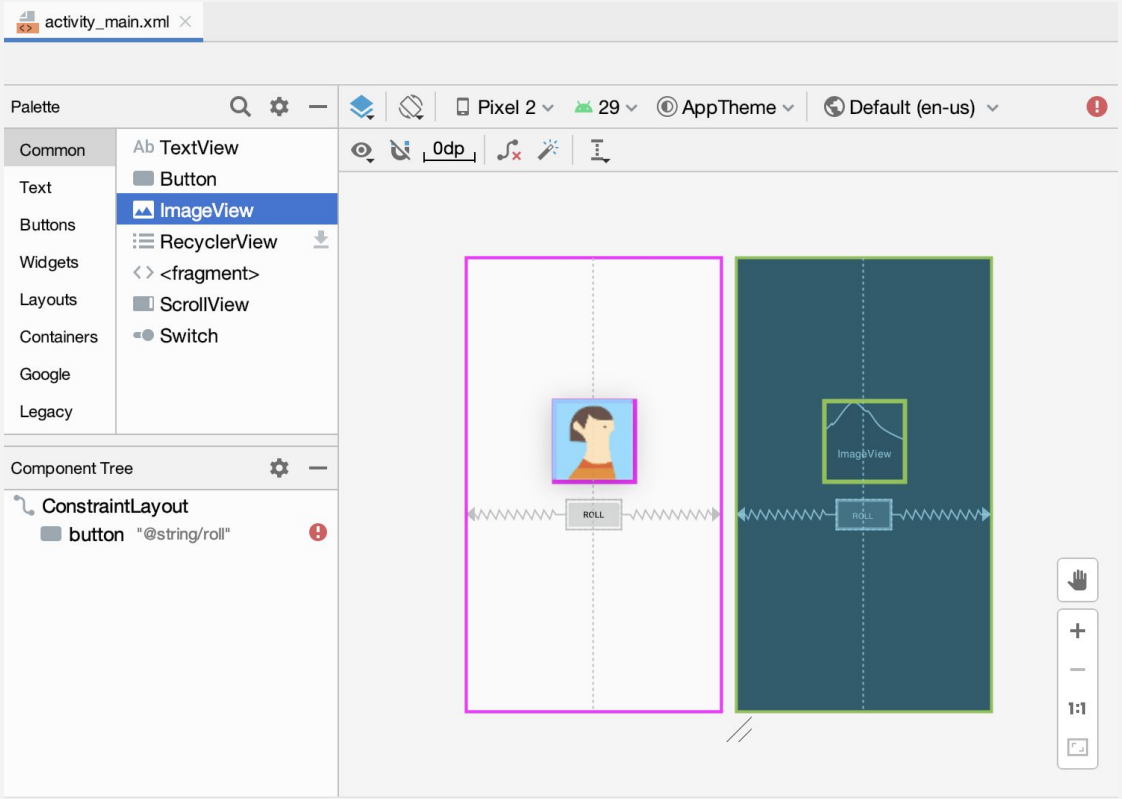
استفاده از when

```
fun main() {
    val myFirstDice = Dice(6)
    val rollResult = myFirstDice.roll()
    val luckyNumber = 4

    when (rollResult) {
        luckyNumber -> println("You won!")
        1 -> println("So sorry! You rolled a 1. Try again!")
        2 -> println("Sadly, you rolled a 2. Try again!")
        3 -> println("Unfortunately, you rolled a 3. Try again!")
        5 -> println("Don't cry! You rolled a 5. Try again!")
        6 -> println("Apologies! you rolled a 6. Try again!")
    }
}
```

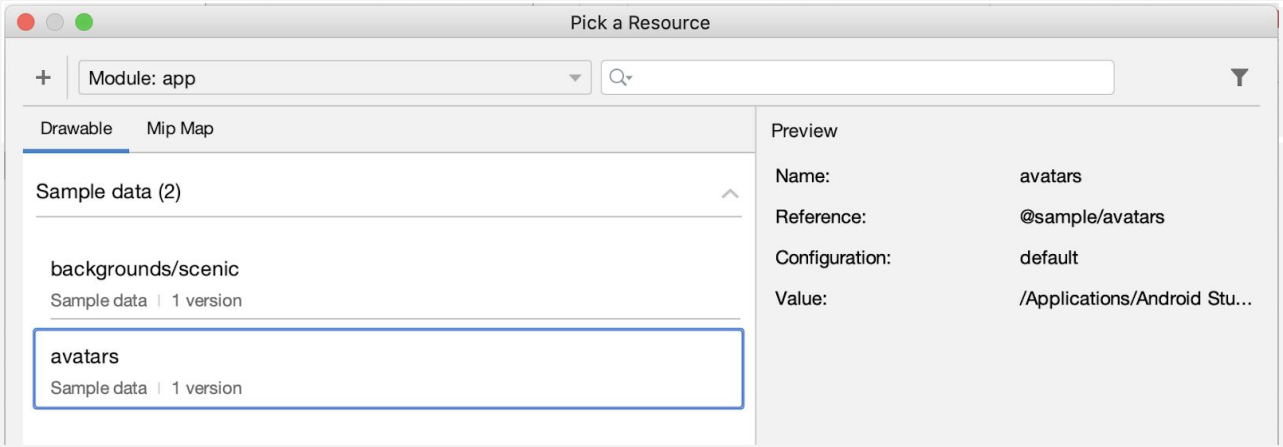
سوال؟

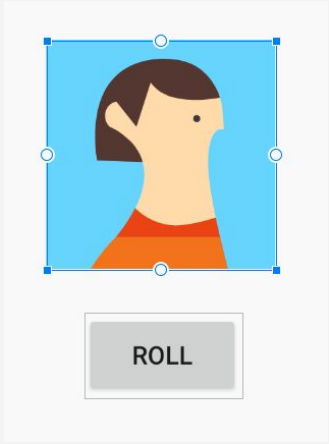
اضافه کردن تصویر

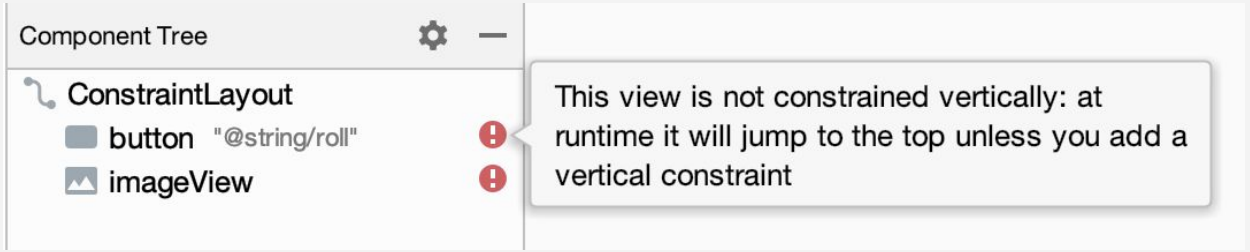
جایگزین کردن متن عدد تاس با یک تصویر



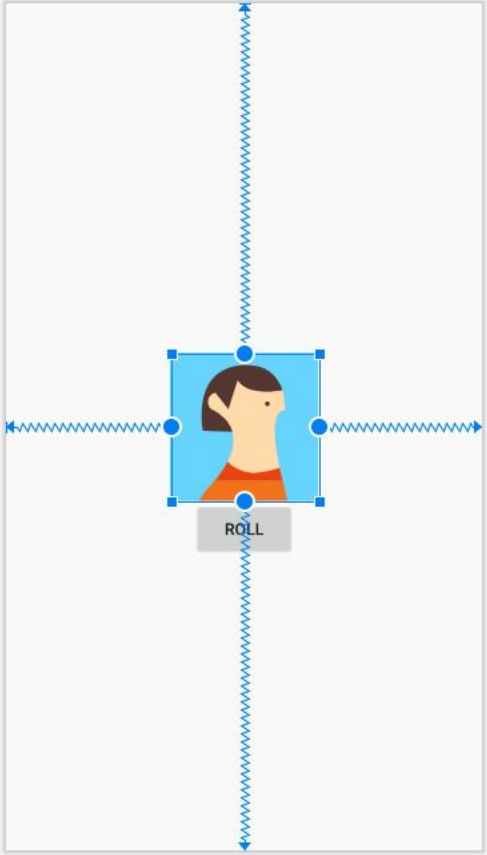
تنظیم تصویر


Pick a Resource
Module: app
Drawable
Mip Map
Sample data (2)
backgrounds/scenic
Sample data | 1 version
avatars
Sample data | 1 version
Preview
Name: avatars
Reference: @sample/avatars
Configuration: default
Value: /Applications/Android Stu...

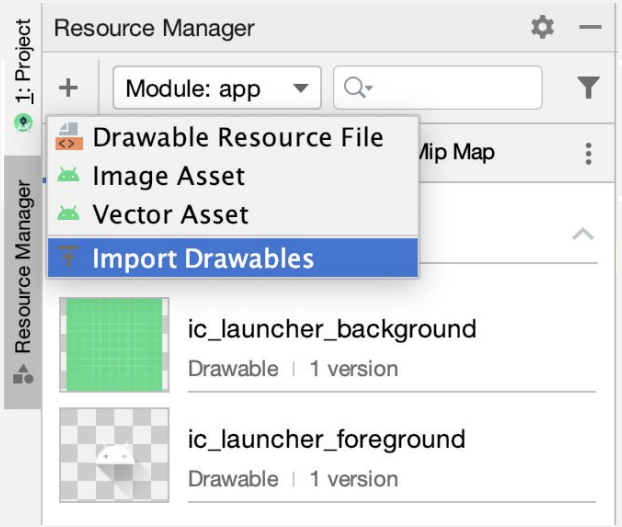

ROLL

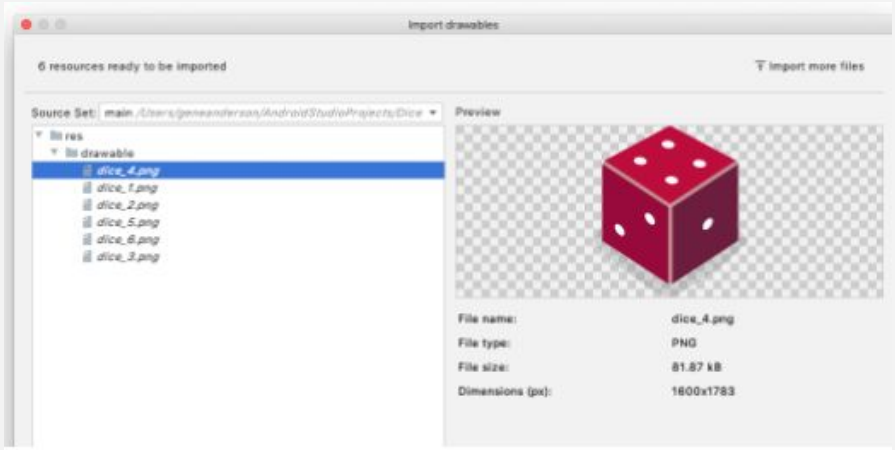

Component Tree
ConstraintLayout
button "@string/roll"
imageView
This view is not constrained vertically: at runtime it will jump to the top unless you add a vertical constraint

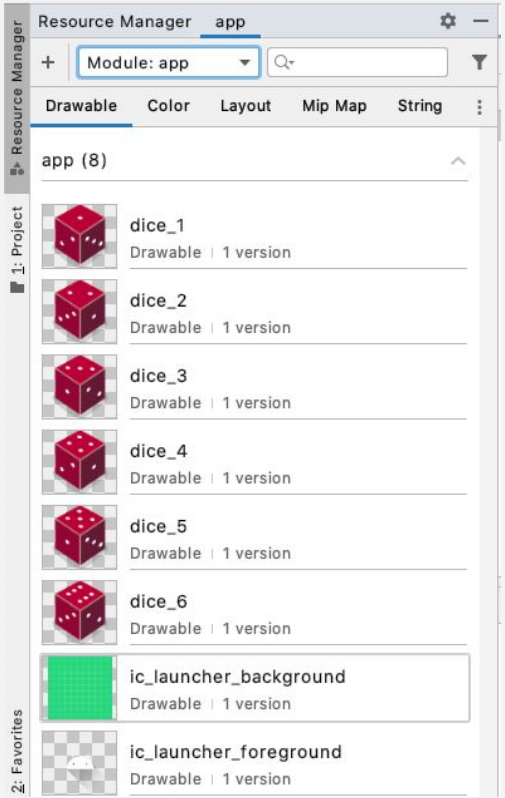
عکس و دکمه تنظیم شده



اضافه کردن تصاویر اعداد مختلف تاس







تصویر نمونه جهت نمایش در ویرایشگَر

srcCompat | @tools:sample/avatars[0]

- تعیین srcCompact
- تنظیم اندازه و محل تصویر

نمایش عکس با توجه به عدد تاس

```
private fun rollDice() {
    val dice = Dice(6)
    val diceRoll = dice.roll()

    val diceImage: ImageView = findViewById(R.id.imageView)

    when (diceRoll) {
        1 -> diceImage.setImageResource(R.drawable.dice_1)
        2 -> diceImage.setImageResource(R.drawable.dice_2)
        3 -> diceImage.setImageResource(R.drawable.dice_3)
        4 -> diceImage.setImageResource(R.drawable.dice_4)
        5 -> diceImage.setImageResource(R.drawable.dice_5)
        6 -> diceImage.setImageResource(R.drawable.dice_6)
    }
}
```

بهبود کد

```
val drawableResource = when (diceRoll) {
    1 -> R.drawable.dice_1
    2 -> R.drawable.dice_2
    3 -> R.drawable.dice_3
    4 -> R.drawable.dice_4
    5 -> R.drawable.dice_5
    else -> R.drawable.dice_6
}

diceImage.setImageResource(drawableResource)
```

```
diceImage.contentDescription = diceRoll.toString()
```

انداختن تاس در ابتدا

```
override fun onCreate(savedInstanceState: Bundle?) {
    super.onCreate(savedInstanceState)
    setContentView(R.layout.activity_main)

    val rollButton: Button = findViewById(R.id.button)
    rollButton.setOnClickListener { rollDice() }

    // Do a dice roll when the app starts
    rollDice()
}
```

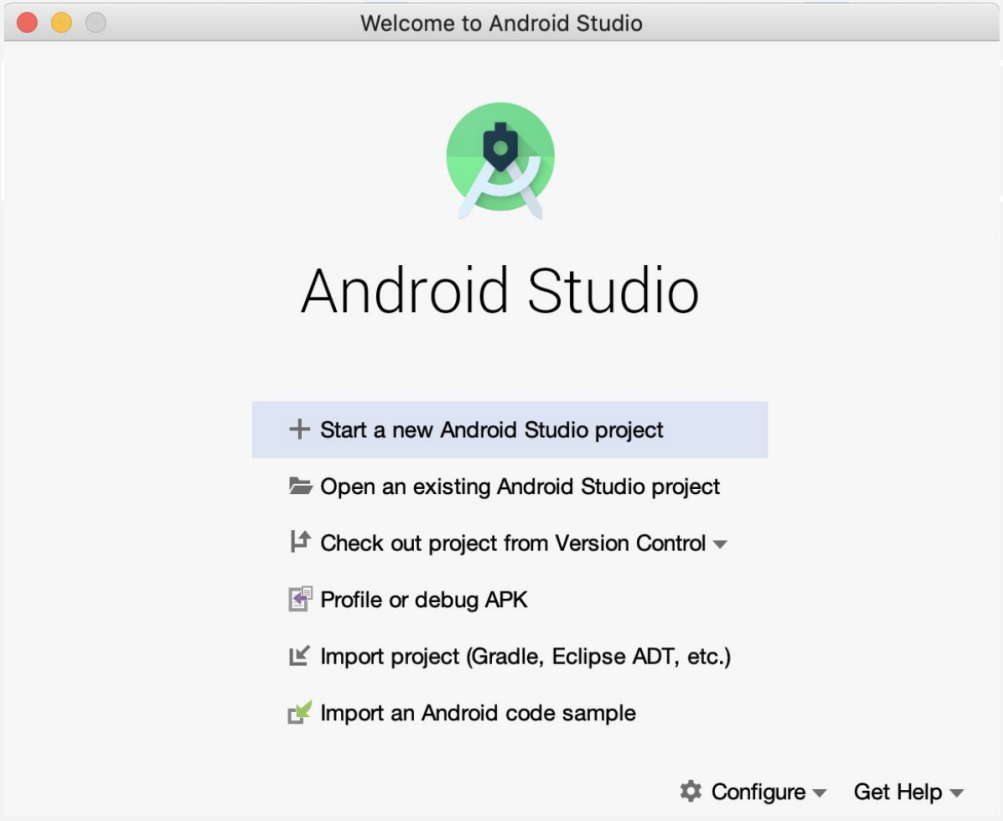
داشتن توضیح در کد

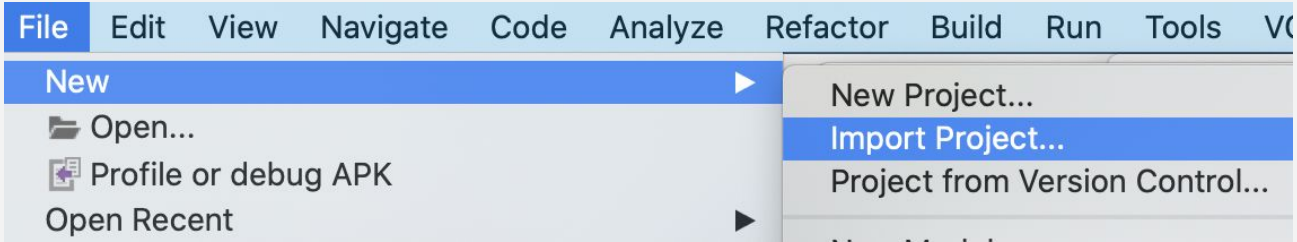
```
/**
* Roll the dice and update the screen with the result.
*/
private fun rollDice() {
    // Create new Dice object with 6 sides and roll the dice
    val dice = Dice(6)
    val diceRoll = dice.roll()

    // Find the ImageView in the layout
    val diceImage: ImageView = findViewById(R.id.imageView)

    // Determine which drawable resource ID to use based on the dice roll
    val drawableResource = when (diceRoll) {
        1 -> R.drawable.dice_1
        2 -> R.drawable.dice_2
        3 -> R.drawable.dice_3
        4 -> R.drawable.dice_4
        5 -> R.drawable.dice_5
        else -> R.drawable.dice_6
    }

    // Update the ImageView with the correct drawable resource ID
    diceImage.setImageResource(drawableResource)

    // Update the content description
    diceImage.contentDescription = diceRoll.toString()
}
```

سوال؟

اجرای تست برای برنامه
درست کردن شربت لیمو

وارد کردن یک پروژه

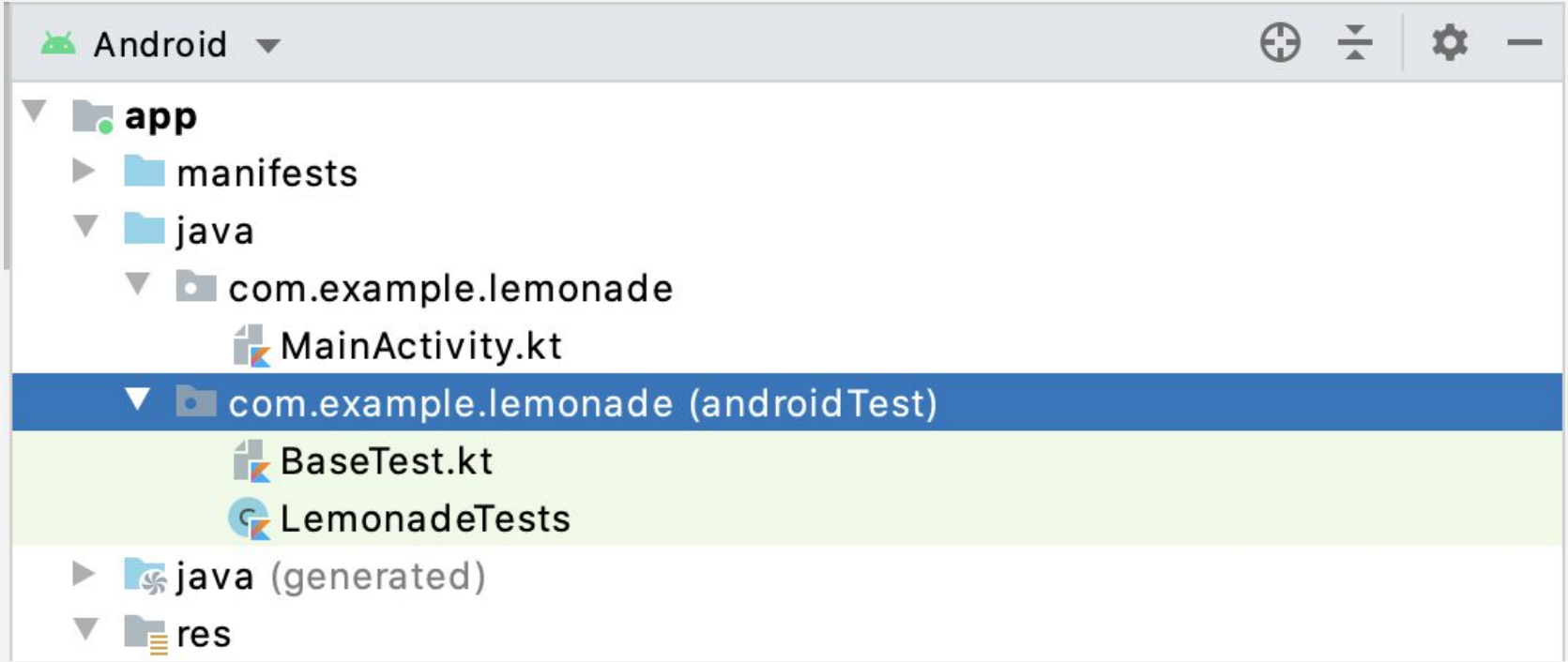




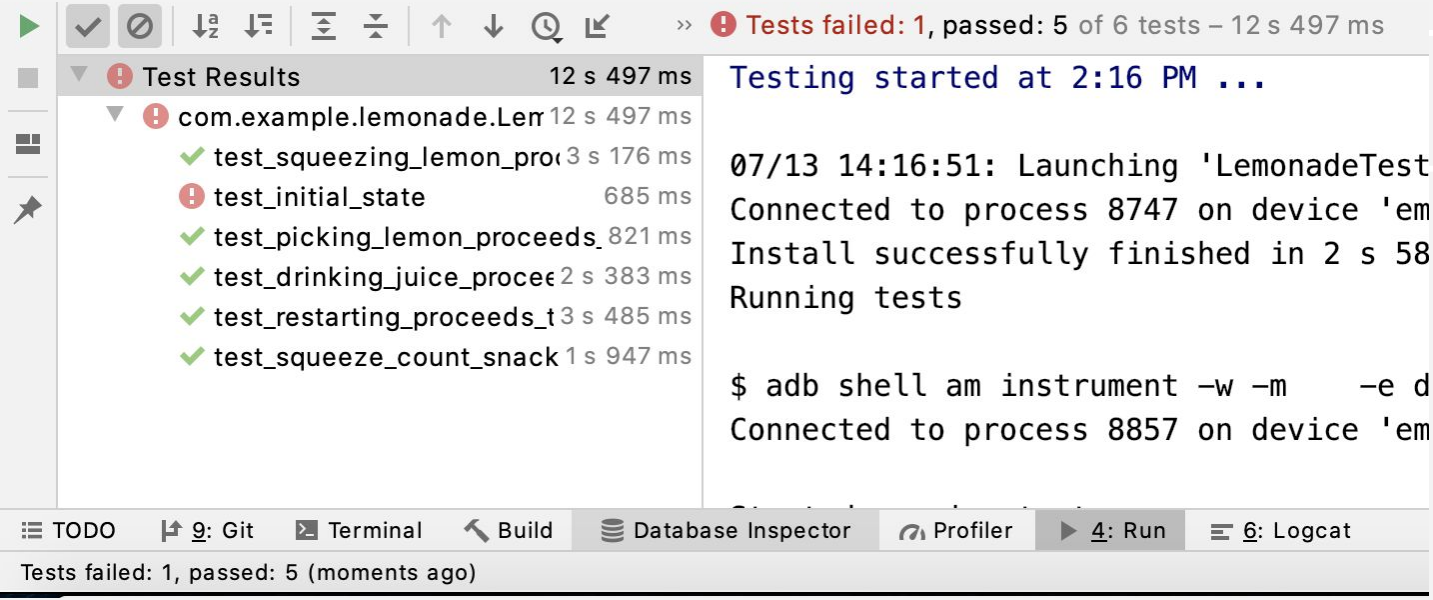
تعیین وضعیت (state)

- وضعیت های مختلف:
  - Select
  - Squeeze
  - Drink
  - Restart

انتخاب کلاس تست



اجرای کلاس تست


Tests failed: 1, passed: 5 of 6 tests – 12 s 497 ms
Test Results 12 s 497 ms
com.example.lemonade.Lem 12 s 497 ms
test_squeezing_lemon_pro 3 s 176 ms
test_initial_state 685 ms
test_picking_lemon_proceeds_ 821 ms
test_drinking_juice_proce 2 s 383 ms
test_restarting_proceeds_t 3 s 485 ms
test_squeeze_count_snack 1 s 947 ms
Testing started at 2:16 PM ...
07/13 14:16:51: Launching 'LemonadeTest
Connected to process 8747 on device 'em
Install successfully finished in 2 s 58
Running tests
$ adb shell am instrument -w -m -e d
Connected to process 8857 on device 'em
TODO
9: Git
Terminal
Build
Database Inspector
Profiler
4: Run
6: Logcat
Tests failed: 1, passed: 5 (moments ago)

تست ناموفق


Tests failed: 1 of 1 test – 1 s 786 ms
Test Results 1 s 786 ms
com.example.lemonade.Lem 1 s 786 ms
test_initial_state 1 s 786 ms
androidx.test.espresso.base.DefaultFailureHandler$AssertionFailedWith
Expected: with string from resource id: <2131624039>[squeeze_count] v
Got: "MaterialTextView{id=2131231095, res-name=text_action, visi
at dalvik.system.VMStack.getThreadStackTrace(Native Method)
TODO
9: Git
Terminal
Build
Database Inspector
Profiler
4: Run
6: Logcat
Event Log
Layout Inspector
Tests failed: 1, passed: 0 (4 minutes ago)
13:1 LF UTF-8 4 spaces main

سوال؟