

**Лекция №1.**  
**по курсу «Мобильное программирование»**

Москва 2019

## Разделы курса

<https://vk.com/club179408705>



Java Programming Language

Android Development

## Основные понятия

**АКТИВНОСТЬ** (отвечает за взаимодействие пользователя с информацией на экране)

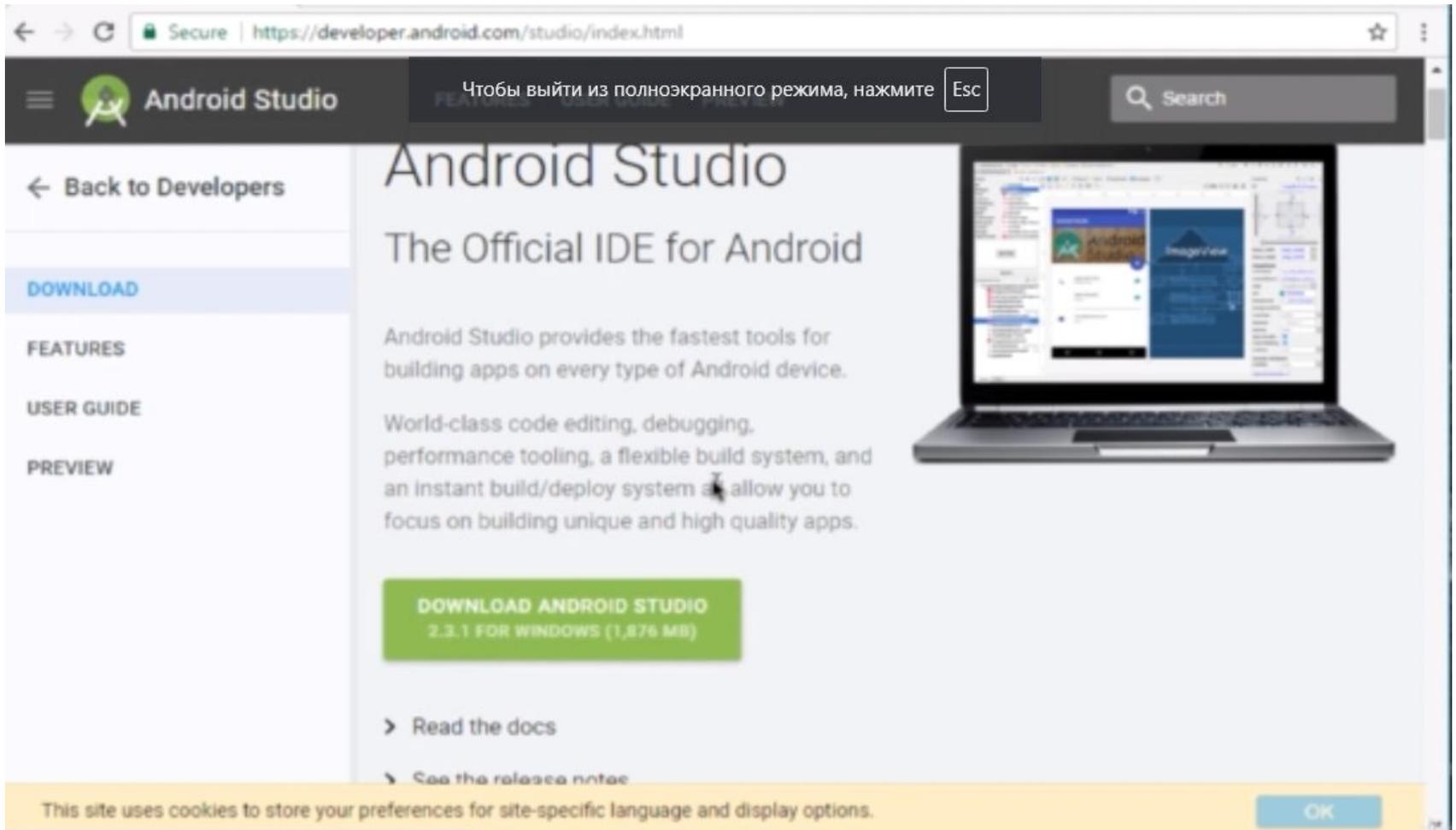
**Widget (Компонент, элемент)**  
каждый виджет является экземпляром класса

View или одного из его subclasses)

**Layout (панель-контейнер)**

**Макет** (определяет набор объектов пользовательского интерфейса и их расположение на экране)

# Установка Android Studio



The screenshot shows the official Android Studio website. At the top, there is a navigation bar with the Android Studio logo, a search bar, and a notification that says "Чтобы выйти из полноэкранного режима, нажмите Esc" (To exit full-screen mode, press Esc). Below the navigation bar, there is a sidebar with links for "Back to Developers", "DOWNLOAD", "FEATURES", "USER GUIDE", and "PREVIEW". The main content area features the heading "Android Studio" and "The Official IDE for Android". Below this, there is a paragraph describing the IDE's capabilities: "Android Studio provides the fastest tools for building apps on every type of Android device. World-class code editing, debugging, performance tooling, a flexible build system, and an instant build/deploy system allow you to focus on building unique and high quality apps." A prominent green button labeled "DOWNLOAD ANDROID STUDIO" is visible, with the text "2.3.1 FOR WINDOWS (1,876 MB)" underneath it. Below the button, there are links for "Read the docs" and "See the release notes". On the right side of the page, there is an image of a laptop displaying the Android Studio interface. At the bottom of the page, there is a yellow cookie consent banner that reads "This site uses cookies to store your preferences for site-specific language and display options." with an "OK" button.

Secure | <https://developer.android.com/studio/index.html>

Android Studio

Чтобы выйти из полноэкранного режима, нажмите Esc

Search

← Back to Developers

DOWNLOAD

FEATURES

USER GUIDE

PREVIEW

## Android Studio

### The Official IDE for Android

Android Studio provides the fastest tools for building apps on every type of Android device.

World-class code editing, debugging, performance tooling, a flexible build system, and an instant build/deploy system allow you to focus on building unique and high quality apps.

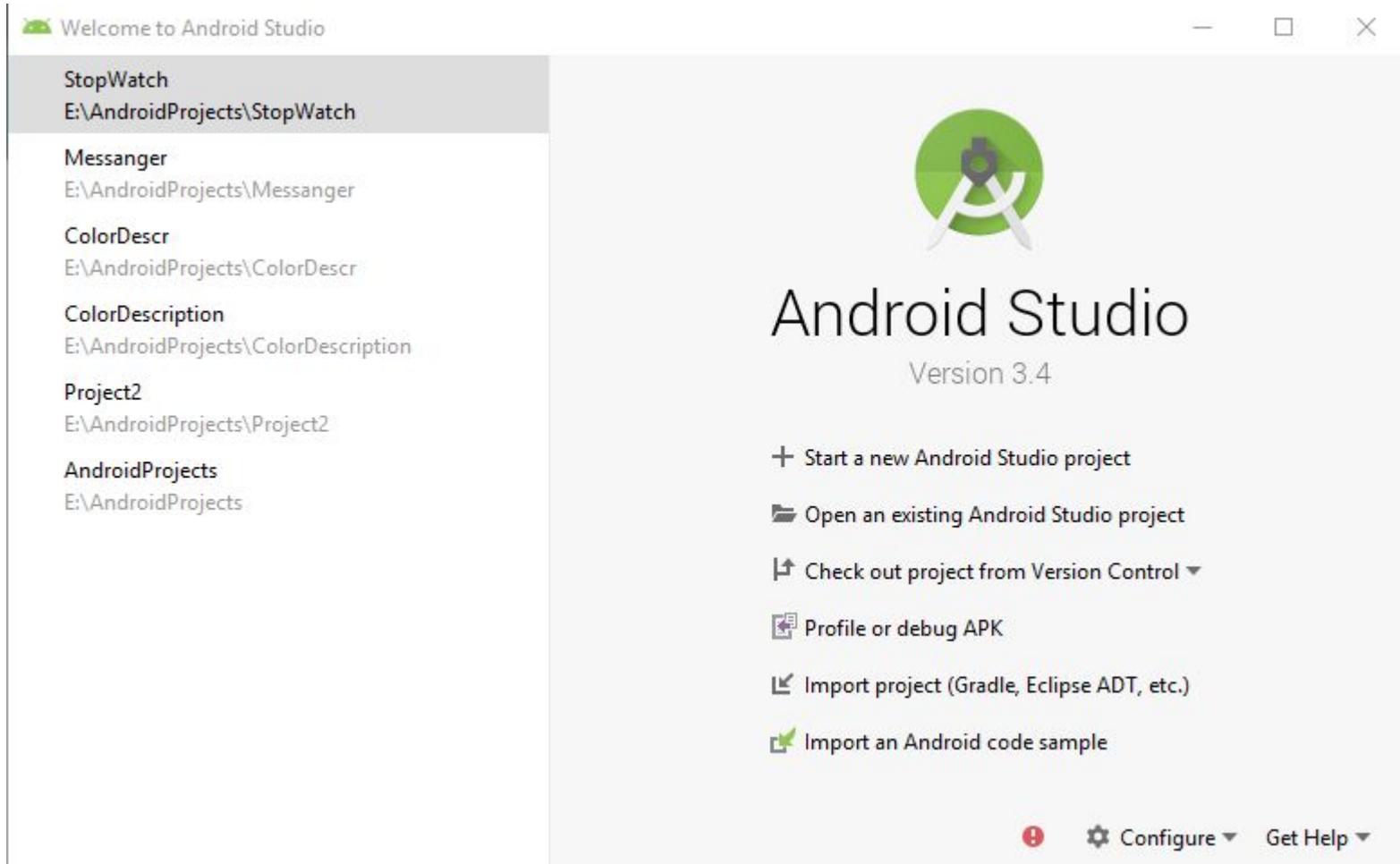
**DOWNLOAD ANDROID STUDIO**  
2.3.1 FOR WINDOWS (1,876 MB)

> Read the docs

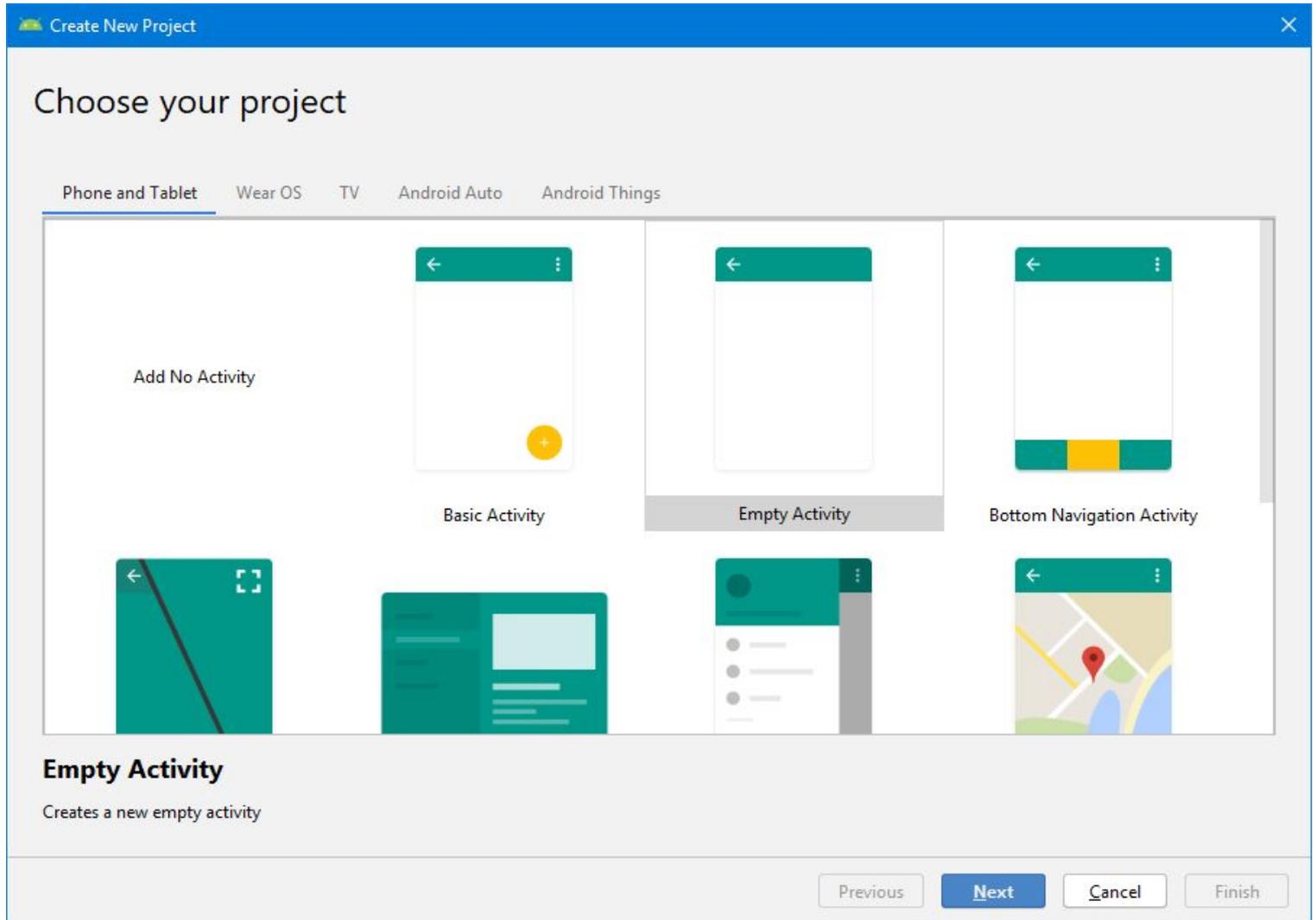
> See the release notes

This site uses cookies to store your preferences for site-specific language and display options. [OK](#)

# Занык Android Studio



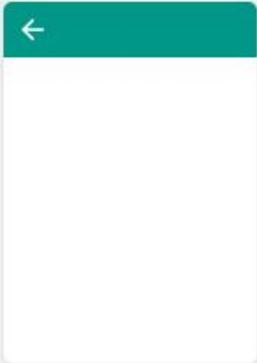
# Создание проекта



# Создание проекта

Create New Project

## Configure your project



Empty Activity

Creates a new empty activity

Name  
Hello world

Package name  
com.example.helloworld

Save location  
E:\AndroidProjects\Helloworld

Language  
Java

Minimum API level  
API 15: Android 4.0.3 (IceCreamSandwich)

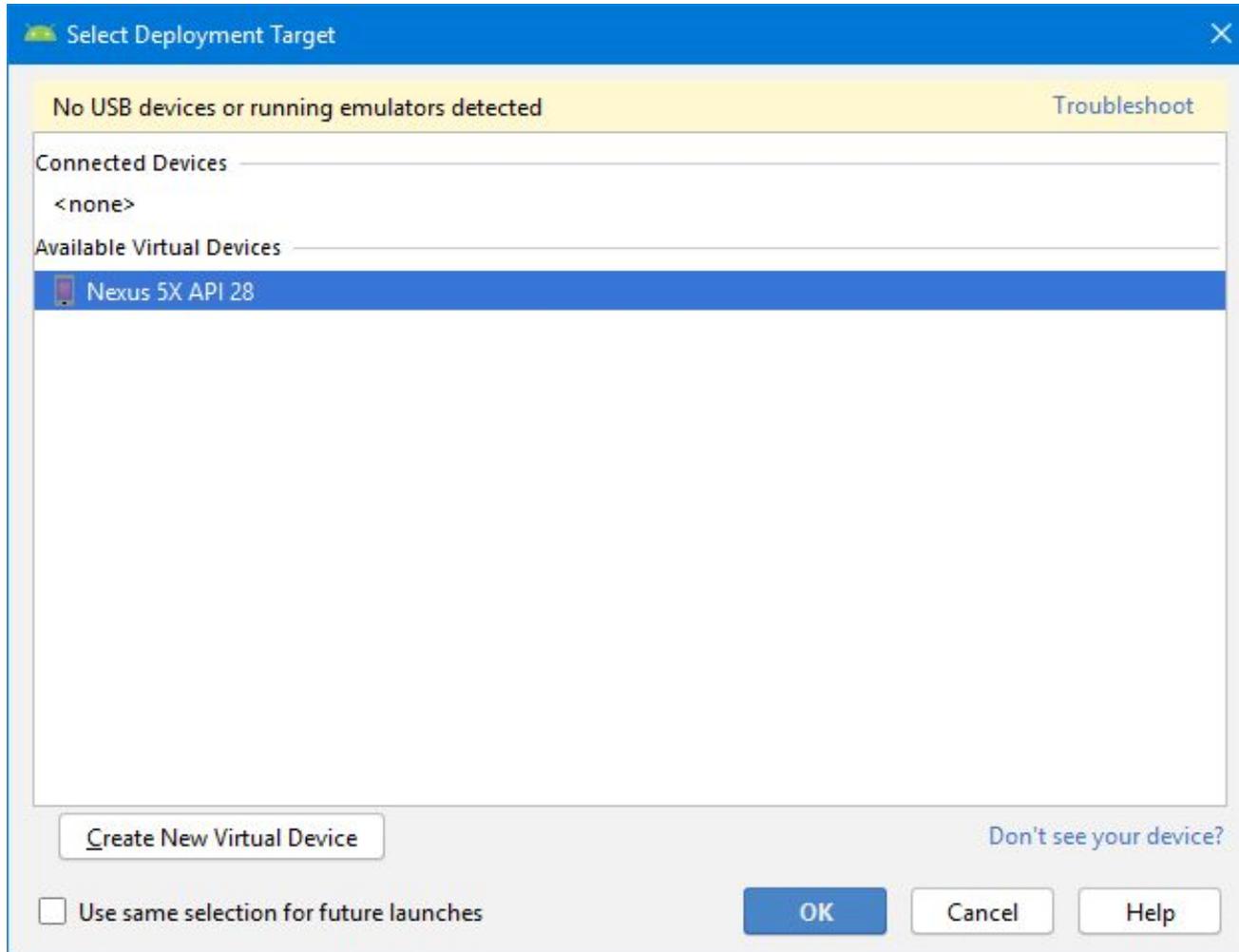
**i** Your app will run on approximately **100%** of devices.  
[Help me choose](#)

This project will support instant apps

Use androidx.\* artifacts

[Previous](#) [Next](#) [Cancel](#) [Finish](#)

# Запуск проекта



# Создание нового устройства

Select Hardware  
Android Studio

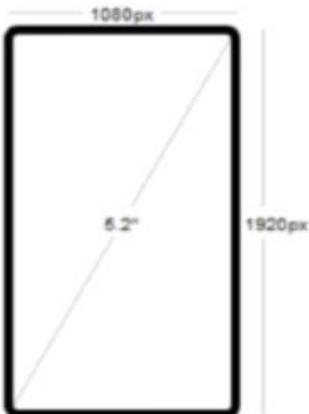
### Choose a device definition

Q

Category	Name	Size	Resolution	Density
TV	Pixel XL	5.5"	1440x2560	560dpi
Wear	Pixel	5.0"	1080x1920	xhdpi
Phone	Nexus 5	4.0"	480x800	hdpi
Tablet	Nexus One	3.7"	480x800	hdpi
	Nexus 6P	5.7"	1440x2560	560dpi
	Nexus 6	5.96"	1440x2560	560dpi
	Nexus 5X	5.2"	1080x1920	420dpi
	Nexus 5	4.95"	1080x1920	xhdpi
	Nexus 4	4.7"	768x1280	xhdpi
	Galaxy Nexus	4.65"	720x1280	xhdpi

New Hardware Profile   Import Hardware Profiles   

### Nexus 5X



Size: large  
Ratio: long  
Density: 420dpi

Clone Device...

# Создание нового устройства

**Android Virtual Device (AVD)**  
Android Studio

### Verify Configuration

AVD Name:

Nexus 5X	5.2 1080x1920 xxhdpi	<input type="button" value="Change..."/>
Nougat	Android 7.1.1 x86	<input type="button" value="Change..."/>

Startup orientation:  Portrait  Landscape

Emulated Performance: Graphics:

Device Frame:  Enable Device Frame

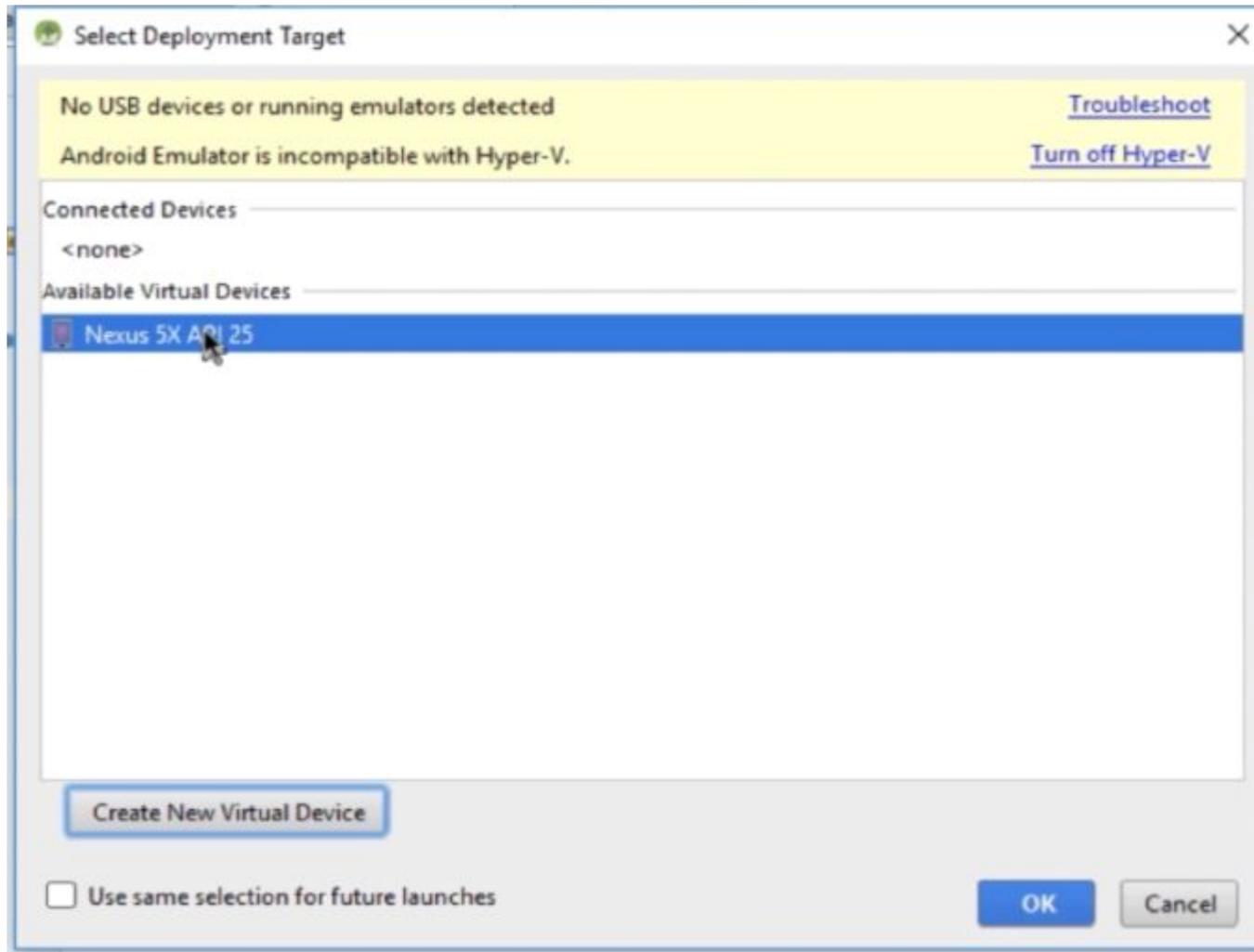
### AVD Name

The name of this AVD.

Recommendation: **Android Emulator is incompatible with Hyper-V.**  
[Turn off Hyper-V](#)

Android Studio

## Создание нового устройства



# Sdk manager

Settings for New Projects

Appearance & Behavior > System Settings > Android SDK

Manager for the Android SDK and Tools used by Android Studio

Android SDK Location:  [Edit](#)

SDK Platforms SDK Tools SDK Update Sites

Each Android SDK Platform package includes the Android platform and sources pertaining to an API level by default. Once installed, Android Studio will automatically check for updates. Check "show package details" to display individual SDK components.

	Name	API Level	Revision	Status
<input type="checkbox"/>	Android 9.+ (Q)	29	3	Not installed
<input checked="" type="checkbox"/>	Android 9.0 (Pie)	28	6	Installed
<input type="checkbox"/>	Android 8.1 (Oreo)	27	3	Not installed
<input type="checkbox"/>	Android 8.0 (Oreo)	26	2	Not installed
<input type="checkbox"/>	Android 7.1.1 (Nougat)	25	3	Not installed
<input type="checkbox"/>	Android 7.0 (Nougat)	24	2	Not installed
<input type="checkbox"/>	Android 6.0 (Marshmallow)	23	3	Not installed
<input type="checkbox"/>	Android 5.1 (Lollipop)	22	2	Not installed
<input type="checkbox"/>	Android 5.0 (Lollipop)	21	2	Not installed
<input type="checkbox"/>	Android 4.4W (KitKat Wear)	20	2	Not installed
<input type="checkbox"/>	Android 4.4 (KitKat)	19	4	Not installed
<input type="checkbox"/>	Android 4.3 (Jelly Bean)	18	3	Not installed
<input type="checkbox"/>	Android 4.2 (Jelly Bean)	17	3	Not installed
<input type="checkbox"/>	Android 4.1 (Jelly Bean)	16	5	Not installed
<input type="checkbox"/>	Android 4.0.3 (IceCreamSandwich)	15	5	Not installed
<input type="checkbox"/>	Android 4.0 (IceCreamSandwich)	14	4	Not installed
<input type="checkbox"/>	Android 3.2 (Honeycomb)	13	1	Not installed
<input type="checkbox"/>	Android 3.1 (Honeycomb)	12	3	Not installed
<input type="checkbox"/>	Android 3.0 (Honeycomb)	11	2	Not installed
<input type="checkbox"/>	Android 2.3.3 (Gingerbread)	10	2	Not installed
<input type="checkbox"/>	Android 2.3 (Gingerbread)	9	2	Not installed
<input type="checkbox"/>	Android 2.2 (Froyo)	8	3	Not installed
<input type="checkbox"/>	Android 2.1 (Eclair)	7	3	Not installed

Hide Obsolete Packages  Show Package Details

OK Cancel Apply Help

# Sdk manager

Appearance & Behavior > System Settings > Android SDK Reset

Manager for the Android SDK and Tools used by Android Studio

Android SDK Location:  [Edit](#)

**SDK Platforms** | SDK Tools | SDK Update Sites

Each Android SDK Platform package includes the Android platform and sources pertaining to an API level by default. Once installed, Android Studio will automatically check for updates. Check "show package details" to display individual SDK components.

	Name	API Level	Revision	Status
▼ <input checked="" type="checkbox"/>	<b>Android 7.1.1 (Nougat)</b>			
<input checked="" type="checkbox"/>	Android SDK Platform 25	25	3	Installed
<input checked="" type="checkbox"/>	Sources for Android 25	25	1	Installed
<input checked="" type="checkbox"/>	Android TV Intel x86 Atom System Image	25	3	Not installed
<input checked="" type="checkbox"/>	Android Wear ARM EABI v7a System Image	25	3	Not installed
<input checked="" type="checkbox"/>	Android Wear Intel x86 Atom System Image	25	3	Not installed
<input checked="" type="checkbox"/>	Google APIs ARM 64 v8a System Image	25	4	Not installed
<input checked="" type="checkbox"/>	Google APIs ARM EABI v7a System Image	25	4	Not installed
<input checked="" type="checkbox"/>	Google APIs Intel x86 Atom System Image	25	4	Installed
<input checked="" type="checkbox"/>	Google APIs Intel x86 Atom_64 System Image	25	4	Not installed
▼ <input type="checkbox"/>	<b>Android 7.0 (Nougat)</b>			
<input checked="" type="checkbox"/>	Google APIs	24	1	Installed
<input type="checkbox"/>	Android SDK Platform 24	24	2	Not installed
<input type="checkbox"/>	Sources for Android 24	24	1	Not installed
<input type="checkbox"/>	Android TV Intel x86 Atom System Image	24	10	Not installed
<input type="checkbox"/>	ARM 64 v8a System Image	24	7	Not installed
<input type="checkbox"/>	ARM EABI v7a System Image	24	7	Not installed
<input type="checkbox"/>	Intel x86 Atom System Image	24	7	Not installed
<input type="checkbox"/>	Intel x86 Atom_64 System Image	24	7	Not installed
<input type="checkbox"/>	Google APIs ARM 64 v8a System Image	24	11	Not installed
<input type="checkbox"/>	Google APIs ARM EABI v7a System Image	24	11	Not installed
<input checked="" type="checkbox"/>	Google APIs Intel x86 Atom System Image	24	11	Installed
<input type="checkbox"/>	Google APIs Intel x86 Atom_64 System Image	24	11	Not installed

Show Package Details

Aktipawan Windows

# VTX emulator

Сведения о системе

Файл Правка Вид Справка

Сведения о системе

- Аппаратные ресурсы
- Компоненты
- Программная среда

Элемент	Значение
Конфигурация PCR7	Привязка невозможна
Папка Windows	C:\WINDOWS
Системная папка	C:\WINDOWS\system32
Устройство загрузки	\Device\HarddiskVolume1
Язык системы	Россия
Аппаратно-зависимый уровень	Версия = "10.0.17134.858"
Имя пользователя	DESKTOP-BH94OS2\1
Часовой пояс	RTZ 2 (зима)
Установленная оперативная п...	8,00 ГБ
Полный объем физической па...	7,90 ГБ
Доступно физической памяти	1,72 ГБ
Всего виртуальной памяти	12,7 ГБ
Доступно виртуальной памяти	3,29 ГБ
Размер файла подкачки	4,75 ГБ
Файл подкачки	C:\pagefile.sys
Защита DMA ядра	Откл.
Безопасность на основе вирту...	Не включено
Поддержка шифрования устр...	Причины сбоя автоматического шифрования устройства: Доверенный пла...
Hyper-V — расширения режи...	Да
Hyper-V — расширения для п...	Да
Hyper-V — виртуализация вкл...	Да
Hyper-V — предотвращение в...	Да

Искать:  Найти

Поиск только в выделенной категории  Поиск только в именах категорий

Активация Windows

Чтобы активировать Windows, перейдите в раздел "Параметры".

Закреть

# IDE

Android Studio interface showing the IDE for an Android application named "ShowNameNow". The main window displays the design view of the activity\_main.xml layout, showing a white background and a dark blue vertical bar on the right. The Component Tree shows a ConstraintLayout containing an Ab TextView with the text "Hello World!". The Palette on the left lists various UI components like Button, ImageView, RecyclerView, etc. The bottom panel shows a build log with successful sync and build messages.

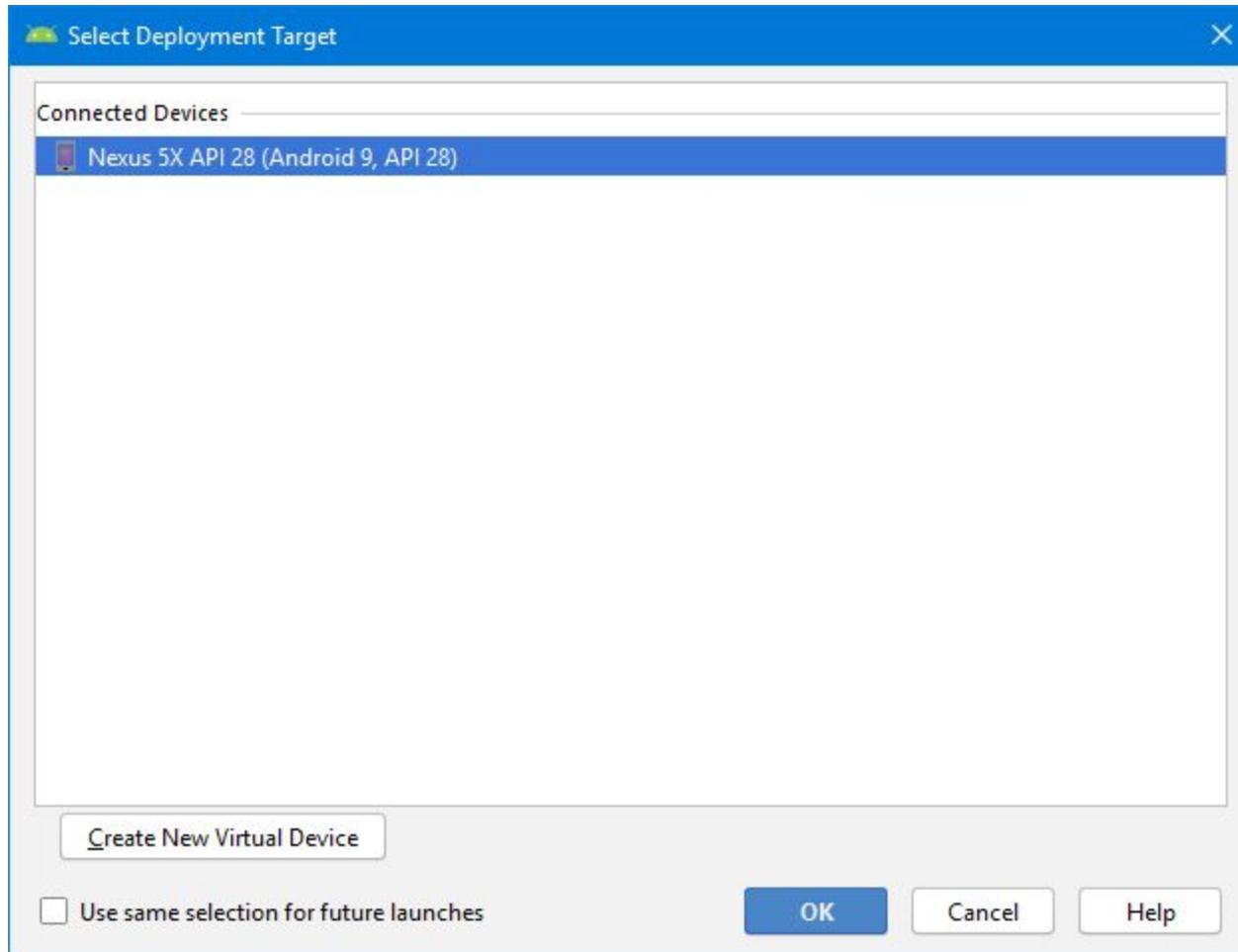
Build: Sync x

- ✓ ShowNameNow: synced successfully at 29.08.2019 21:53 1 m 2 s 302 ms
- ✓ Starting Gradle Daemon 10 s 15 ms
- ✓ Run build E:\AndroidProjects\ShowNameNow 38 s 131 ms
  - ✓ Load build 4 s 664 ms
  - ✓ Configure build 29 s 48 ms
  - ✓ Calculate task graph 771 ms
  - ✓ Run tasks 3 s 122 ms

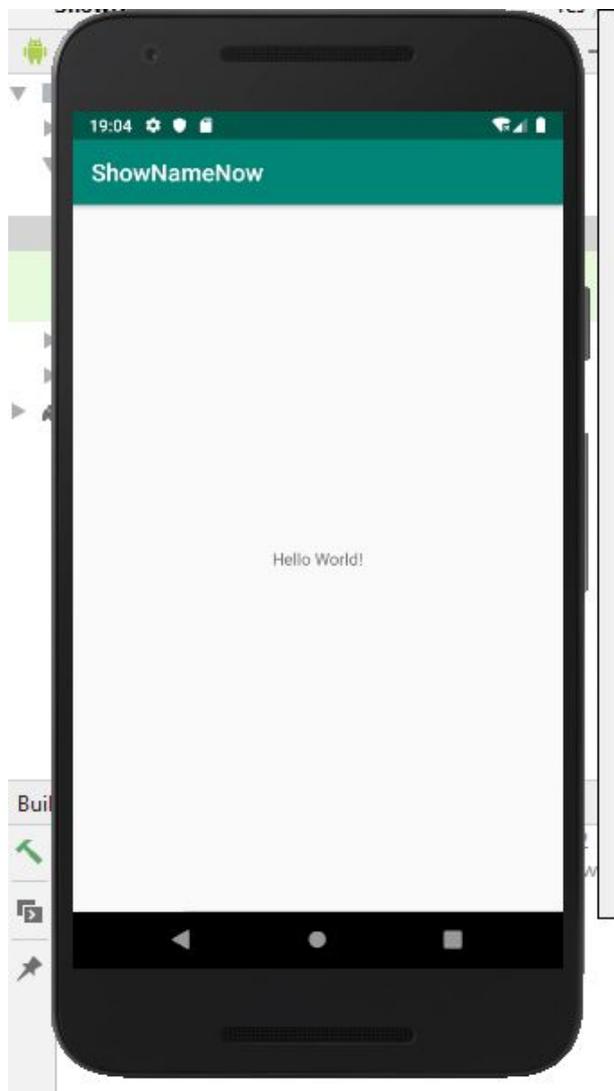
Активация Windows  
Чтобы активировать Windows, перейдите в раздел "Параметры".

Power save mode is on: Code insight and background tasks are disabled. // Do Not Show Again // Disable Power Save Mode (4 minutes ago)

## Select virtual device



## Результат работы программы



# Исходный код программы

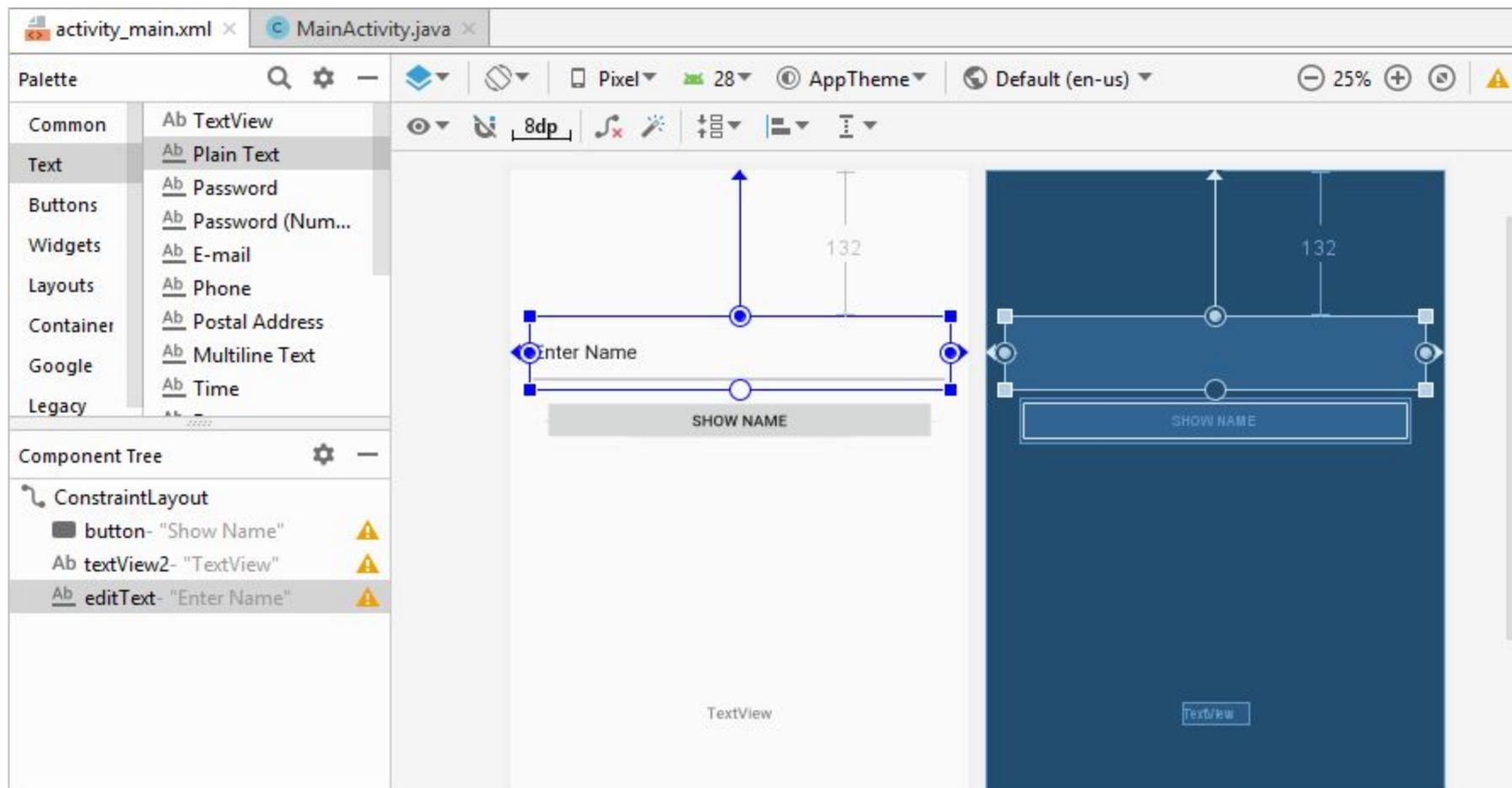
```
activity_main.xml x MainActivity.java x
1 package com.example.shownamenow;
2
3 import android.support.v7.app.AppCompatActivity;
4 import android.os.Bundle;
5 import android.widget.Button;
6 import android.widget.TextView;
7
8 public class MainActivity extends AppCompatActivity {
9     private Button myButton;
10    private TextView showText;
11
12    @Override
13    protected void onCreate(Bundle savedInstanceState) {
14        super.onCreate(savedInstanceState);
15        setContentView(R.layout.activity_main);
16
17        myButton = findViewById(R.id.button);
18        showText = findViewById(R.id.textView2);
19        showText.setText("Hello I am here");
20    }
21 }
22
```

# Исходный код программы

```
myButton.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View v) {  
    }  
});
```

```
myButton.setOnClickListener(new View.OnClickListener() {  
    @Override  
    public void onClick(View v) {  
        showText.setText("Hello I am here");  
    }  
});  
showText = findViewById(R.id.textView2);
```

# Вид программы



# Вид программы

The screenshot displays the Android Studio interface. The main editor shows the `MainActivity.java` file with the following code:

```
10 public class MainActivity extends AppCompatActivity {
11     private Button myButton;
12     private TextView showText;
13     private EditText enterName;
14
15
16     @Override
17     protected void onCreate(Bundle savedInstanceState) {
18         super.onCreate(savedInstanceState);
19         setContentView(R.layout.activity_main);
20
21         myButton = findViewById(R.id.button);
22         enterName = findViewById(R.id.editText);
23         myButton.setOnClickListener((v) -> {
24
25             String name = enterName.getText().toString();
26
27             showText.setText("Hello " + name);
28         });
29         showText = findViewById(R.id.textView2);
30
31
32
33
34 }
```

The Build Output window at the bottom shows the following logs:

Build	Build Output	Sync	Event Log
✓	Build: completed successfully at 31.08.2019 14:26	5 s 140 ms	14:25 Executing tasks: [:app:assembleDebug]
✓	Run build E:\AndroidProjects\ShowNameNow	4 s 715 ms	14:26 Gradle build finished in 5 s 141 ms
✓	Load build	5 ms	
✓	Configure build	503 ms	
✓	Calculate task graph	96 ms	
✓	Run tasks	3 s 989 ms	

At the bottom of the screen, there is a status bar with the text: "Instant Run applied code changes and restarted the app. Field Added. // (Don't show again) (a minute ago)".

On the right side, there is a Windows activation watermark: "Активация Windows. Чтобы активировать Windows, перейдите в раздел 'Параметры'. IDE and Plugin Updates. Android Studio is ready to update." and a system tray showing the time "14:1" and encoding "CRLF UTF-8 4 spaces".