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Introduction & Fundamental

Kotlin Introduction and Fundamentals for Learn kotlin

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GiniLoh!
30,9 rb subscriber

Sejarah Perkembangan Bahasa Pemrograman Hingga Saat Sekarang

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What is programming?

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Program?

Set of instructions (instructions given to the computer)

Programming?

Activities of a programmer who is doing and making an application

Programmer?

A person in charge of writing code with a programming language to create and develop software

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What is programming?

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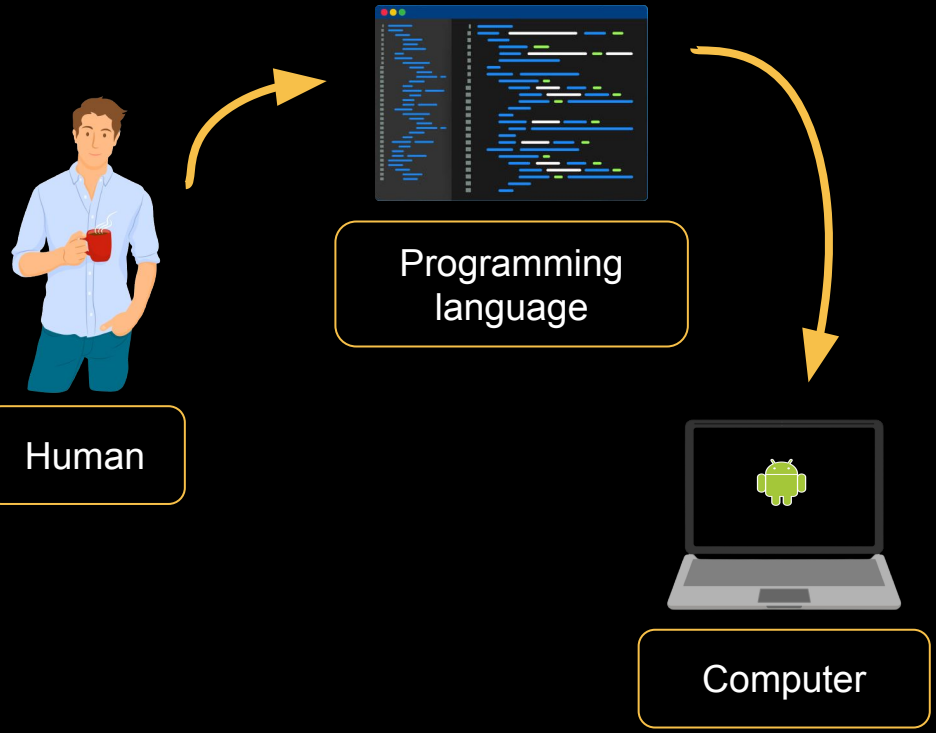
Instructions for computer

- Do calculations
- Display text
- Center text position
- Change screen color
- ……. ?



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What is programming?

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Examples of the results of programming activities

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Commands in programming languages

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Commands for computers in programming languages:

```
println("Hello World")
```

```
System.out.println("Hello World");
```

```
console.log("Hello World")
```

```
echo "Hello World";
```

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Programming language for mobile

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Multiple programming languages for Mobile App Development

More detail:

https://medium.com/javarevisited/top-5-programming-languages-for-mobile-app-development-in-2021-19a1778195b8

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Kotlin v1.8.10

Modern but already mature programming language aimed to make developers happier.

Safe

Concise

Interoperable

Modern

Multiple Platforms

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What is Kotlin?

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Concise. Cross-platform. Fun.

Kotlin is an open-source **statically typed programming language** that targets the JVM, Android, JavaScript and Native. It's developed by JetBrains. The project started in 2010 and was open source from very early on. The first official 1.0 release was in February 2016.

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Who develops Kotlin?

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Kotlin is primarily developed by a team of engineers at **JetBrains** (current team size is 100+). The lead language designer is Roman Elizarov. In addition to the core team, there are also over 250 external contributors on GitHub.

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Kotlin from JetBrains

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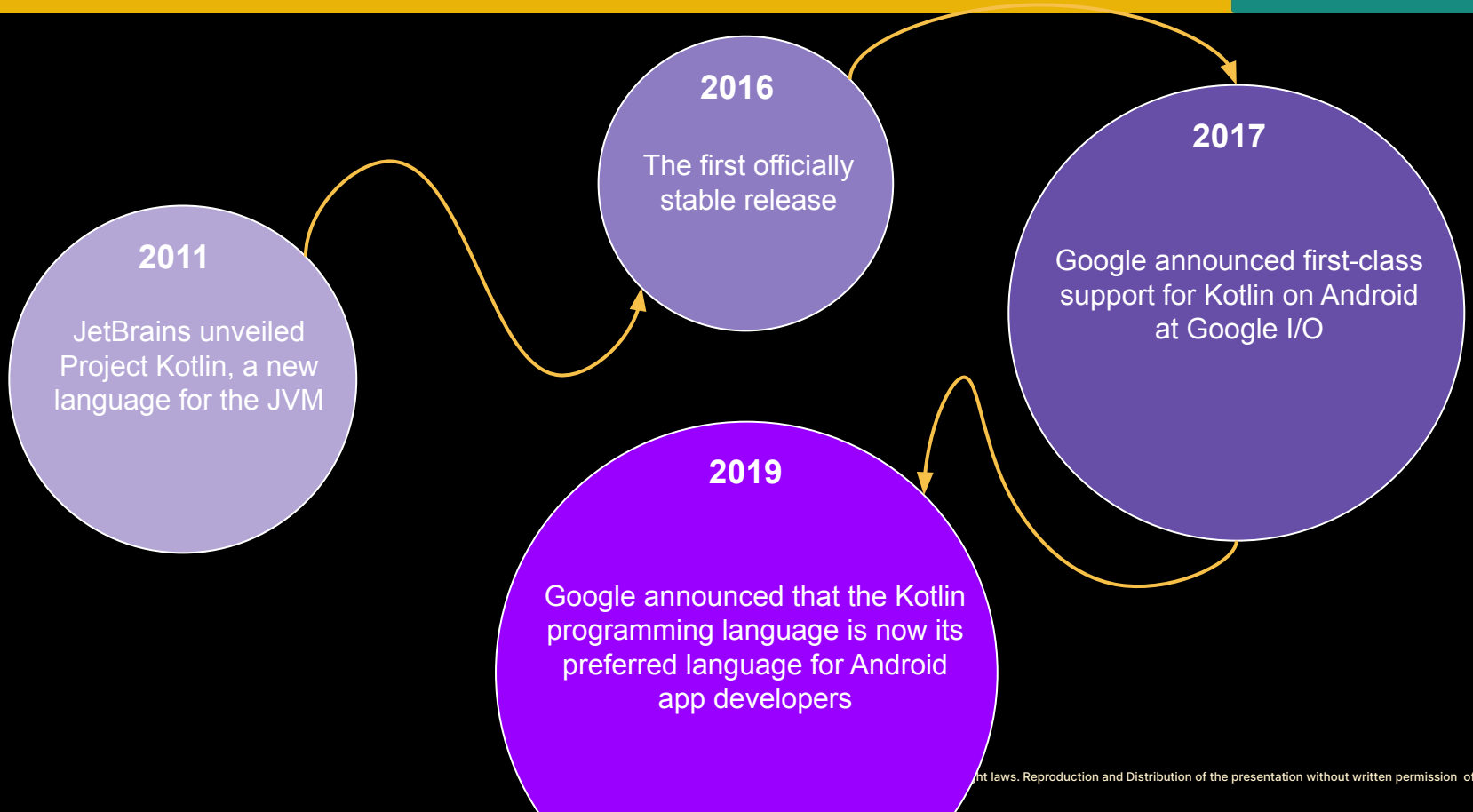

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Testimonial

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SENIOR SOFTWARE ENGINEER

Duolingo

"Overall we're very happy that we migrated to Kotlin when we did, and we're excited to see its usage continue to grow both within our company and throughout the software industry!"

SENIOR SOFTWARE ENGINEER

Trip Advisor

"Having less code is good for reducing errors and lowering maintenance costs. Therefore, we care a lot that Kotlin promises to allow us to write more succinct code and reduce boilerplate."

SOFTWARE ENGINEER

Expedia

"Using Kotlin at Expedia has helped us write more succinct and easier-to-read code. It's also helped make our developers a lot happier."

https://developer.android.com/kotlin/stories

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Why you should know Kotlin?

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- Modern and concise
- Safe
- Interoperability
- Multiparadigm
- Multiplatform
- Statically Typed
- Lambdas
- Higher order functions
- Coroutines
- IDE: Intellij or Android Studio

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Modern and concise

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Kotlin has become a modern programming language because it has the latest features in the concept of writing program code, from memory usage efficiency to writing concise program code. Of course, this is very beneficial for the Developer in completing the product easier and faster. **The more concise the program code will be faster and easier to understand**.

Java

```java
public class HelloWorld {
    public static void main(String[] args) {
        System.out.println("Hello World");
    }
}
```

Kotlin

```kotlin
fun main() {
    println("Hello world")
}
```

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Safe

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- Kotlin runs on top of the JVM, so **memory security is guaranteed**.
- Kotlin is able to eliminate **NullPointerException**, this is often called by Java programmers as "*The billion dollar mistake*".
- **Null Safety** feature by adding a **(?)** sign to the data type.

```
var variableA : String? = "Kotlin Null Safety"
variableA = null
```

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Any question?

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Interoperability

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- Existing Java code can be called from Kotlin in a natural way
- Kotlin code can be used from Java rather smoothly as well

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Multiplatform

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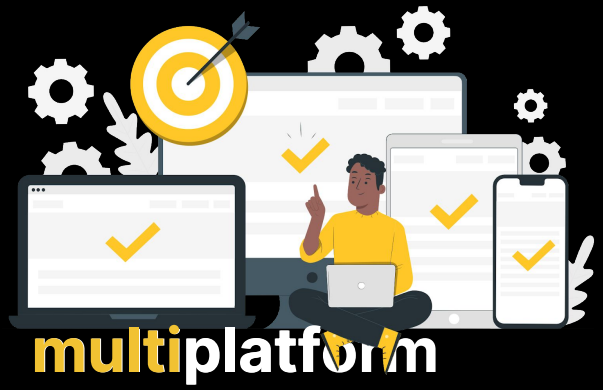
The first-choice language for Android development, Kotlin is also being adopted for teaching multiplatform development for mobile, web, server-side programming, data science, and other computer science topics.



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Statically Typed

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Kotlin is a **statically typed** programming language. Statically typed programming languages perform type checking during compilation rather than during run time, which makes programs written in these languages run faster.

Kotlin features ***type inference***, which is a mechanism used by the compiler to infer the type from a context.

```
String language = "Java"; // Java code

val language = "Kotlin" // Kotlin code
```

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Multiparadigm

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Object Oriented Programming (OOP)

Is about creating objects that contain both data and methods.

Functional Programming (FP)

Is about writing procedures or methods that perform operations on the data.

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Kotlin for server side

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Kotlin is a great fit for developing server-side applications. It allows you to write concise and expressive code while maintaining full compatibility with existing Java-based technology stacks.

https://kotlinlang.org/docs/server-overview.html

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Kotlin for Android

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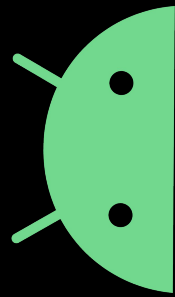
Compatibility

Performance

Interoperability

Compilation Time



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Compatibility

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Kotlin is fully compatible with JDK 6.

So Kotlin can run on older Android devices without any issues.

Android Studio fully supports development with the Kotlin language.

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Performance

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Kotlin applications can run on par with Java applications because they share the same bytecode structure.

Kotlin features inline functions that make code written with lambda run much faster than Java code.

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Interoperability

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The Kotlin language can be used in conjunction with the Java language, without having to migrate all your old code to Java.

So you can call Java code from Kotlin and vice versa.

This is the reason why Kotlin is quickly becoming accepted by developers.

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Compilation Time

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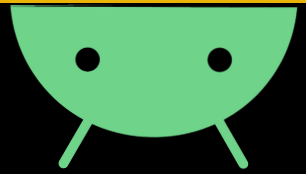

Kotlin supports efficient incremental compilation.

So the build process can be faster than Java.

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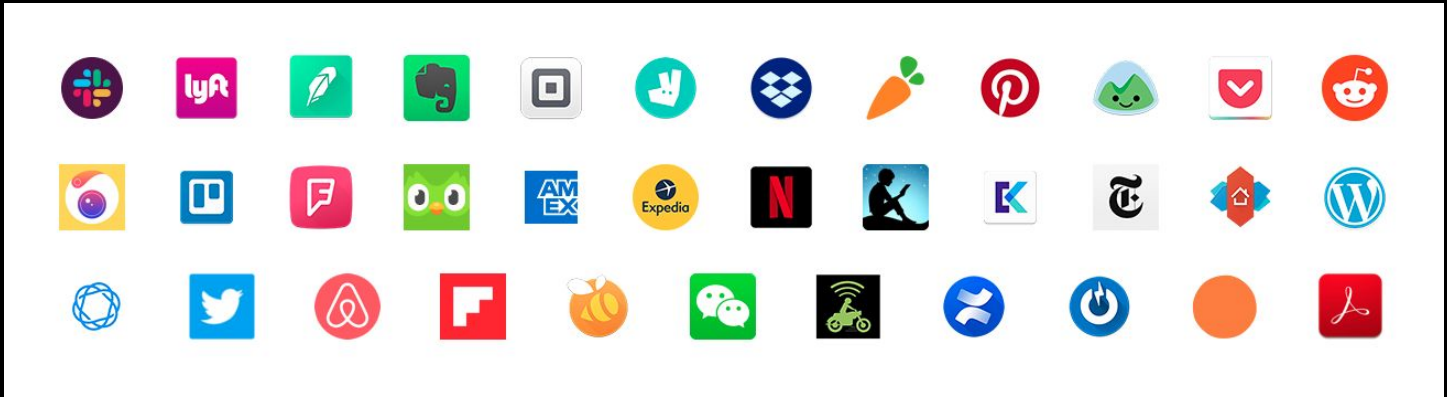
Apps built with Kotlin

Which one icon already in your smartphone?



Source: https://developer.android.com/kotlin

See more and details from other site:

https://www.spec-india.com/blog/top-apps-built-with-kotlin

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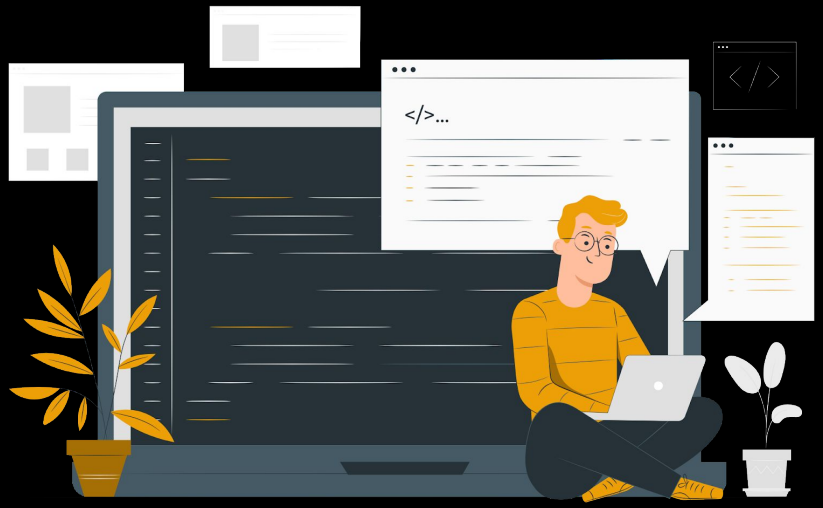
Getting ready to build and run Kotlin



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“Hello World” with Kotlin

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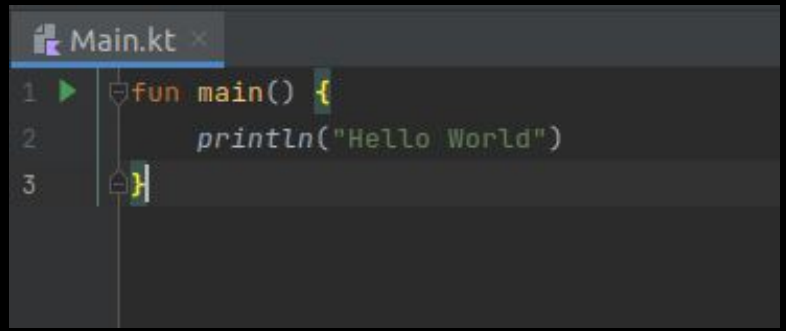
Basic syntax in Kotlin



Try running the code using your IntelliJ IDEA

or https://play.kotlinlang.org

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GUIDING RESOURCE

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Guiding Resources:

1. https://kotlinlang.org/docs/home.html
2. https://www.w3schools.com/kotlin
3. https://www.tutorialspoint.com/kotlin

Design Asset:

https://storyset.com

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Cheers

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