

Kotlin: The Big Picture

Introducing Kotlin



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Version Check



This course was created by using:

- Kotlin 1.8
- Android Studio Electric Eel
- IntelliJ 2022.3



Version Check



This course is 100% applicable to:

- Kotlin 1.3 and above
- Any version of Android Studio after 2018
- Any version of IntelliJ after 2019



Overview



What is Kotlin?

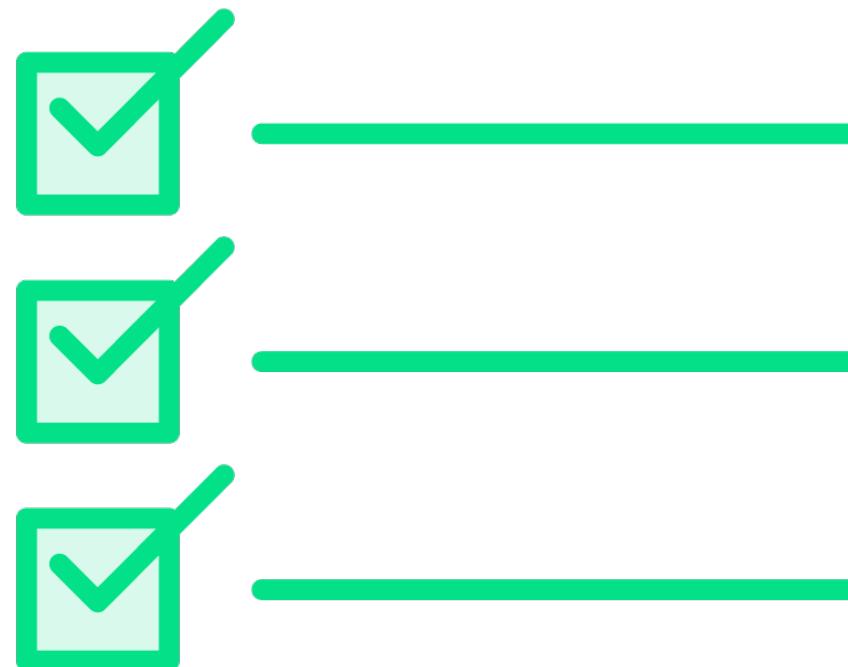
Kotlin benefits and disadvantages

Common Kotlin use cases

IDEs and powerful libraries



Course Prerequisites



Don't need

- Previous Kotlin experience

Need

- Programming familiarity
 - Object-oriented language
 - Functional language
 - Basics of web/mobile development
- Organizational knowledge
 - Types of digital assets
 - Languages in use
 - Pain points





Course Goal

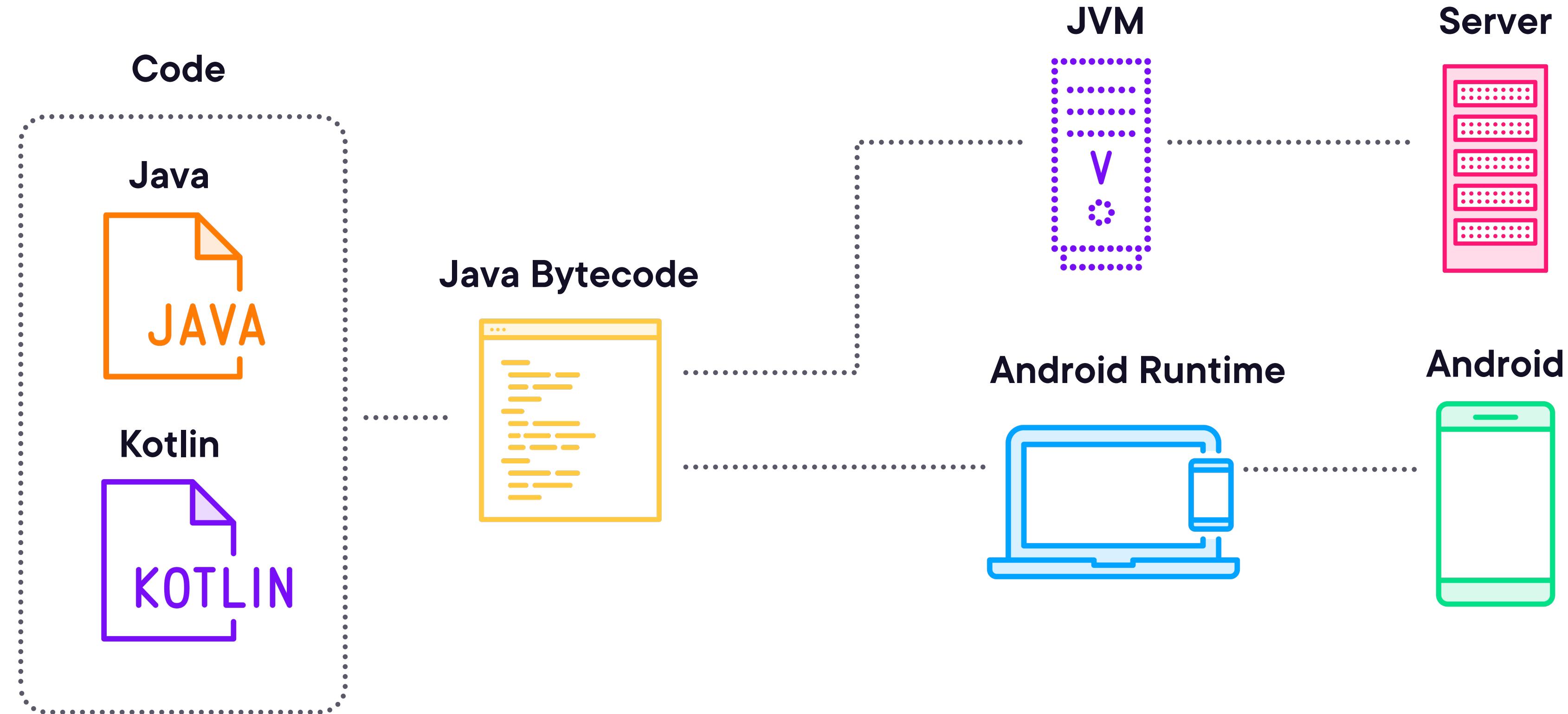
**Help you to decide if Kotlin is right
for you and your organization.**



What is Kotlin?



Kotlin in the Java Ecosystem



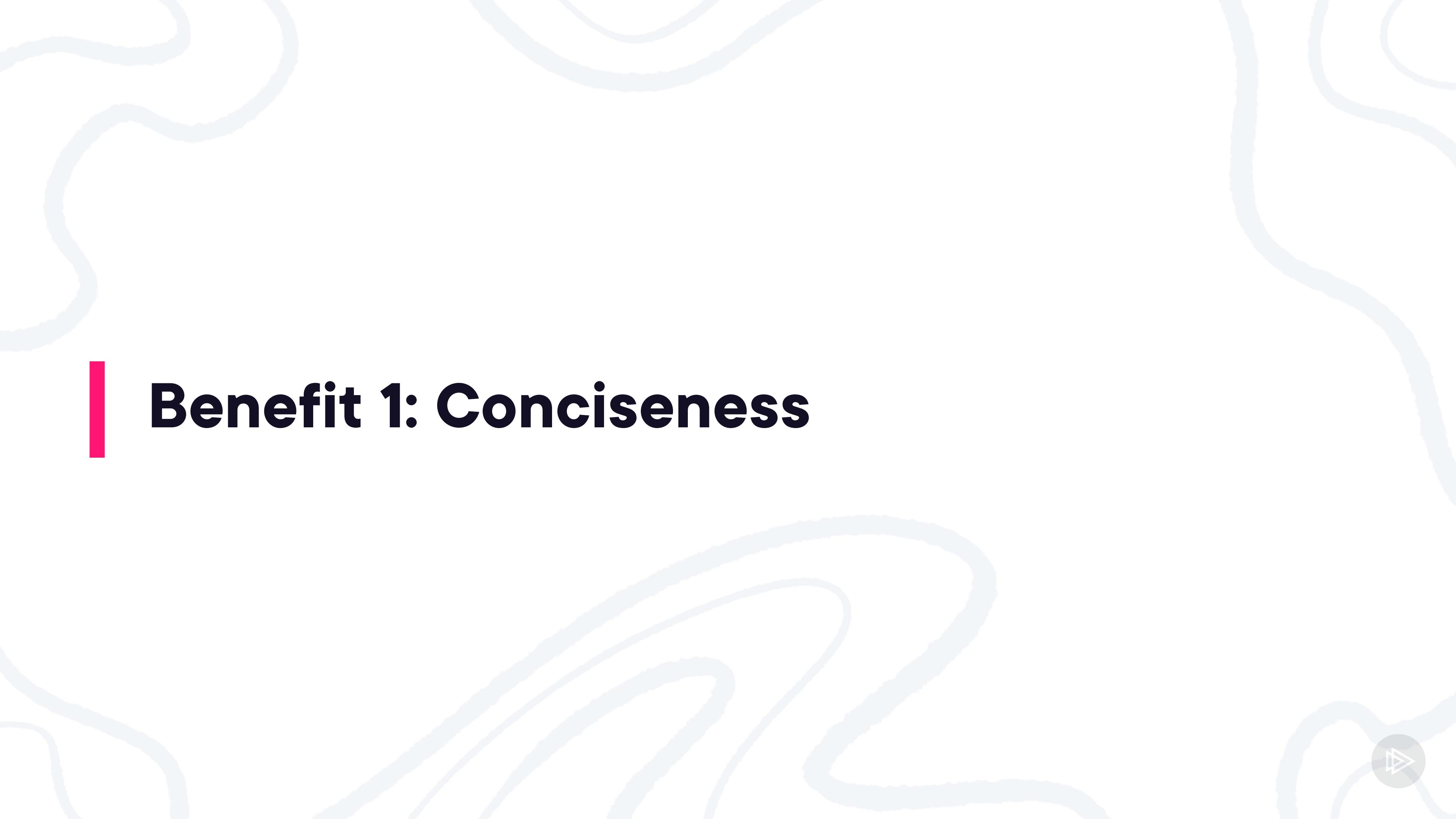
Benefits of Kotlin

Conciseness

**Improved code
safety**

Added functionality





Benefit 1: Conciseness

Kotlin's conciseness can reduce lines of code by 40%





Benefit 2: Improved Code Safety

```
private String address;
```

```
address = null;
```

```
int length = address.length;
```



java.lang.NullPointerException:
Cannot invoke "String.length()"
because the return value of
"address" is null

◀ Create a variable

◀ Set it to null

◀ Try to use the variable

◀ Null pointer exception



Tony Hoare (2009)

“I call it my billion-dollar mistake. [It] caused a billion dollars of pain and damage in the last forty years.”



```
var address: String
```

```
address = null
```

 Null can not be a value of a non-null type String

◀ Create a variable

◀ Set it to null



```
var address: String?
```

```
address = null
```

```
val length = address.length
```

 Only safe (?.) or non-null asserted (!!.) calls are allowed on a nullable receiver of type String?

```
val length = if (address != null)  
address.length else 0
```

```
val length = (address ?: "").length
```

◀ Create a variable as nullable with ?

◀ Set it to null

◀ Try to use the variable

◀ Check for null and provide a default value

◀ Use the elvis operator (?:)



```
class Customer(var name: String, var  
address: String?, referrer: Customer?)  
  
val referring = customer?.referrer  
  
val refName = customer?.referrer?.name  
  
val referring = customer!! .referrer
```

◀ **Class with child object**

◀ **Safe call – returns null if customer is null**

◀ **Works for chained objects as well**

◀ **Accept null pointer exception risks**





Benefit 3: Added Functionality

Object-oriented Programming

```
public class Customer { ←  
    private String Address;  
    private String Name; ←  
    private int orderCount;  
  
    public Customer(String name, String address) { ←  
        this.Name = name;  
        this.Address = address;  
    }  
  
    public double calculateShipping() { ←  
        ordercount++;  
        return lookupAddress - (.2f * ordercount);  
    }  
  
    private double lookupAddress(){ ←  
        ...  
    }  
}
```



Functional Programming

```
fun calculateShipping(address: String, orderCount: int): double {  
    val shippingCost = 4.99f  
    val discountPercent = .2f  
  
    return shippingCost - (discountPercent * orderCount)  
}
```



Expressive Code

Creating a list of state abbreviations

Java

```
Map<String, String> states = new  
HashMap<String, String>();  
states.put("AL", "Alabama");  
states.put("AK", "Alaska");  
states.put("AZ", "Arizona");  
  
for (Map.Entry<String, String> entry :  
states.entrySet()) {  
    println(entry.getKey() +  
        " " + entry.getValue());  
}
```

Kotlin

```
val states = mapOf(  
    "AL" to "Alabama",  
    "AK" to "Alaska",  
    "AZ" to "Arizona");  
  
for ((k, v) in states) {  
    println("$k $v")  
}
```



Kotlin Tradeoffs and Considerations



Learning Curve

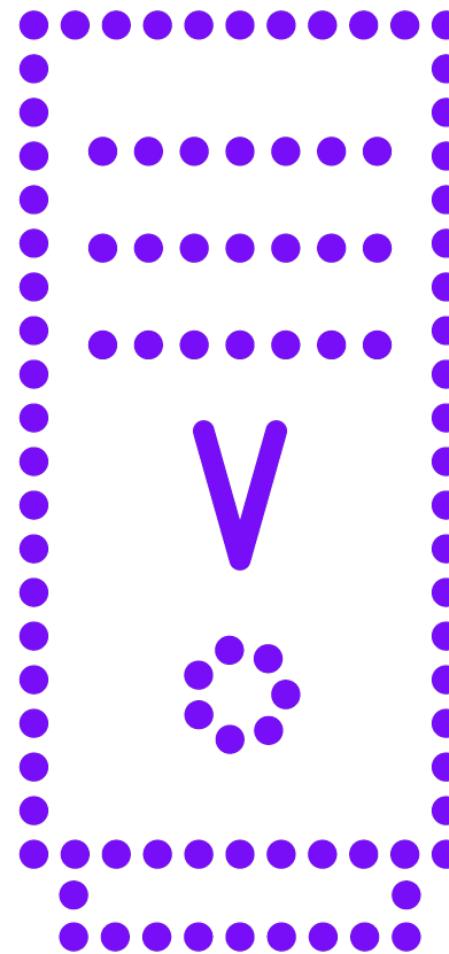
**Any new language
takes time**

**Object-oriented
mindset takes
time to switch
to functional
programming**

**Leveraging full
feature set is
a progression**



JVM Dependency



Another 3rd party dependency

Concerns about platform availability



Up Next:

Kotlin Use Cases

