Android: Kotlin Training Plan

**Pre-requisites**

Programming experience in Android and Java

**Total duration: 6 days**

* Self-training: 3 days
* Assignment: 3 days

**Topics**

**Kotlin Basics**

* Variable types and declaration – var, val, lateinit var, lazy {}
* Null-safety operator
* Control flow statements
* When expressions
* Usage of range in loops

**Classes, Functions and Lambdas**

* Class, data class and sealed class
* Overriding methods, properties and overriding rules
* In-line and extension functions
* Scope functions
* Lambda expressions

**Collections and Generics**

* Mutable and read-only collections
* Collection ­operations – transformation, filtering, grouping etc
* In-out generics keywords
* Generic type projection

**Coroutines and Asynchronous programming**

* Coroutines and suspend functions
* Coroutine context, job and dispatcher
* Asynchronous programming using async and await

**Resources:**

References:

[Android Developers: Training](https://developer.android.com/kotlin/learn)

[Kotlin Basics](https://kotlinlang.org/docs/reference/basic-types.html)  
[Classes and objects](https://kotlinlang.org/docs/reference/classes.html)

[Collections](https://kotlinlang.org/docs/reference/collections-overview.html)

[Generics](https://kotlinlang.org/docs/reference/generics.html)

[Coroutines and asynchronous programming](https://kotlinlang.org/docs/reference/coroutines/coroutines-guide.html)

[Build local unit tests](https://developer.android.com/training/testing/unit-testing/local-unit-tests)

Pluralsight references:

[Switch to Kotlin from Java for Android Development](https://www.pluralsight.com/courses/android-development-kotlin-from-java)

[Getting Started with Kotlin](https://www.pluralsight.com/courses/kotlin-getting-started)

Assignment

**Business requirement**

As a user I want to be able to see to-do list, including the title and completion status.

**API Specification**

* Protocol HTTPS
* Hostname jsonplaceholder.typicode.com
* Method GET
* Endpoint /todos
* Response example: HTTP code 200

[

{

"userId": 1,

"id": 1,

"title": "delectus aut autem",

"completed": false

},

{

"userId": 1,

"id": 2,

"title": "quis ut nam facilis et officia qui",

"completed": false

},

{

"userId": 1,

"id": 3,

"title": "fugiat veniam minus",

"completed": false

},

…

]

* Retrieve list of to-dos from the API
* Display list of to-dos
* Handle network error, i.e. show error message when there is no network connectivity

A screenshot of a cell phone

Description automatically generated A screenshot of a cell phone

Description automatically generated

(loading to-do list from server) (handling error message)

**Expectation**

* Assignment to be completed in Kotlin programming language
* Usage of Kotlin best practices
* Usage of coroutine for network call

**Good to have**

* Use MVVM architecture
* Unit test cases for view model
* Code should be testable
* Additional features that you think will enhance the user experience