Kotlin Cheat Sheet

1. Kotlin Basics

- `var` vs `val`
- Data Types
- String Interpolation
- Default Argumentsz
- Named Arguments
- Elvis Operator (`?:`)
- Safe Calls (`?.`)
- Null Safety (`!!`)
- Type Casting (`as`, `is`)
- Extension Functions
- Companion Object
- `lateinit` vs `lazy`

2. Functions

- Top-Level Functions
- Single-Expression Functions
- Inline Functions
- Higher-Order Functions ((map, filter, forEach, reduce))
- Lambda Functions
- Anonymous Functions
- Tail-Recursive Functions
- Function Overloading

3. Classes and Objects

- Primary and Secondary Constructors
- Data Classes
- Sealed Classes
- Abstract Classes
- Interfaces
- Enum Classes
- Object Keyword
- Inner Classes
- Nested Classes

4. Collections

- Immutable vs Mutable Collections
- List, Set, Map
- Filtering and Mapping
- `flatMap` and `groupBy`
- Lazy Collections (`sequence`)
- Sorting and Reversing
- `forEach` vs `forEachIndexed`

5. Coroutines

- suspend Functions
- launch vs async
- CoroutineScope
- Structured Concurrency
- withContext
- Dispatchers (IO, Main, Default)
- runBlocking
- Flows (Flow, StateFlow, SharedFlow)

6. Advanced Kotlin

- Generics
- Delegation
- Inline Classes
- Type Aliases
- Operator Overloading
- Destructuring Declarations
- Variance (in, out)
- Reified Types

7. Kotlin Standard Library

- apply, let, run, also, with
- String Functions (substring, split, replace)
- Collections Operations (filter, map, reduce)
- Ranges (.., until, downTo)
- takeIf and takeUnless
- repeat

8. Exception Handling

- Try-Catch-Finally
- Custom Exceptions
- require, check, assert

10. Miscellaneous

- Inline Lambdas
- when Expression
- Type Inference
- Kotlin Scripting (.kts)
- by Keyword
- Reflection (KClass, call)
- Kotlin Multiplatform (KMM)
- Enum Constants and Enum Functions (valueOf, values)

11. Object-Oriented Programming (OOP)

- Classes & Objects
- Constructors (Primary & Secondary)
- Inheritance (open, super)
- Abstract & Sealed Classes
- Interfaces

9. Kotlin and Java Interoperability

- @JvmStatic
- @JvmOverloads
- @JvmField
- @Throws
- Nullability Annotations (@Nullable, @NonNull)
- SAM Conversions