TutorialKart

# Kotlin Abstract Class – Syntax & Examples

## Kotlin Abstract Class

Kotlin Abstract Class is one of the way to implement abstraction in Kotlin. Following is a sample of how a Kotlin Abstract Class looks.

```
abstract class Vehicle {
    // regular variable
    var name : String = "Not Specified"
    // abstract variable
    abstract var medium : String
    // regular function
    fun runsWhere() {
        println("The vehicle, $name, runs on $medium")
    }
    // abstract function
    abstract fun howItRuns()
}
```

*__regular__ meaning the variable/function is initialized/defined.

## About Kotlin Abstract Class

Let us consider following simple example that demonstrates the usage of Abstract class, and then draw the list of points about Koltin Abstract Class.

**example.kt**

```
/**
 * Abstract Class
 */
abstract class Vehicle {
    // regular variable
    var name : String = "Not Specified"
    // abstract variable
    abstract var medium : String
    // regular function
    fun runsWhere() {
        println("The vehicle, $name, runs on $medium")
    }
    // abstract function
    abstract fun howItRuns()
}

/**
```

```
/**
 * inheriting abstract class
 */
class Aeroplane : Vehicle() {
    // override abstract variables and functions of the
    // abstract class that is inherited
    override var medium: String = "air"

    override fun howItRuns() {
        println("Aeroplane fly based on buoyancy force.")
    }

}

fun main(args: Array<String>) {
    var vehicle1 = Aeroplane()
    vehicle1.howItRuns()
}
```

Let us break down the above example, and analyze the code.

1. **abstract** keyword is used to declare an abstract class.

```
abstract class Vehicle { }
```

2. Abstract classes cannot be instantiated.

```
fun main(args: Array<String>) {
    var vehicle:Vehicle = Vehicle()
}
```

```
Error:(2, 27) Kotlin: Cannot create an instance of an abstract class
```

3. Abstract classes can be inherited.

```
class Aeroplane : Vehicle() { }
```

4. Variables and functions of an abstract class could be declared either as abstract or not.

```
class Aeroplane : Vehicle() { }
```

5. Abstract variables are not initialized. Abstract methods does not have an implementation.

```
// abstract variable
    abstract var medium : String

    // abstract function
    abstract fun howItRuns()
```

6. In the inherited class, unless it is also an abstract class, variables and functions, not declared as abstract are not mandatory to override. Abstract variables and abstract functions must be overridden.

```
class Aeroplane : Vehicle() {
    // override abstract variables and functions of the
    // abstract class that is inherited
    override var medium: String = "air"

    override fun howItRuns() {
        println("Aeroplane fly based on buoyancy force.")
    }
}
```

7. To override non-abstract methods, they must be declared open. You may refer Kotlin Inheritance for a detailed example.

## Conclusion

In this Kotlin Tutorial, we learned about Abstract Classes in Kotlin.


**Kotlin Java**

- Kotlin Tutorial

**Getting Started**

- Setup Kotlin(Java) Project
- Kotlin Example Program
- Convert Java to Kotlin
- Kotlin Main Function
- Kotlin Loops
- Kotlin For Loop
- Kotlin While, Do While Loops
- Kotlin Repeat
- Kotlin Ranges
- Kotlin When

**Object Oriented Concepts**

## Classes

- Kotlin - Class, Primary and Secondary Constructors
- Kotlin Sealed Class
- Kotlin Data Class
- Kotlin Enum
- Kotlin - Extension Functions

## Inheritance

- Kotlin Inheritance
- Kotlin Override Method of Super Class

## Abstraction

- Kotlin Abstraction
- **Kotlin Abstract Class**
- Kotlin - Interfaces
- Kotlin Null Safety

## Exception Handling

- Kotlin Try Catch
- Kotlin Throw Exception
- Kotlin Custom Exception

## Fix Compilation Errors

- Kotlin - Variable must be initialized
- Kotlin - Primary Constructor call expected
- Kotlin - Null can not be a value of a non-null type String
- Kotlin - Cannot create an instance of an abstract class

## Kotlin - String Operations

- Kotlin - Compare Strings
- Kotlin - Replace String
- Kotlin - Split String
- Kotlin - Split String to Lines
- Kotlin - String Capitalize

## Kotlin - Functions

- Kotlin Function - Default Arguments
- Kotlin - Use Function

## Kotlin Collections

### Kotlin List

- Kotlin List
- Kotlin List forEach

## Kotlin File Operations

- Kotlin - Create File
- Kotlin - Read File
- Kotlin - Read File as List of Lines
- Kotlin - Write to File
- Kotlin - Append Text to File
- Kotlin - Check if File Exists
- Kotlin - Copy a File to Other
- Kotlin - Iterate through all files in a directory
- Kotlin - Delete Recursively
- Kotlin - Get File Extension

## Kotlin Interview Q/A

- Kotlin Interview Questions

## Kotlin Android

- Kotlin Android Tutorial

## Useful Resources

- How to Learn Programming