

Scala Environment

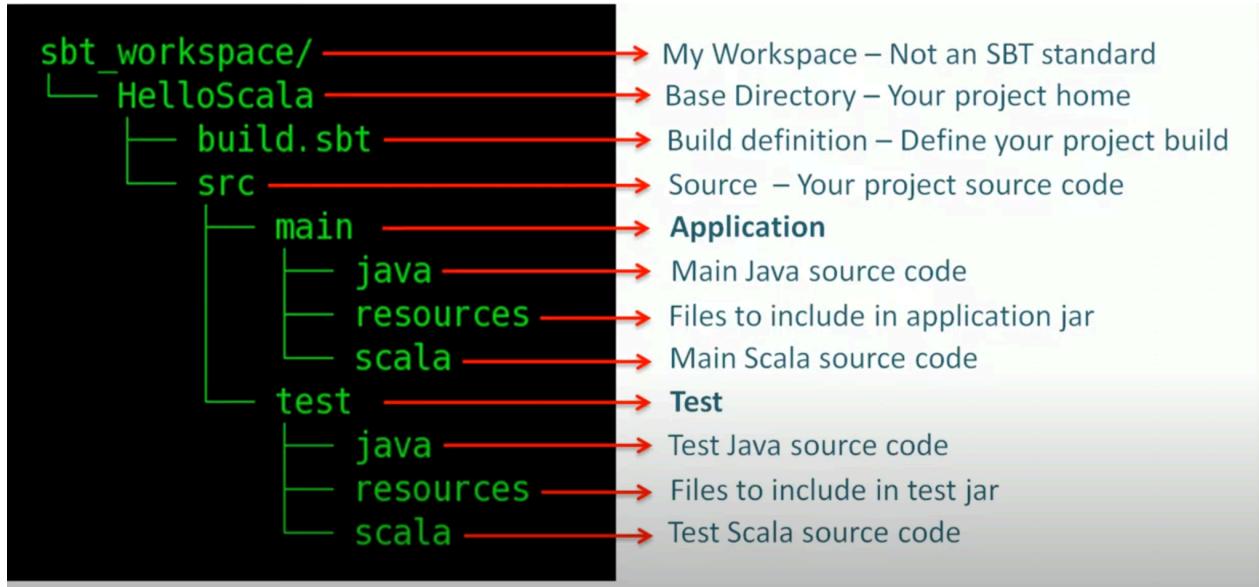
Scala projects, particularly those built with sbt (Scala Build Tool), typically follow a **standardized directory structure**, similar to Maven projects. This structure promotes organization and simplifies build processes.

- SBT - Based on Maven.
- SBT_Workspace - Workspace Directory
- Hello Scala is my first project
- All projects should follow this structure
- Src - For source code - Main and Test
 - Application code
 - Test Code
- Can code in java and scala

```
sbt_workspace/
└── HelloScala
    ├── build.sbt
    └── src
        ├── main
        │   ├── java
        │   ├── resources
        │   └── scala
        └── test
            ├── java
            └── resources
                └── scala
```



Project Layout



✓ Scala Environment Overview

Scala runs on the **Java Virtual Machine (JVM)** and interoperates seamlessly with Java. The development environment typically includes:

- **JDK (Java Development Kit)** – Required to compile and run Scala.
- **Scala Compiler (`scalac`)** – Compiles `.scala` files to JVM bytecode.
- **Scala REPL (`scala`)** – An interactive shell for executing Scala code snippets.
- **Build Tools** – Typically **sbt (Scala Build Tool)**, or alternatives like Maven or Gradle.
- **IDE Support** – IntelliJ IDEA (with Scala plugin) is the most widely used.

✓ Setting Up the Scala Environment (Summary)

1. Install Java (JDK 8 or above)

Recommended: JDK 11 or 17.

2. Install Scala

- Via SDKMAN: `sdk install scala`
- Or manually from <https://www.scala-lang.org/download/>

3. Install sbt (Scala Build Tool)

- Via SDKMAN: `sdk install sbt`
- Or from <https://www.scala-sbt.org/>

Verify Installations:

```
java -version  
scala -version  
scalac -version  
sbt about
```

✓ Scala Folder Structure (Manual / sbt Project)

When you **create a Scala project using sbt**, a typical folder structure looks like this:

```
your-scala-project/  
|__ build.sbt           <- Build definition file  
|__ project/             <- sbt settings/plugins  
|   |__ build.properties  
|__ src/  
|   |__ main/             <- Scala source files  
|   |   |__ scala/  
|   |   |__ resources/    <- Non-code resources (conf,  
|   |   |__ json, etc.)  
|   |__ test/              <- Scala test files  
|   |   |__ scala/  
|   |   |__ resources/    <- Test resources  
|__ target/               <- Compiled output  
(auto-generated)
```

✓ Key Files & Folders Explained

File/Folder

Purpose

<code>build.sbt</code>	Main build configuration file, like a <code>pom.xml</code> in Maven.
<code>project/build.properties</code>	Defines sbt version. Required to compile the project.
<code>src/main/scala/</code>	All production Scala source code lives here.
<code>src/main/resources/</code>	Configuration files, templates, static assets for main app.
<code>src/test/scala/</code>	Scala test code (ScalaTest, specs2, etc.).
<code>src/test/resources/</code>	Test-related configs, input data, mocks, etc.
<code>target/</code>	sbt's output directory — contains compiled classes, JARs, metadata.

Simple `build.sbt` File Example

```
name := "HelloScalaProject"

version := "0.1"

scalaVersion := "2.13.12"

libraryDependencies += "org.scalatest" %% "scalatest" %
  "3.2.15" % Test
```

Scala CLI Alternative

For small projects or scripts, you can use **Scala CLI**:

```
scala-cli run Main.scala
```

Structure with Scala CLI is flat. You can place `.scala` files in the root directory.

Environment Variables (Optional)

Set in `.bashrc`, `.zshrc`, or `.bash_profile`:

```
export SCALA_HOME=/path/to/scala
export PATH=$SCALA_HOME/bin:$PATH
```

REPL Usage

After installing Scala, run:

```
scala
```

You'll get an interactive shell to test code snippets:

```
scala> val x = 42
val x: Int = 42
```

Compiling and Running Scala Manually

Save Code (e.g., `Hello.scala`)

```
object Hello extends App {
  println("Hello, Scala!")
}
```

1. **Compile:** `scalac Hello.scala`
2. **Run:** `scala Hello`
3. This generates `.class` files in the current directory.

Summary

Tool	Purpose
scalac	Scala compiler
scala	REPL and runner for Scala bytecode
sbt	Build tool like Maven/Gradle
scala-cli	Lightweight, script-friendly CLI tool
IntelliJ	IDE with strong Scala support
