

**МИНИСТЕРСТВО ЦИФРОВОГО РАЗВИТИЯ СВЯЗИ И МАССОВЫХ
КОММУНИКАЦИЙ**

Ордена Трудового Красного Знамени

**Федеральное государственное бюджетное образовательное учреждение
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Кафедра «Математическая кибернетика и информационные технологии»

Лабораторная работа №1

по дисциплине

«Функциональное программирование»

Выполнил: студент группы

БВТ2201

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Москва

2025

Цель работы

Установить язык программирования Scala и проверить его работу.

Ход работы

Первым делом глобально устанавливаем на устройство язык Scala.

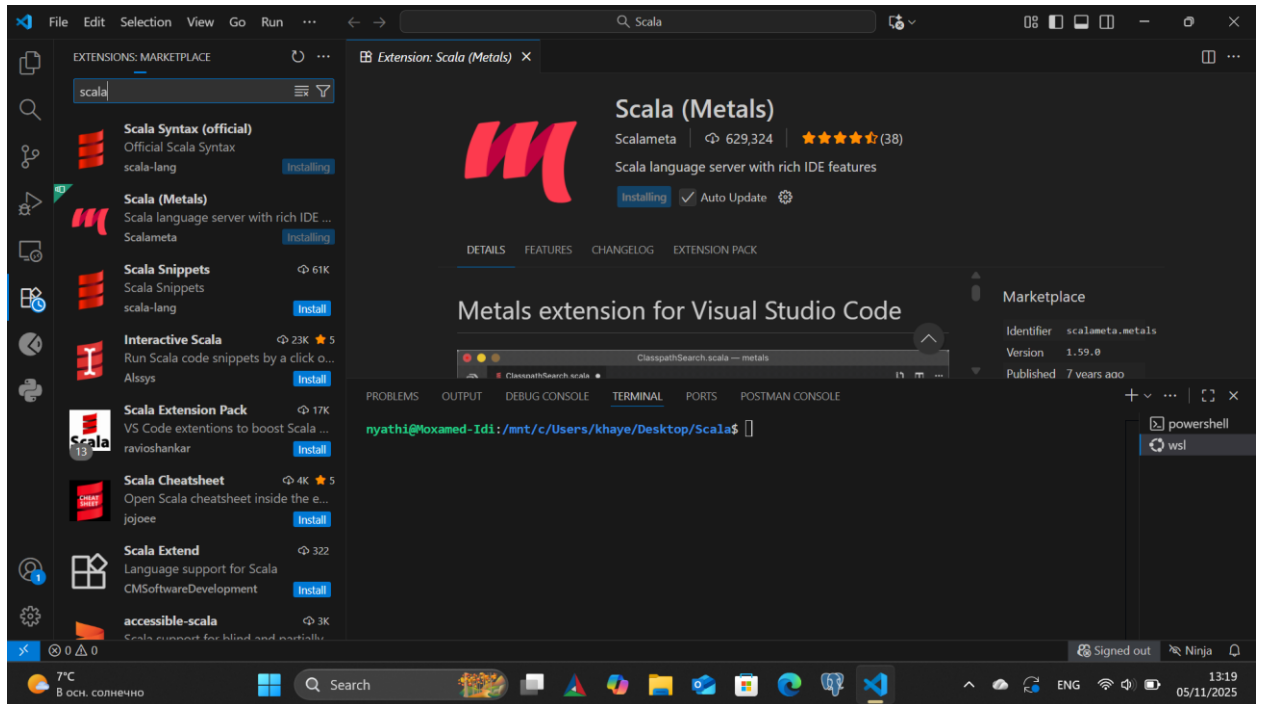


Рис 1. Scala Metals (VS Code)

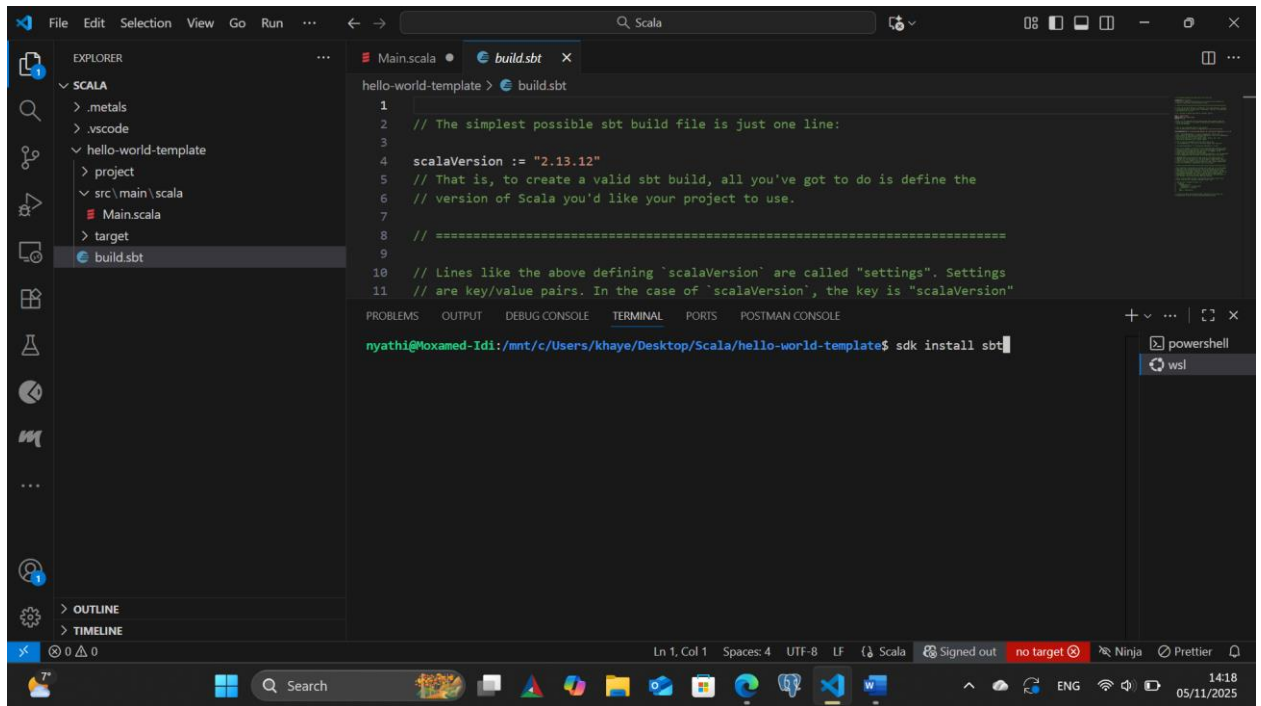


Рис 2. Scala Version

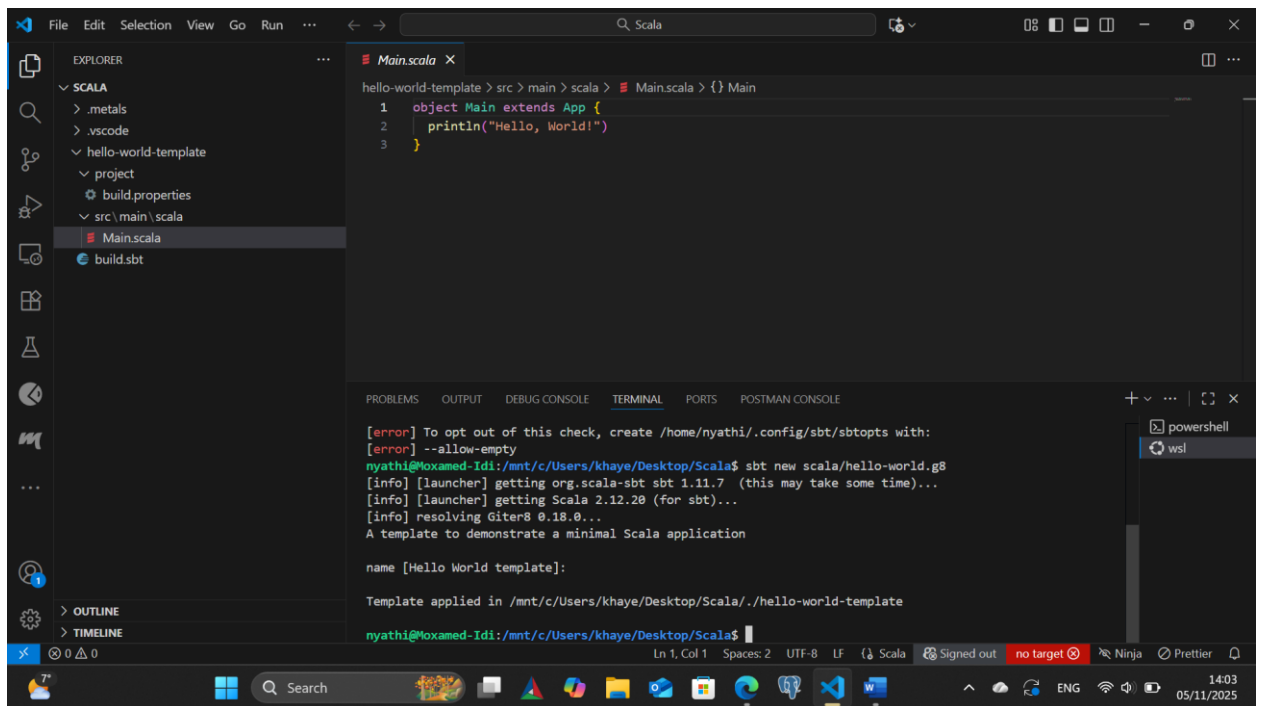


Рис 3. Установка sbt и запуск приложение

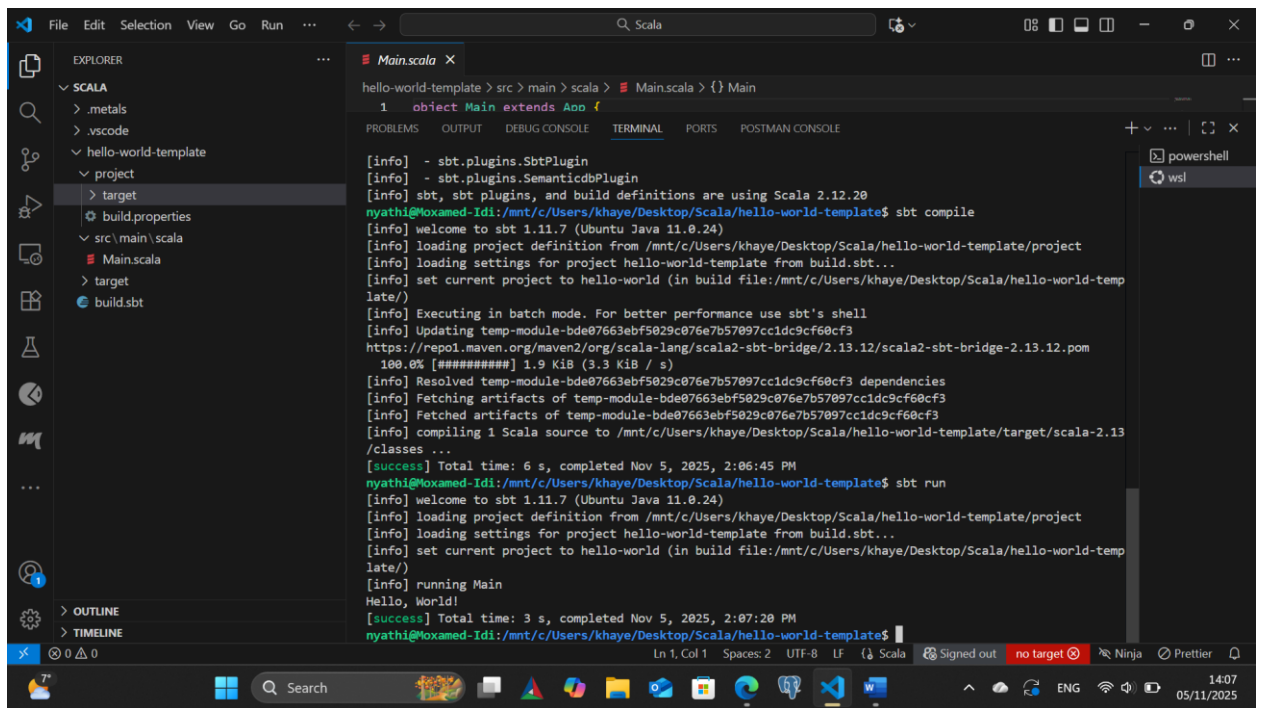
```
hello-world-template > src > main > scala > Main.scala > {} Main
1 object Main extends App {

[info] welcome to sbt 1.11.7 (Ubuntu Java 11.0.24)
[info] loading project definition from /mnt/c/Users/khaye/Desktop/Scala/hello-world-template/project
[info] Updating hello-world-template-build
https://repo1.maven.org/maven2/jline/jline/2.14.6/jline-2.14.6.pom
100.0% [#####] 19.4 KiB (32.4 KiB / s)
[info] Resolved hello-world-template-build dependencies
[info] Fetching artifacts of hello-world-template-build
[info] loading settings for project hello-world-template from build.sbt...
[info] set current project to hello-world (in build file: /mnt/c/Users/khaye/Desktop/Scala/hello-world-temp
late/)
[info] Updating hello-world_2.13
https://repo1.maven.org/maven2/org/scala-lang/scala-library/2.13.12/scala-library-2.13.12.pom
100.0% [#####] 1.6 KiB (11.9 KiB / s)
https://repo1.maven.org/maven2/org/scala-lang/modules/scala-parser-combinators_2.13/2.3.0/scala-parser-co...
100.0% [#####] 2.2 KiB (12.9 KiB / s)
[info] Resolved hello-world_2.13 dependencies
[info] Updating hello-world_2.13
https://repo1.maven.org/maven2/org/scala-lang/scala-compiler/2.13.12/scala-compiler-2.13.12.pom
100.0% [#####] 2.5 KiB (28.1 KiB / s)
https://repo1.maven.org/maven2/io/github/java-diff-utils/java-diff-utils/4.12/java-diff-utils-4.12.pom
100.0% [#####] 2.6 KiB (35.7 KiB / s)
https://repo1.maven.org/maven2/org/jline/jline/3.22.0/jline-3.22.0.pom
100.0% [#####] 17.3 KiB (192.1 KiB / s)
https://repo1.maven.org/maven2/net/java/dev/jna/jna/5.13.0/jna-5.13.0.pom
100.0% [#####] 2.0 KiB (13.5 KiB / s)
```

Рис 4. sbt about

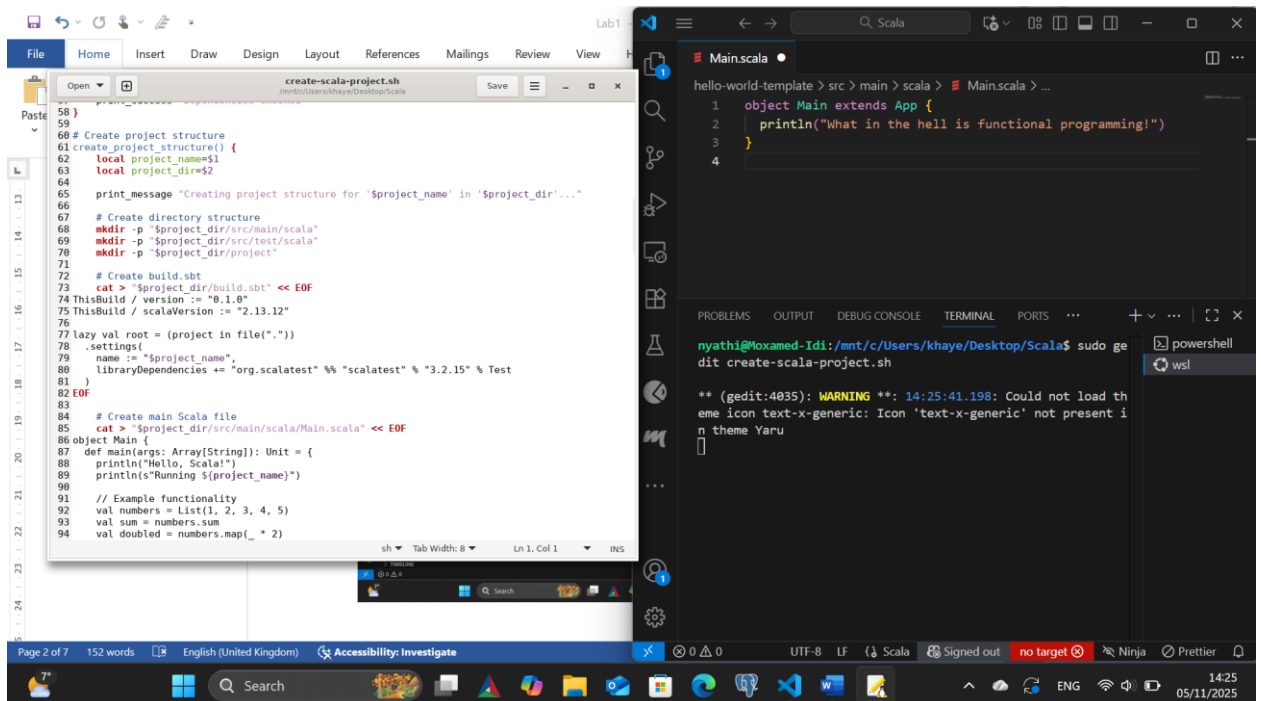
```
[info] Available Plugins
[info] - sbt.ScriptedPlugin
[info] - sbt.plugins.CorePlugin
[info] - sbt.plugins.Giter8TemplatePlugin
[info] - sbt.plugins.IvyPlugin
[info] - sbt.plugins.JUnitXmlReportPlugin
[info] - sbt.plugins.JvmPlugin
[info] - sbt.plugins.MiniDependencyTreePlugin
[info] - sbt.plugins.SbtPlugin
[info] - sbt.plugins.SemanticdbPlugin
[info] sbt, sbt plugins, and build definitions are using Scala 2.12.10
nyathi@Moxamed-Idi:/mnt/c/Users/khaye/Desktop/Scala/hello-world-template$ sbt compile
[info] welcome to sbt 1.11.7 (Ubuntu Java 11.0.24)
[info] loading project definition from /mnt/c/Users/khaye/Desktop/Scala/hello-world-template/project
[info] loading settings for project hello-world-template from build.sbt...
[info] set current project to hello-world (in build file: /mnt/c/Users/khaye/Desktop/Scala/hello-world-temp
late/)
[info] Executing in batch mode. For better performance use sbt's shell
[info] Updating temp-module-bde07663ebf5029c076e7b57097cc1dc9cf60cf3
https://repo1.maven.org/maven2/org/scala-lang/scala2-sbt-bridge/2.13.12/scala2-sbt-bridge-2.13.12.pom
100.0% [#####] 1.9 KiB (3.3 KiB / s)
[info] Resolved temp-module-bde07663ebf5029c076e7b57097cc1dc9cf60cf3 dependencies
[info] Fetching artifacts of temp-module-bde07663ebf5029c076e7b57097cc1dc9cf60cf3
[info] Fetching artifacts of temp-module-bde07663ebf5029c076e7b57097cc1dc9cf60cf3
[info] compiling 1 Scala source to /mnt/c/Users/khaye/Desktop/Scala/hello-world-template/target/scala-2.13
/classes ...
[success] Total time: 6 s, completed Nov 5, 2025, 2:06:45 PM
nyathi@Moxamed-Idi:/mnt/c/Users/khaye/Desktop/Scala/hello-world-template$
```

Рис 5. sbt compile



```
hello-world-template > src > main > scala > Main.scala > {} Main
1 object Main extends App {
[info] - sbt.plugins.SbtPlugin
[info] - sbt.plugins.SemanticdbPlugin
[info] sbt, sbt plugins, and build definitions are using Scala 2.12.20
nyathi@Moxamed-Idi:/mnt/c/Users/khaye/Desktop/Scala/hello-world-template$ sbt compile
[info] welcome to sbt 1.11.7 (Ubuntu Java 11.0.24)
[info] loading project definition from /mnt/c/Users/khaye/Desktop/Scala/hello-world-template/project
[info] loading settings for project hello-world-template from build.sbt...
[info] set current project to hello-world (in build file:/mnt/c/Users/khaye/Desktop/Scala/hello-world-template/)
[info] Executing in batch mode. For better performance use sbt's shell
[info] Updating temp-module-bde07663ebf5029c076e7b57097cc1dc9cf60cf3
https://repo1.maven.org/maven2/org/scala-lang/scala2-sbt-bridge/2.13.12/scala2-sbt-bridge-2.13.12.pom
100.0% [#####] 1.9 KiB (3.3 KiB / s)
[info] Resolved temp-module-bde07663ebf5029c076e7b57097cc1dc9cf60cf3 dependencies
[info] Fetching artifacts of temp-module-bde07663ebf5029c076e7b57097cc1dc9cf60cf3
[info] Fetched artifacts of temp-module-bde07663ebf5029c076e7b57097cc1dc9cf60cf3
[info] compiling 1 Scala source to /mnt/c/Users/khaye/Desktop/Scala/hello-world-template/target/scala-2.13/classes...
[success] Total time: 6 s, completed Nov 5, 2025, 2:06:45 PM
nyathi@Moxamed-Idi:/mnt/c/Users/khaye/Desktop/Scala/hello-world-template$ sbt run
[info] welcome to sbt 1.11.7 (Ubuntu Java 11.0.24)
[info] loading project definition from /mnt/c/Users/khaye/Desktop/Scala/hello-world-template/project
[info] loading settings for project hello-world-template from build.sbt...
[info] set current project to hello-world (in build file:/mnt/c/Users/khaye/Desktop/Scala/hello-world-template/)
[info] running Main
Hello, World!
[success] Total time: 3 s, completed Nov 5, 2025, 2:07:20 PM
nyathi@Moxamed-Idi:/mnt/c/Users/khaye/Desktop/Scala/hello-world-template$
```

Рис 6. Sbt run



```
58 }
59
60 # Create project structure
61 create_project_structure() {
62   local project_name=$1
63   local project_dir=$2
64
65   print_message "Creating project structure for '$project_name' in '$project_dir'..."
66
67   # Create directory structure
68   mkdir -p "$project_dir/src/main/scala"
69   mkdir -p "$project_dir/src/test/scala"
70   mkdir -p "$project_dir/project"
71
72   # Create build.sbt
73   cat > "$project_dir/build.sbt" << EOF
74 ThisBuild / version := "0.1.0"
75 ThisBuild / scalaVersion := "2.13.12"
76
77 lazy val root = (project in file("."))
78 .settings(
79   name := "$project_name",
80   libraryDependencies += "org.scalatest" %% "scalatest" % "3.2.15" % Test
81 )
82 EOF
83
84 # Create main Scala file
85 cat > "$project_dir/src/main/scala/Main.scala" << EOF
86 object Main {
87   def main(args: Array[String]): Unit = {
88     println("Hello, Scala!")
89     println(s"Running $project_name")
90
91     // Example functionality
92     val numbers = List(1, 2, 3, 4, 5)
93     val sum = numbers.sum
94     val doubled = numbers.map(_ * 2)
95   }
96 }
```

Рис 7. Вариант 1_script

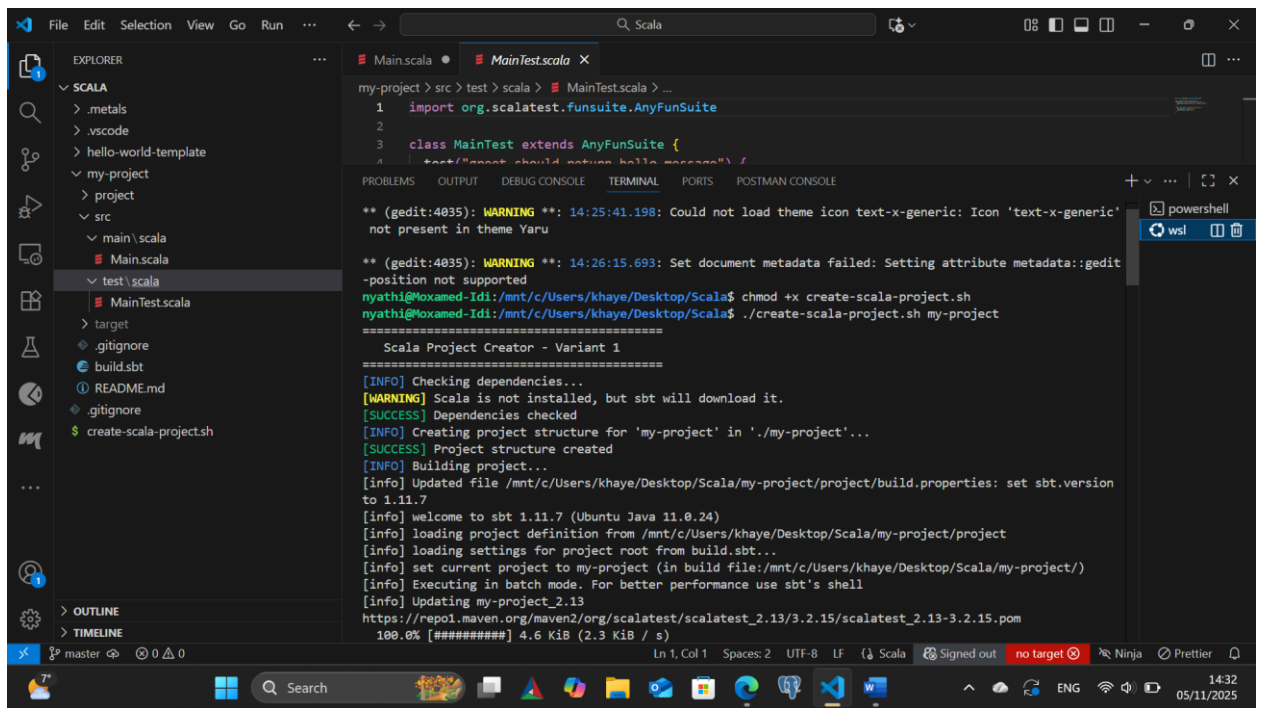


Рис 8. Права в скрипте и его запуск

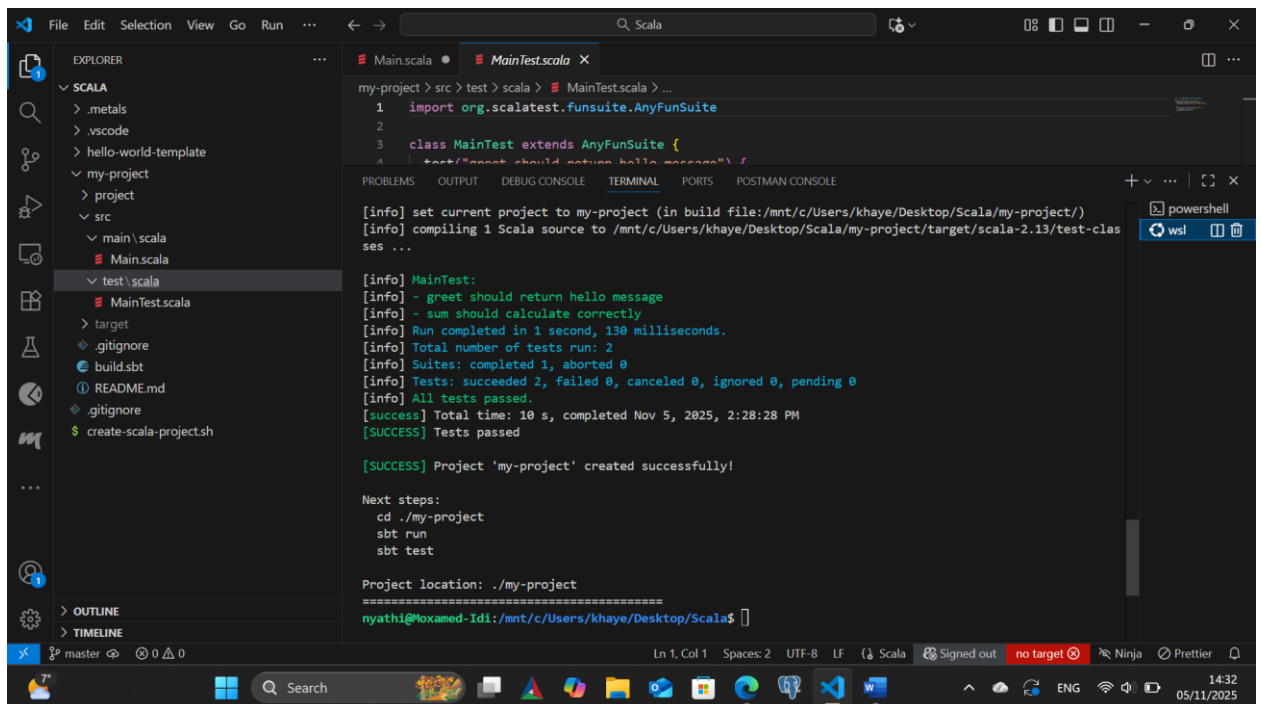


Рис 9. Результаты

Вывод

Проделав работу, я установить язык программирования Scala и проверил его работу на примере стандартного кода.