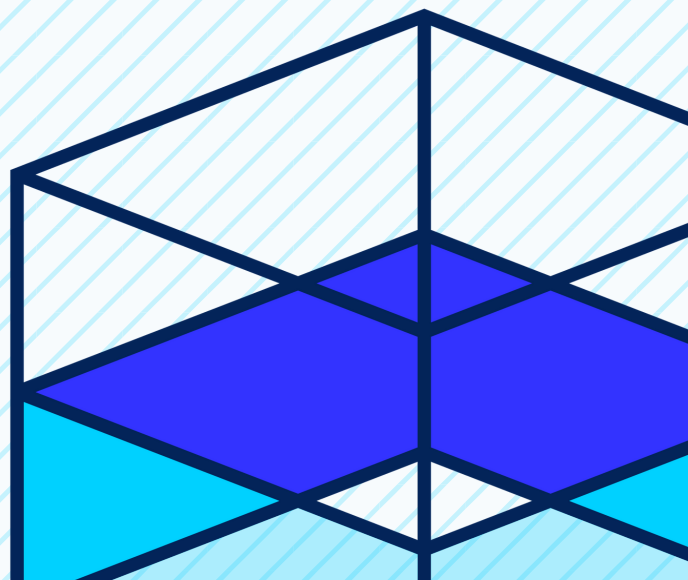


**TECH
TALENT**
SOUTH

FOUNDATIONAL JAVA

**CITY OF AUSTIN
12-WEEKS**





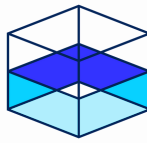
PROGRAM OVERVIEW

The goal of this course is to introduce the topics and skills needed to begin a career in Java programming. It's specifically geared toward aspiring developers with no prior knowledge, but is also a great refresher course for those with experience or those who have knowledge of a different programming language. Tech Talent South's Code Immersion programs are the perfect launching point for those who are passionate, persistent, and eager to learn.

Students can expect to be proficient in the concepts listed below and more specifically, have a strong foundational base in Java. In addition to our core curriculum, our guest speaker series, company tours, and other community events put students in front of professionals who are excited about getting to know them and connecting them with potential opportunities. The technology opportunities are continuously expanding and our Code Immersion programs are a great way to dive in and start!

PREREQUISITES

The course requires students to have access to a personal computer (Windows or macOS), basic computer literacy, and access to Wi-Fi.



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TOPICS

INTRODUCTION TO PROGRAMMING, COMMAND LINE, GIT, GITHUB, AND AGILE

The program begins with a high-level introduction to basic programming concepts as well as a discussion of soft/power skills that will be required: decision making, critical thinking, attitude, collaboration, communication, time and resource management and more. Students will also start out with a strong foundation in general development practices like version control using Git and GitHub as well as a familiarity with the Command Line Interface (CLI). Throughout the course, students will practice being responsible for their code by practicing standard collaboration techniques. Ultimately, in this introductory segment, students will be taught common development methodologies with an emphasis on agile development.

FRONT-END DEVELOPMENT

In this segment students will learn the basics of front-end web development including markup languages (HTML and CSS) as well as front-end programming with JavaScript. The JavaScript fundamentals component not only teaches front-end development, but also focuses on the foundational programming knowledge (syntax, variables, functions, branching, loops, and data storage) that will support their programming throughout the remainder of the course.

ADVANCED JAVASCRIPT

In the Advanced JavaScript component of the course, students will be introduced to more complex JavaScript approaches such as object orientation and packaging their applications using Webpack.

REACT FUNDAMENTALS

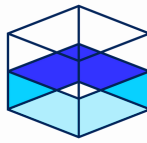
Students will learn the front-end framework, React, with an introduction to syntax and its core concepts. Emphasis will be placed on React and data handling through the creation of interactive client-side programs.

USING REST SERVICE - PROJECT

Students will be introduced to core concepts of full stack development through an introduction to REST, RESTful APIs and Postman.

DATABASES AND SQL

At this point, students will dive into server-side database management by first learning how to work with Firebase and then learning Structured Query Language (SQL) and how it is used to manage databases. Students will learn how to make basic and advanced queries as well as how to use SQL for reporting and manipulating data within a database. Finally, students will learn normalization tactics and how to model data. As a foundation for server-side programming in Java, the emphasis is on relational databases.



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TOPICS CONTINUED

JAVA DATA STRUCTURES AND FUNCTIONS

Students will be introduced to the Java programming language and will learn its syntax, commonly used data structures, as well as the basic structure behind its functions and methods. Emphasis will be placed on the implementation of functions and data structures.

OBJECT ORIENTED PROGRAMMING WITH JAVA

Students will learn the fundamentals of object oriented programming (OOP) through a deeper dive into the Java programming language. Core OOP concepts of encapsulation, abstraction, inheritance, and polymorphism will be taught through project-based learning.

ADVANCED JAVA

The Advanced Java module covers core programming concepts such as algorithms and big-O notation as well as advanced data structures and search algorithms. In addition, students will learn the basics of exception handling in Java and will learn how to debug their applications and will learn more advanced Java techniques such as design patterns and threading.

JAVA APPLICATION DEVELOPMENT with SPRING

Students will take their Java knowledge to a full-stack development environment by using SpringBoot with Java to build two fully-functional web applications. In this section students will also be introduced to the Model-View-Controller approach to application development as well as to templating through the templating language, Thymeleaf.

RESTful APIs

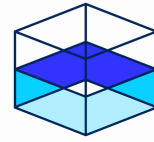
In this section, students return to APIs from the perspective of server-side programming. Students will learn how to build an API using Spring and Java and will produce two full-stack applications using available APIs.

TESTING (TDD JUnit)

Students will learn about automated and unit testing as it relates to the idea of Test Driven Development. Students will learn the importance of testing and the foundation of the ideology. Emphasis will be placed on TDD using JUnit.

DEPLOYMENT AND DEV-OPS

Students will learn how to deploy and maintain an application in production including popular tools, best practices, and modern workflows. Students will also work on a final capstone project that comprises all major topics covered throughout the course.



COURSE OUTLINE: SCHEDULE

Week 1

- Day 1 | Introduction to Programming & Command Lines
- Day 2 | Git / Github
- Day 3 | Development Methodologies - Focus on Agile
- Day 4 | HTML
- Day 5 | CSS 1

Week 2

- Day 1 | Bootstrap
- Day 2 | Portfolio Project Day
- Day 3 | JavaScript Intro & Syntax
- Day 3 | JavaScript Data Structures
- Day 4 | JavaScript Functions 1, 2, 3

Week 3

- Day 1 | JS Dom Traversal
- Day 2 | Introduction to Object-Oriented-Programming & JavaScript Object Orientation
- Day 3 | Intro to React
- Day 4 | React II
- Day 5 | React III

Week 4

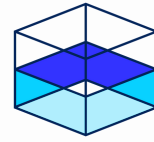
- Day 1 | React Router
- Day 2 | React Practice: React Tic-Tac-Toe Project
- Day 3 | React Group Project
- Day 4 | Understanding REST/HTTP/Intro to APIs using Postman
- Day 5 | Firebase

Week 5

- Day 1 | Databases / SQL
- Day 2 | SQL Fundamentals
- Day 3 | Relational Databases
- Day 4 | Introduction to Java and Java Data Types
- Day 5 | Java Control Flow

Week 6

- Day 1 | Java Data Structures
- Day 2 | OOP Review: Java OOP 1 - Classes, Methods, JDK
- Day 3 | LabJava OOP 2 - Classes and Objects
- Day 4 | LabJava OOP 3 - Interfaces, Method Overriding Lab
- Day 5 | 2048 Game Project



Week 7

- Day 1 | Advanced Java - Heaps, Binary Trees
- Day 2 | Advanced Java - Big O Notation, Algorithms
- Day 3 | Advanced Java - Exception Handling
- Day 4 | Advanced Java - Design Patterns
- Day 5 | Advanced Java - Threads and Streams

Week 8

- Day 1 | Advanced Java - Lambdas, Generics
- Day 2 | Mapping out Application/UML Modeling
- Day 3 | Lab: Java Project (3 applications)
- Day 4 | Spring Boot Intro
- Day 5 | Spring Boot: Adding and Accessing Data (JPA Annotations)

Week 9

- Day 1 | Intro to MVC, Maven, and Thymeleaf
- Day 2 | Spring Boot and OAuth2
- Day 3 | SpringBoot Blog Project 1
- Day 4 | SpringBoot Blog Project 2
- Day 5 | SpringBoot Blog Project 3

Week 10

- Day 1 | SpringBoot Twitter Project Part 1
- Day 2 | SpringBoot Twitter Project Part 2
- Day 3 | SpringBoot Twitter Project Part 3
- Day 4 | REST and HTTP Review
- Day 5 | SpringBoot Open Weather (Consuming API)

Week 11

- Day 1 | SpringBoot MARTA
- Day 2 | JUnit with SpringBoot
- Day 3 | Deployment
- Day 4 | Microservices, Docker
- Day 5 | CI CD

Week 12

- Day 1 | Capstone Work
- Day 2 | Capstone Work
- Day 3 | Capstone Work
- Day 4 | Capstone Work
- Day 5 | Capstone Presentation