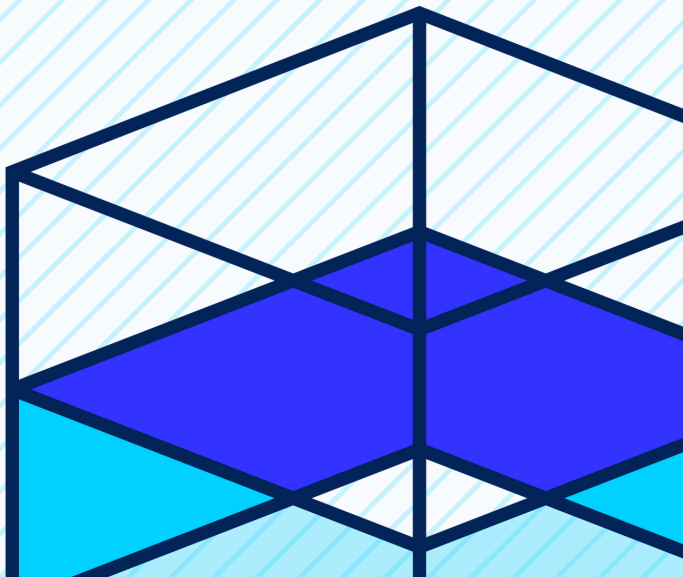
TECH TALENT SOUTH

FULL STACK WEB DEVELOPMENT

PROGRAM SYLLABUS

PROGRAM LEVEL: FOUNDATIONAL + ADVANCED



TECH TALENT SOUTH

PROGRAM OVERVIEW (PART I - FOUNDATIONAL)

Our Code Immersion program, above all else, develops software engineers ready to succeed in today's digital workforce. 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 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 career services, interview readiness, and other talent development activities 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 so are our graduates.

COMPLETION REQUIREMENTS

A candidate will be considered to have successfully completed the course objectives upon obtaining a minimum score of 70% on the final examination.

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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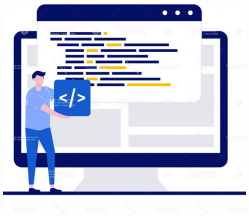
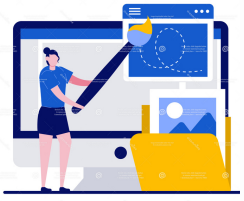
PART I (FOUNDATIONAL)



INTRO 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.

FRONT-END FRAMEWORKS

Students will learn the popular front-end frameworks, React and Angular. They will be introduced to the syntax and its core concepts of each. Emphasis will be placed on data handling through the creation of interactive client-side programs initially and full-stack applications at the end of the course.

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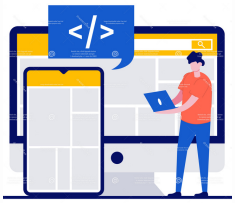
DATABASES AND SQL

At this point, students will dive into server-side database management by first learning how to work 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.

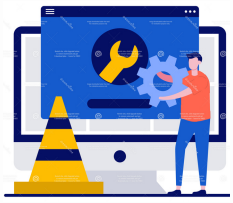
JAVA DATA STRUCTURES AND FUNCTIONS

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.

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PROGRAM OVERVIEW (PART II - ADVANCED)

In this Advanced Java course, students will be introduced to key Java Applications Development skills necessary to succeed as mid-level Java developers. Specifically, students will learn full-stack Spring-based Java development using the Spring Tools for Eclipse.

Lectures delivered by the course instructor are reinforced with hands-on (learning by doing) programming projects, including a capstone full-stack Java project. Students are expected to complete lab assignments outside of class hours. Questions and challenges from past assignments will be addressed by the instructor during class sessions.

Students entering this course should have experience with the Java programming language as well as basic knowledge of front-end programming and development (HTML and JavaScript). Students should also have an understanding of web architecture (server-client model) to succeed in this course. Some knowledge of databases, specifically, relational databases will also be of use to students entering the course.

COMPLETION REQUIREMENTS

A candidate will be considered to have successfully completed the course objectives upon obtaining a minimum score of 70% on the final examination.

PREREQUISITES

The course requires students to have access to a personal computer (Windows or macOS), basic computer literacy, and access to Wi-Fi. This course also requires successful completion of Foundational Java or a student can place out of Foundational Java by passing assessments to demonstrate language proficiency.

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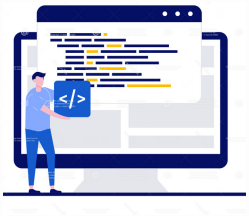
PART II (ADVANCED)



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.