

Frontend Development Curriculum

Genesys Internship Program –
Codename: Learnable, 2023

Week 1

Introduction to Programming

This lesson will cover the introduction to programming and its basic concepts.

You will be eased into understanding what programming is and how to start programming using javascript before you begin programming.

At the end of this week, you will explain what programming is all about with ease to the next person.

Week 2

Git and Version Control

This week, we will introduce you to version control and collaboration tools like Git and GitHub. This will give you fundamental knowledge about the Git and Git Environment. You will also learn step by step on saving code on git repositories and other git commands that come in handy during development.

At the end of this week, you should be acquainted with Git, have a fundamental understanding of all it offers, and gain the confidence to try it out. You would also be expected to understand and implement a typical git cycle from initialization to pushing the code to a repository, have many git commands in your arsenal, and know when best to use each command.

Week 3

JavaScript Fundamentals I

JavaScript is the lingua franca of the Web, but before using it to create dynamic websites, you need to understand how it works. In this course, you will explore the syntax behind the JavaScript language. You will learn how to "speak" JavaScript by gaining an understanding of variables, types, objects, arrays, operators, control structures, loops, and functions through a series of hands-on examples that put these ideas into action.

At the end of this week, you should grasp the core syntax of JavaScript and how this scripting language works to build robust and complex functionality on the Web.

Week 4

Object Oriented Programming

Object-oriented programming (OOP) is a style of programming that focuses on using objects to design and build applications. In this lesson, you will learn about the concept and the principles of OOP. You will also learn about Object-Oriented Analysis and Design and the process of OO analysis and Design and get a feel of how it is done practically.

At the end of this week, you will have learnt how to define a class and its members and instantiate an object out of the class.

Week 5

HTML and CSS

HTML is a simple, elegant way to structure content on a webpage, and CSS exists to style HTML, to beautify content. This course provides a brief look at the essentials of HTML and CSS. It reviews the structure of a typical HTML document and shows how to section pages and format your content with HTML. CSS is briefly explained on a fundamental level as a way to style/beautify your HTML content.

This week will cover the following fundamentals of HTML:

- What is the Web, and how is it Accessed?
- How websites are created.
- What is HTML?
- What are HTML elements/tags?
- Identify the parts that make up an HTML tag.
- Determine when to use specific HTML tags.
- Correctly structure nested HTML content.
- Decide between a variety of text editors for writing code.
- What is HTML Semantics?

We will also cover the following:

- What the CSS?
- How to apply CSS to HTML content.
- Structure of CSS
- CSS Box Model
- Selectors.
- Specificity.
- Test styles by manipulating CSS properties.
- Use keyboard shortcuts to write code faster.
- Use code editor extensions to improve workflow and write code more efficiently.

At the end of the week, you should be able to create meaningful markup that makes up the structure of a webpage and understand the parts of an HTML element. You should also understand how to apply CSS styles to your HTML elements and know the basics needed to start styling with CSS.

Week 6

Advanced HTML and CSS

This class is meant to extend your knowledge of HTML and CSS. This means you are expected to have knowledge of the fundamentals of HTML and CSS.

At the end of this week, you are expected to understand meta tags, logical and physical tags, conditional comments and HTML entities. You would also understand Form Inputs, Iframe, CSS Specificity and Box Model.

Week 7

Software Testing

What is software testing, and how important is it to test your software? This lesson will teach you how to test your software for errors, gaps or missing requirements in contrast to actual requirements.

At the end of this lesson, you will know the difference between Testing and Debugging and also know when to apply either one of the processes.

Week 8

JavaScript Fundamentals II

This class is meant to build on existing knowledge of JavaScript. You will be exposed to the "object" rich features of Javascript, understand array and array higher-order functions, play around with the DOM, get introduced to asynchronous programming and learn how to architect Javascript applications. This class is a somewhat advanced version of "JavaScript Fundamentals I." This class assumes that you already have knowledge of the basics of Javascript.

At the end of this week, you should be acquainted with JavaScript objects. You should be able to play around and understand the Global Object, the Arguments Object, the Math Object e.t.c. You would also be expected to understand the JavaScript arrays and Higher Order Functions and be comfortable using them to build apps.

Also, aside from knowing that Nodes are all the different components that a webpage is made up of and that elements are one type of node, you should be able to:

1. Add a new text or element to a DOM
2. Delete or remove existing text or elements in a DOM
3. Update, modify or change existing text, or elements from a DOM

Also, you should be comfortable with asynchronous programming and understand how JavaScript module systems work and are able to structure your applications with them.

Week 9

JavaScript Design Patterns

Design patterns are reusable solutions to commonly occurring problems in software design. This would be an introduction to design patterns. It would cover such topics as why design patterns are useful in writing clean, maintainable, and reusable code; Examples of popular design patterns; and different design patterns every javascript developer should know.

At the end of this week, you should understand and be acquainted with design patterns, why they are essential and how to apply them in code using modern javascript syntax. You should also understand different scenarios where we can apply these design patterns when building reusable and extensible software.

Week 10

Blockchain Week/Web3 Week

Web3 is an idea for a new iteration of the World Wide Web. You will be introduced to new concepts that are incorporated into the World Wide Web, such as decentralization and blockchain technologies.

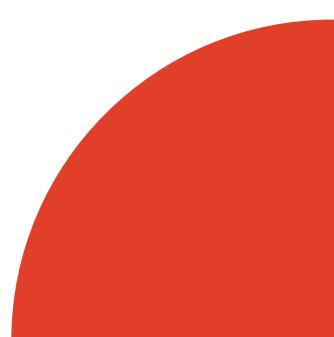
Proposed Facilitator: Joshua Nwankwo, Ifedili Onyegbu

Week 11-13

Developing WebApps with React

The goal of this course is to introduce you to React JS. You will become familiar with the principles of the library and comprehend the issues it addresses (helping you know why we use it).

In order to develop strong foundations for creating applications with React, we would get right into knowing it. To do this, we would basically go through the fundamentals (such as props, state, components, and life cycle). The first week would also involve deeper discussion of conditional rendering, investigation of how react handles/treats list elements using keys, and basic hook development. In the second week, this course will introduce you to advanced hook principles in the upcoming weeks and even show you how to create your own unique hooks. You would gain knowledge of how to leverage the React Context API to render props, refs, and higher order components (HOCS).



We would examine routing (moving between pages), learn how to use forms, discover ways to apply styling to our components (using CSS-in-JS, for example), and state management during the last week (Concepts, Zustand and Redux).

From this point forward, you'll be able to construct incredibly effective react applications.

Week 14

Design Sprint

A design sprint is a five-phase framework that helps answer critical business questions through rapid prototyping and user testing. Sprints let your team reach clearly defined goals and deliverables and gain key learnings quickly. The process helps spark innovation, encourage user-centered thinking, align your team under a shared vision, and get you to product launch faster.

Week 15

Test Driven Development with Javascript

This class will introduce you to Test-driven development, giving you fundamental knowledge about the importance of testing in every software. You will understand why it is important and get introduced to the concept of automated testing, especially compared to traditional testing methods.

At the end of this week, you are expected to understand the concept of Jest as a tool for testing, understand how it is set up for use and lastly, be able to use Jest in a project. You will also have an understanding of the concept of Gherkin stories and how to use them in TDD