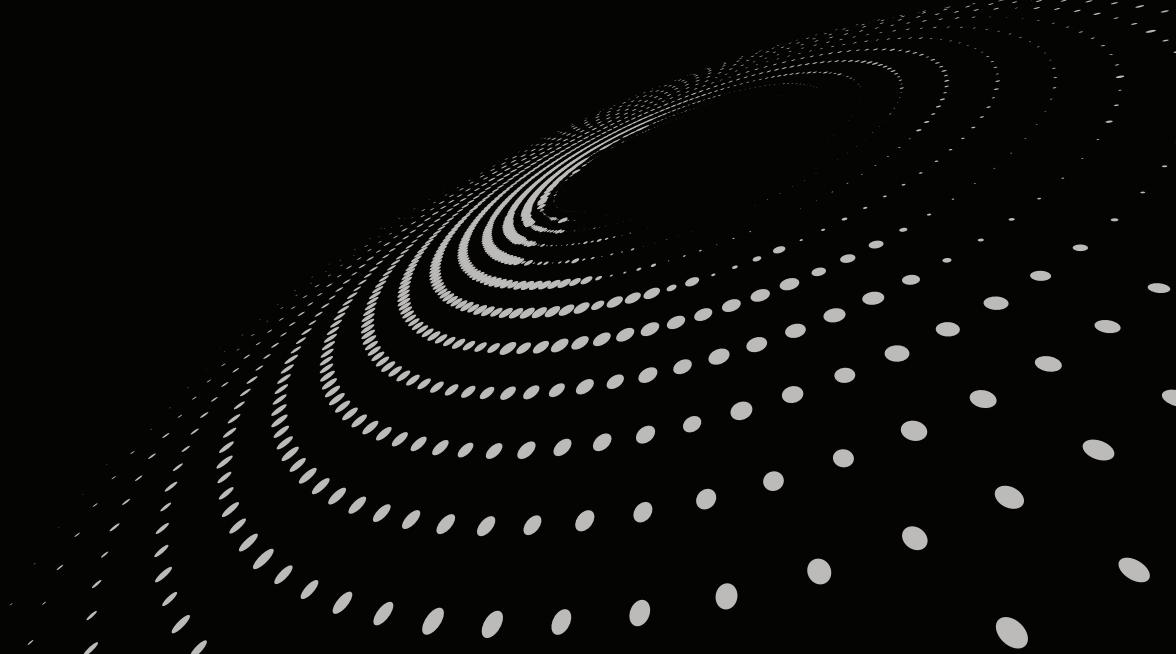
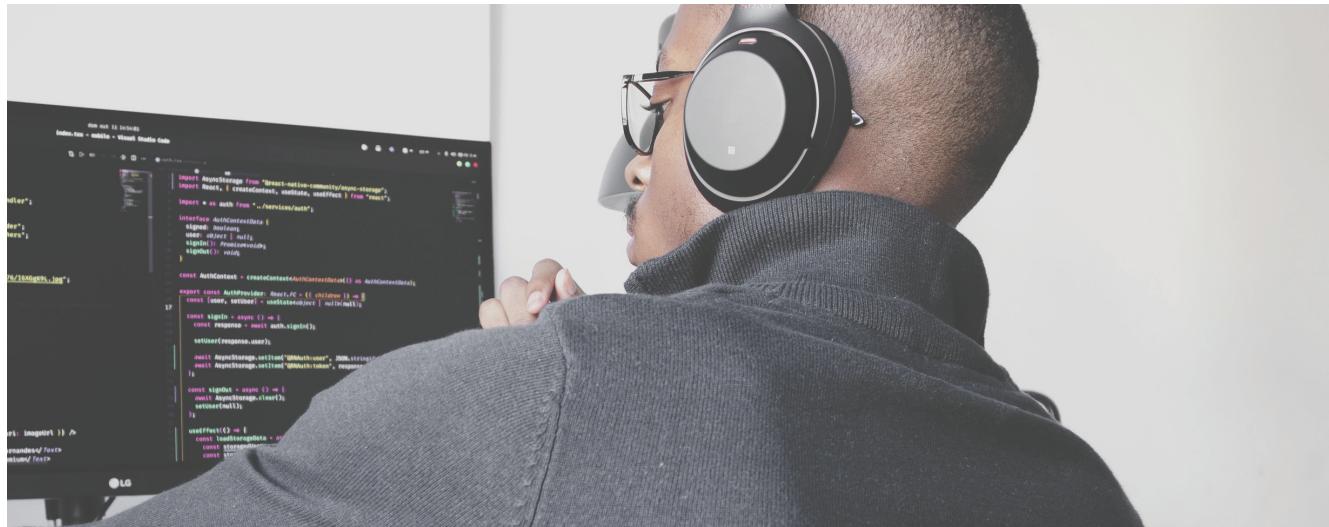


Alt\_\_  
School

School of  
**Software  
Engineering.**





## AltSchool Onboarding Month

### ► Week One

- Why is technology important?
- What jobs can you do after graduation?
- Communicating with your coursemates, instructors, and course assistants.
- How best do you learn and class delivery methods ( Reading, Live Classes, Videos)
- Learning at your own pace but at a good pace.
- All you need to know about this course (with QnA).
  - Class Structure
  - Graduation Criteria
  - Graduation Levels
  - Weekly quizzes, badges, and rankings.
  - Progress Tracker
  - (Other important details)

- How to use all the tools and resources you have access to.
  - Using Slack and Emails effectively
  - Calendar management
  - Introduction to the Learning Management System
  - How to set up your profile
  - How to submit your assignment
  - How to request help
  - How to view your class schedule
  - Completing your self-assessment checklist

## ► Week Two

### Lecture 1: Introduction to Computer Science

- What is computer science
- Fields of computer science
  - Artificial intelligence
  - User Interface Designer /User Experience Designer
  - Data Science
  - Software Engineering

### LECTURE 2: Computer Components

- At the end of this lecture, you will be in pole position to:
  - Explain what computer system is
  - Differentiate between computer hardware and software
  - Intensively and extensively discuss computer software
  - Differentiate between application software and system software
  - List the examples of application software and system software

- What is a Computer?
- Computer Hardware and Software
- Computer Software deep dive
- System Software and Application Software

## ► Week Three – More on computing principles

### Lecture 1: Introduction to Computer Science

- What is programming?
- Types of programming languages
- Bits and Bytes
  - What is data? Information?
  - How is data stored on a computer?
  - What is a bit? Byte?
  - Other units of storage
- Data Types
  - What is a variable?
  - Common data types in programming languages

- **Data Structures**

- What are data structures
- Factors to consider when choosing a data structure
- Some data structures (array, linked list, heaps, trees, hash tables, graphs, objects, stacks, lists) and how they work

- **Object-Oriented Programming**

- Why OOP?
- OOP in action
- OOP concepts with examples: Class, Methods, Encapsulation, Inheritance, Polymorphism, Dynamic Binding, etc

- **Algorithms**

- What is an algorithm?
- Why you should learn Data Structures and Algorithms
- Writing algorithms in pseudocode
- Writing algorithms in a programming language
- Examples of simple algorithms

## ► Week Four – Introduction to Programming Languages and Tools of the trade

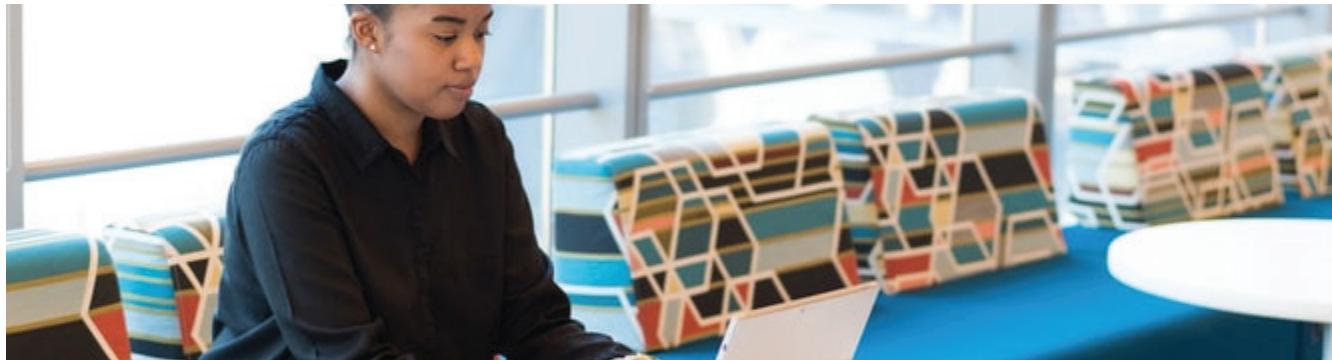
### Important Programming Concepts (definitions)

- Loops
- Array
- Big O Notation
- Recursion

## Basic elements of a program

- Tools of the trade
  - Operating Systems
    - macOS
    - Windows
    - Linux Distributions
  - Editors
  - Figma
  - Browsers
    - Edge
    - Chrome
    - Firefox
    - Safari
    - Others
- Command Line tools
  - Windows:
    - Powershell
    - Command Line (CMD)
    - Windows Terminal
    - Mintty
  - macOS:
    - Terminal
    - iTerm
    - Powershell
    - Zsh
  - Linux:
    - Bash
    - KDE Konsole
    - Powershell
  - Others:
    - NPM
    - Git
    - Yarn

- Accounts to open
  - Sign up on the following platforms
    - Twitter
    - Github
    - Stackoverflow
    - figma
- Organizing your computer (creating folders and subfolders to keep your projects neat)
- Documentations and finding help:
  - [Mozilla Developer Network \(MDN\)](#)
  - [W3Schools](#)
  - [StackOverflow](#)
  - [Freecodecamp](#)



## First Semester

### ► Month Two

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## Objectives

**Basic Introduction to Frontend Development:** At the end of month two, you would have a good understanding of basic HTML and CSS. You would have built a minimum of 3 projects through your assignments and you would have access to everyone's performance through a leaderboard.

---

### Week One

#### Week 1 outcome:

At the end of this week, you should be comfortable with the following:

- What is HTML?
- History of HTML
- Why HTML is the building block of the web.
- The basics of HTML (Hypertext Markup Language)
- Limitations of HTML

- Definition and Terms
  - Tags
    - Open and Closing tags
    - Self-closing tags
  - Attributes
  - Values
  - Validation - HTML Validation
  - DocTypes
  - URL
  - HTML Page
  - HTML Color Codes
  - WWW
  - HTTP
  - Image Formats:
    - Svg
    - Png
    - Jpeg / jpg
- Tags
  - <h1>...<h6>
  - Tables
  - Forms
  - Lists
  - Links - href
  - Media - audio, video
  - Download
  - Marquee

## Assignment A

1

- |   |  |   |
|---|--|---|
| <ul style="list-style-type: none"><li>• Create a single HTML page (remember what makes a page):<ul style="list-style-type: none"><li>• Your page should have:</li></ul></li></ul> | <ul style="list-style-type: none"><li>• Your page should use the following tags:<ul style="list-style-type: none"><li>• &lt;b&gt;</li><li>• &lt;p&gt;</li><li>• &lt;br&gt;</li></ul></li></ul> | <ul style="list-style-type: none"><li>• Your page should not use the following tags:<ul style="list-style-type: none"><li>• Table</li><li>• Forms</li></ul></li></ul> |
|---|--|---|

# 2

# 3

- Your name
- A sentence about yourself
- Your goal for this diploma course

- <h1> ... <h6>
- <marquee>
- List

- 
- Using table tags, building a Tabulated data page. A single page with tabled data.
    - The content should be A - Z, each alphabet should be in a single cell

- Using Forms, create a contact page:
  - Fields:
    - Name
    - Email
    - Message
    - Priority (dropdown)

- Your form should have a submit button

- Your form should have basic HTML Validation

## Week Two

### Week 2 outcome:

At the end of this week, you should be comfortable with the following:

- CSS fundamentals ( Cascading Style Sheet)
- Integrating CSS in your HTML page
- CSS Syntax
- CSS colors, variables, and properties.

- External, Internal and Inline CSS
- CSS selectors
  - ID
  - Class
- Combining Selectors
- CSS target

## Assignment B

1

- Improve on your portfolio page from assignment A1 by adding:
  - More tags \*\*might add more tags later
    - div
    - Span
    - Articles
- Add more content to include the following headings:
  - Summary (about you)
  - Education (list your past education and certificates)
  - Job Experiences
  - Hobby
  - Other skills

- Move the contact form you created in assignment A3 to the bottom of this page

- Ensure you add adequate styling using CSS (use all the concepts you have learned about colors and CSS properties, your grading will be based on how much of these concepts you apply eloquently)

# 2

- Improve on your assignment A2, by converting the tabulated page to a calculator interface. Your calculator should have:
  - Numbers 1 to 9
  - A text field at the top
  - The following operators
    - Addition (+)
    - Subtraction (-)
    - Multiplication ( \* )
    - Division ( / )
    - Modulus ( % )
  - Your calculator does not need to function in any way, but ensure you use the right colors for the buttons and the general interface. The goal is to make sure your calculator looks as real as possible
  - Apply as many of the CSS concepts you have learned as possible.

## Week Three

### Week 3 outcome:

At the end of this week, you should be comfortable with the following:

- CSS Grid and flexbox
- CSS Media Queries and Responsiveness

- CSS Grid and flexbox
- CSS Media Queries and Responsiveness

### Assignment C

- Re-create your calculator interface using CSS grid and/or Flex
  - Ensure the interface is responsive

- Improve your portfolio page by adding a menu. The menu items should be the same as the sections of the page (we are working towards making a single page website) and ensure it is responsive.
  - Add your photo to your portfolio page and other relevant information outside of what has already been specified.

- Be creative, and don't add information that will help the website visitor know you and your abilities.
- Highlight your "achievement" and things you are most proud of.
- Add as many testable links as possible.

1  
2

# 3

- Build authentication page. Authentication page includes:
  - **Register page**
    - The following fields are required:
      - First Name
      - Last name
      - Other names
      - Phone
      - Email
      - Gender (drop down)
      - Country (Drop down)
      - State/province
      - Username
      - Password
      - Confirm Password
    - Ensure you do proper validation on each of these fields
    - Add a captcha validation (It doesn't need to work). You can use a library or create something yourself.
  - **Login page**
    - The following fields are required
      - Username/Email
      - Password
    - Don't forget to do validation
  - **Password Reset Process**
    - Should include 2 pages
      - Password Reset Request that would accept the users email address
      - Change password Page that will allow the user change their password

## Week Four

### Week 4 outcome:

At the end of this week, you should be comfortable with the following:

- CSS3 Animations
- What is Accessibility and how to get started building accessible websites.
- Structuring your CSS project
- Collaborating with designers
- Build a Responsive Landing Page

## Assignment D

- 1
- Improve your portfolio page by adding some animations. This is totally up to you, but ensure you don't overdo it. Add animation to the submit button and display a "your form is being submitted" message after

- 2
- 
- Add some animation to your calculator especially to the operator buttons

- 3
- 
- Create a photo Gallery using HTML / CSS. This is a very open-ended task, there are no restrictions. Use your creativity and initiative. This task will allow you to experience what it feels like to create something from scratch. Please note the following:
    - Your gallery should be a photo gallery, no need for video
    - Your gallery should show 1 photo at a time and allow navigation between photos
    - Your gallery should allow zoom (which means I can click on a photo to see a larger version of the same photo)



*Fig 1.5: A virtual project presentation*



*Fig 1.6: Team mates brainstorming together*

## First Semester

### ► Month Three

#### Objectives

**Introduction to JavaScript.** You'll be introduced to basic JavaScript and DOM manipulation this month. At the end of this month, you'll be able to add basic interactivity to html elements with javascript. You will get a basic grasp of the core concepts of JavaScript and how it can be used for other things outside of HTML manipulation.

#### Week One

##### Week 1 outcome:

At the end of this week, you should be comfortable with the following:

- JavaScript History
- Why JavaScript
- JavaScript Concepts: Terms & Definitions
  - Statements
  - Comments
  - Variables

- Let & Const
- Assigning
- Concatenation
- Constants
- Data Types
- Objects
- Arrays
- Functions
  - In-built functions
    - Alert
    - Confirm
    - Prompt
  - Parameters
- System Setup for JavaScript development
- JavaScript Syntax and principles

## Assignment E

- 1
- Basic JavaScript Exercises:
    - Write a javascript code that prints out your name, height and country on the screen. The output can be done in any way, including but not limited to using prompt, printing on the html body, alert and confirm functions.
    - Write JavaScript code using your terminal or browser devtool, the code should print out the same thing printed above.

- 2
- 
- Improve your calculator by adding the following interactivity:
    - Each time I click a button show the value on that button in the console
    - Each time I click an operator, show the symbol of that operator in the console

3

- Write an article regarding your JavaScript learning so far

## Week Two

### Week 2 outcome:

At the end of this week, you should be comfortable with the following:

- JavaScript functions
  - Without parameters
  - With parameters
  - Using Math functions
  - Loops
- JavaScript Objects
- JavaScript Array Operations
- Basic Introduction to the DOM

## Assignment F

1

- Improve your calculator by making it fully functional.
  - Display result in the answer box
  - I should be able to store basic values and use them for other calculations

2

- 
- Duplicate your calculator and add scientific functionalities

## Week Three

### Week 3 outcome:

At the end of this week, you should be comfortable with the following:

- Working with Files
- Sending Email with JavaScript \*\*using libraries
- Combining HTML, CSS and JavaScript to build a project

## Assignment G

1

- Refer back to assignment C3 by making your authentication pages work, the following are required:
  - Registration:
    - Each time a user registers the user data should be submitted to a file
    - Before adding the user data to the file, ensure you check that that user does not already exist
    - If the user already exists inform them to use different details -  
**\*\*Do not clear the registration form\*\***
  - Login:
    - When a user enters their username and password, you should check the file if such record exists
    - If the record exists, show them a successful login message
    - If the record does not exist, show them failed login message
    - Users should be able to reset their password if they have forgotten
  - Password reset:
    - Users should be able to request for a different password by entering their registered email address
    - On such request, you should check if such email exists
    - If the email does not exist, you should inform the user
    - If the email exists, you should send the user a reset password email and add a link to the create new password page

2

- Create new password:
  - Users should be able to change their password
  - Users should not be able to get to this page without going through the reset password request from c above
  - If user attempts to use the old password, inform them that they cannot use the old password
  - If a user successfully changes their password, inform them that the change was successful.

- Build a web application with a professional design from Frontend mentor.

#### Week Four

First semester Exam week.

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