sublevels-prerequisites

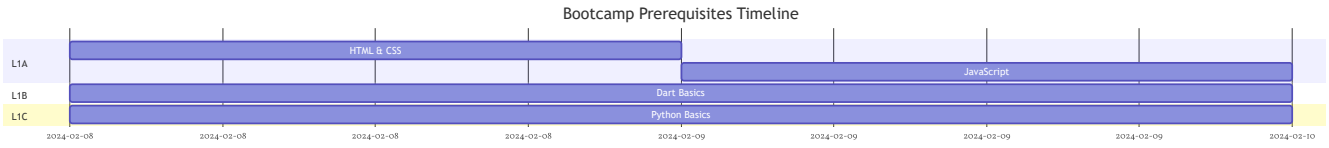
Here's a comprehensive guide for the bootcamp prerequisites:

Bootcamp Prerequisites Guide

Overview of Prerequisites

- [ ] L1A: Frontend Development Prerequisites (Astro & Tailwind) ***Required***
- [ ] L1B: Cross-platform Development Prerequisites (Dart & Flutter) *Optional*
- [ ] L1C: Python for Data Science Prerequisites *Optional*

Learning Path Timeline



Recommended Resources for Each Track

> **Note**
>
> If you want, you can use LLMs like Claude or Chatgpt by asking them to explain whatever concept below

Those are recommended (feel free to choose anything else that fits you)

L1A: Frontend Development

- Html 100 seconds
- CSS 100 secs
- JavaScript in 100 seconds

- JavaScript for the Haters - *Optional* to watch as it can be seen from the title
- 100+ Web dev Things you need to know ~ This and the above summarize most concepts in less than 15 mins. (don't worry if you don't understand everything, just understand the concepts)

Watch one of those 2 below

- Async JavaScript & Callback Functions -- Tutorial for Beginners - A tutorial on Asynchronous JS
- Async/await programming in JS - A tutorial in Arabic that helps explaining the Important concepts of `async` functions
- MDN Playground - Play with HTML, CSS, and JS all in one place online
- MDN Web Docs - Comprehensive web development documentation
- JavaScript.info - Modern JavaScript Tutorial for everything

LiB: Cross-platform Development

- Dart in 100 seconds - A great video to get an idea of Dart language in 100 seconds
- Dart Documentation - Official Dart programming language docs
- Dart Tutorial in less than 2 hrs - Dart Programming Tutorial from freecodecamp
- DartPad - Online Dart code editor

LiA: Frontend Development Prerequisites

> **Note**
>
> I know those are a lot, try to take the big Idea as much as possible. Also in video tutorials those will be much easier to grasp.

HTML & CSS Fundamentals

- Basic HTML structure
- Semantic HTML elements
- CSS selectors and properties
- Flexbox and Grid layouts
- Responsive design principles

Essential HTML Tags

```
<html>
<head>
<body>
Header tags: <h1>, <h2>, ..., <h6>
<section>
<main>
<div>
<span>
<a>
<img>
<button>
<ul>
<li>
<picture>
<nav>
<header>
<footer>
<style>
<script>
```

Essential CSS Concepts

Selectors

```
/* Element Selector */
div { }

/* Class Selector */
.className { }

/* ID Selector */
#idName { }

/* Descendant Selector */
div p { }
```

Box Model

```
/* Box Model Properties */
margin: 10px;
padding: 10px;
```

```
border: 1px solid black;
width: 100px;
height: 100px;
```

Display & Positioning

```
/* Display Types */
display: block;
display: inline;
display: inline-block;
display: flex;
display: grid;
display: none;

/* Position Types */
position: static;
position: relative;
position: absolute;
position: fixed;

/* Position Properties */
top: 0;
right: 0;
bottom: 0;
left: 0;
z-index: 1;
```

Typography

```
font-family: Arial, sans-serif;
font-size: 16px;
font-weight: bold;
line-height: 1.5;
text-align: center;
text-decoration: none;
letter-spacing: 1px;
```

Colors & Backgrounds

```
/* Colors */
color: #ff0000;
color: rgba(255, 0, 0, 0.5);
```

```
/* Backgrounds */
background-color: blue;
```

Flexbox

```
/* Container */
display: flex;
flex-direction: row | column;
justify-content: center;
align-items: center;
flex-wrap: wrap;
gap: 10px;

/* Items */
flex: 1;
```

Grid

```
/* Container */
display: grid;
grid-template-columns: repeat(3, 1fr);
grid-template-rows: auto;
grid-gap: 10px;

/* Items */
grid-column: 1 / 3;
grid-row: 1 / 2;
```

Transitions & Animations

```
/* Transitions */
transition: all 0.3s ease;

/* Animations */
@keyframes slidein {
    from { transform: translateX(0); }
    to { transform: translateX(100px); }
}
animation: slidein 1s ease infinite;
```

Media Queries

```
@media screen and (max-width: 768px) {
    /* Mobile styles */
}

@media screen and (min-width: 769px) and (max-width: 1024px) {
    /* Tablet styles */
}

@media screen and (min-width: 1025px) {
    /* Desktop styles */
}
```

Common Units

```
/* Absolute Units */
px

/* Relative Units */
em
rem
%
vh
vw
fr
```

Pseudo-classes & Elements

```
/* Pseudo-classes */
:hover
:focus
:active
```

Common Properties

```
opacity: 0.5;
border-radius: 10px;
box-shadow: 2px 2px 5px rgba(0,0,0,0.3);
transform: translate(10px, 20px);
overflow: hidden;
cursor: pointer;
```

Essential JavaScript Concepts

```
// Variables and data types
let, const
// Arrays and Objects
// Functions (including arrow functions)
// Destructuring
const { property } = object;
// Template literals
`Hello ${name}`
// Promises and async/await
async function getData() {
    const response = await fetch(url);
}
// DOM manipulation basics
```

LIB: Cross-platform Development Prerequisites

optional but try to learn Dart fundamentals if you can, we will cover it both cases.

Dart Fundamentals

```
// Variables and data types
var, final, const
// Control flow
if, else, for, while
// Functions
void main() {}
// Classes and objects
class Person {
  String name;
  Person(this.name);
}
// Collections
List, Set, Map
// Null safety
String? nullableName
// Async programming
Future<void> getData() async {}
```

LiC: Python Data Science Prerequisites

optional but try to learn python if you can, we will cover it both cases.

- [ ] Learn Python Basics

Checklist Before Starting

LiA Track

- [ ] Understanding of HTML structure and elements
- [ ] CSS styling and layouts
- [ ] Basic JavaScript syntax
- [ ] Async programming concepts

LiB Track ~ *Optional*

- [ ] Dart syntax and basic concepts
- [ ] Object-oriented programming in Dart
- [ ] Async programming in Dart

LiC Track ~ *Optional*

- [ ] Python syntax and basic concepts

> **Note**
>
> Complete these prerequisites before the bootcamp online meeting resume to ensure you can follow along with the sessions effectively.
