AUGMENTED REALITY & VIRTUAL REALITY

18 MONTH

H Holberton

What Your Students Will Learn

Foundation of Software and Engineering

This foundational knowledge of how computers and programming languages work will allow your students to optimize and debug anything later on in their professional career. Students will also begin working with algorithms and data structures which are essential foundations for great Software Engineers - the type that the best companies hire.

In the first sprint of foundations, Students will work in C and Unix programming, graphical programming, data structures, assembly language, and algorithms as well as reverse engineering and security protocols.

From there, they are introduced to higher-level languages, increasingly advanced algorithms, space and time complexity, database management, and front-end programming. Using the latest technologies, they will begin to create a complete web application project that will span the rest of the foundation sprints.
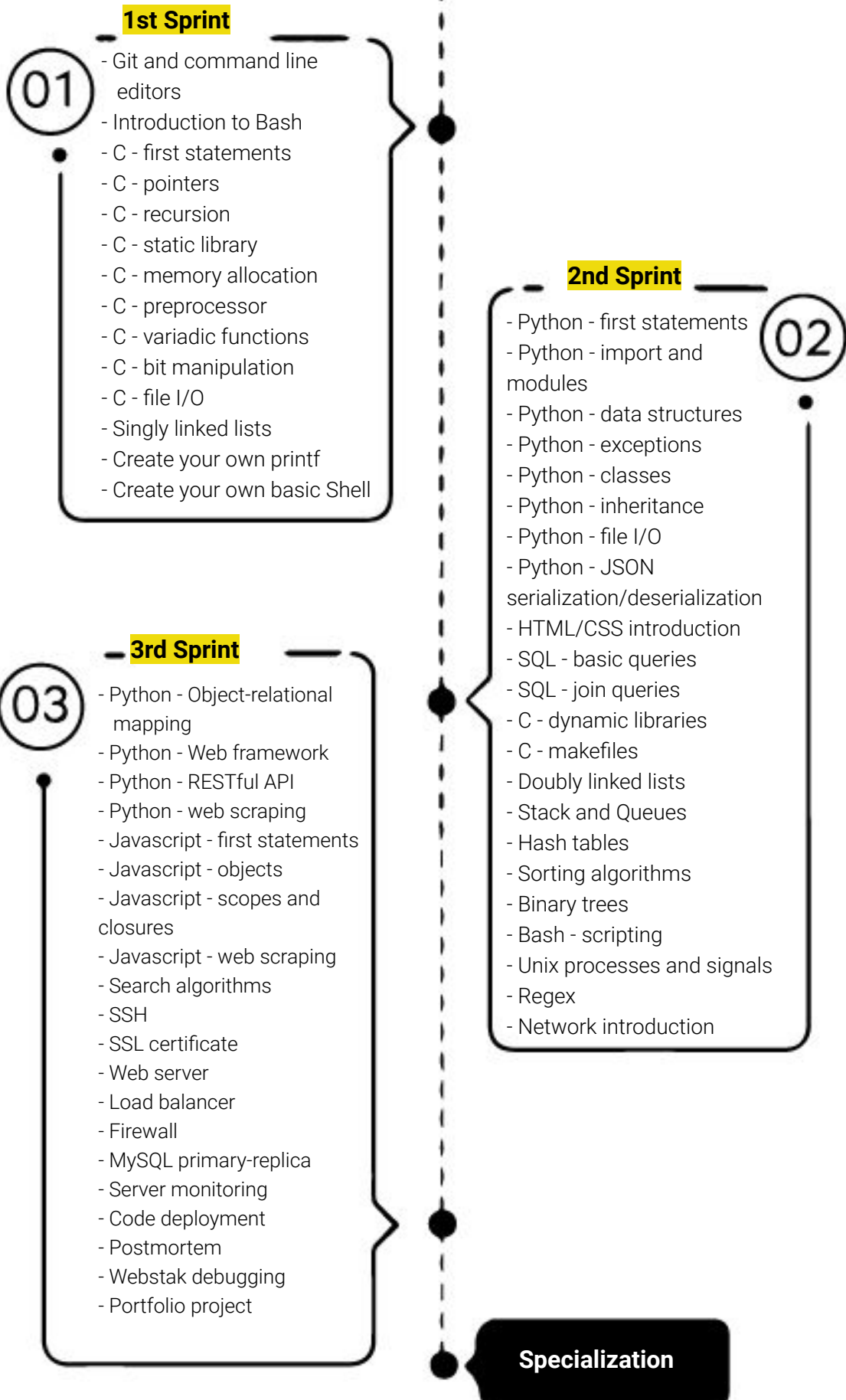
The final sprint of foundations emphasizes automation, scalability, and reliability, so that students are familiar with the infrastructure and best practices similar to those in tech powerhouses. Alongside a continuation in web development, they will also advance in algorithmic understanding, technical writing, debugging, and project management.

Examples of Projects

- Write printf function
- Web stack debugging
- Clone a marketplace
- Code a shell

Foundation of Computer Science & Software Engineering

01 — 1st Sprint

- Git and command line editors
- Introduction to Bash
- C - first statements
- C - pointers
- C - recursion
- C - static library
- C - memory allocation
- C - preprocessor
- C - variadic functions
- C - bit manipulation
- C - file I/O
- Singly linked lists
- Create your own printf
- Create your own basic Shell

02 — 2nd Sprint

- Python - first statements
- Python - import and modules
- Python - data structures
- Python - exceptions
- Python - classes
- Python - inheritance
- Python - file I/O
- Python - JSON serialization/deserialization
- HTML/CSS introduction
- SQL - basic queries
- SQL - join queries
- C - dynamic libraries
- C - makefiles
- Doubly linked lists
- Stack and Queues
- Hash tables
- Sorting algorithms
- Binary trees
- Bash - scripting
- Unix processes and signals
- Regex
- Network introduction

03 — 3rd Sprint

- Python - Object-relational mapping
- Python - Web framework
- Python - RESTful API
- Python - web scraping
- Javascript - first statements
- Javascript - objects
- Javascript - scopes and closures
- Javascript - web scraping
- Search algorithms
- SSH
- SSL certificate
- Web server
- Load balancer
- Firewall
- MySQL primary-replica
- Server monitoring
- Code deployment
- Postmortem
- Webstak debugging
- Portfolio project

Specialization

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Specialization in Augmented Reality & Virtual Reality

Create New Worlds

More than the latest gaming technology, AR/VR will drive new ways for all of us to experience and share the world, and you will be ready to be a part of this wave. Our Augmented Reality & Virtual Reality program fits people with strong interest in art, education, games, or storytelling.

The AR/VR program builds upon the first three sprints with a new language, C#, and with a focus on Unity3D, the world's most popular AR/VR engine. The AR/VR program has also been developed in partnership with Unity, the developers of the Unity3D engine, to help students get a career-ready education.

They will create a 3D game from start to finish to learn how to script interactive behavior, handle asset management, utilize textures and materials, design user interfaces (UI), create animations, utilize audio sources, and publish applications for a variety of platforms and devices.

Building on their proficiency in Unity development, students will then create, design, and program interactive experiences in AR with ARKit, ARCore, and Vuforia SDKs, and in VR with Oculus SDK, OpenVR, and Google VR SDKs.

Typical job titles include: AR/VR Developer, AR/VR Research Engineer, AR/VR Content Developer, Interaction Designer, UX Designer

Examples of Projects

- Build a VR game
- 360 video
- Seated/standing VR experience
- Room scale experience
- Marker-based recognition
- An AR or VR experience of one's own design

18 MONTH PROGRAM

18 MONTH PROGRAM

Augmented Reality & Virtual Reality

Foundations of Computer Science & Software Engineering

4th Sprint

04

- Fundamentals of programming in C#

- Introduction to Unity's interface and concepts

- Creating a basic maze game

- Creating a platformer game with models, textures, animation, audio, and UI

- Publishing and deploying cross-platform builds

- Basic linear algebra

- Test-driven development

5th Sprint

05

- Augmented reality
    - Image detection
    - Plane detection
- Virtual reality
    - 360 video
    - Room scale
- UI / UX concepts
    - interaction design
    - User comfort
    - Accessibility

6th Sprint

06

- ShaderGraph and shader programming

- Portfolio project pitch and development (3D, AR, or VR project of the your choosing, solo or with a group)

Graduate

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Contact us

Connect with our team

Our projects-based programs are designed with your success in mind.

Along with Augmented Reality & Virtual Reality, we offer emerging technology Specialization programs:
- Full-Stack Web Development,,
- Low Level and Algorithms,
- Machine Learning,
- DevOps,
- Front-end Web Development,
- Back-end Development,
- And many more, depending on your needs.

All programs can be customized based on your needs; you specify the length, the pace, and the pedagogical goals. Let's get started

Visit our Website: www.holberton.us