

# Foundations of Computer Science and Augmented Reality & Virtual Reality

**18-month Program**



## Become a Software Engineer - For real

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Our intensive program will first introduce you to the Foundations of computer science and Software Engineering, then specialize in what drives you.

The first three sprints of our program covers the Foundations of Computer Science and Software Engineering, including Linux, data structures, algorithms, low-level programming languages, high-level modern languages, databases, APIs, and DevOps.

Then, the last 3 sprints are dedicated to specialization: you'll become a Master of Augmented Reality and Virtual Reality



# What to Expect

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### 1) No pre-course

Holberton School does not expect students to come in with previous software engineering experience (although if you do have experience, that's awesome too).

There is no **pre-course** work (that's why you are attending a school after all), but we do recommend that you read through The C Programming Language book by Kernighan and Ritchie or Programming in C by Stephen Kochan.

The goal of reading through the book is not to deeply understand all the concepts, but to familiarize yourself with key terminology and content.

### 2) Coursework

We are training you to be a full-stack software engineers in 12 months. The program will be intense.

There are no formal teachers or formal lectures. Students are learning by creating and we rely on peer-learning, collaboration, and industry-relevant curriculum to guide the way.

There is no competition here at Holberton School, rather students are helping each other towards their goals. Of course, there is also technical staff available to answer questions and extend support.

### 3) Professional development

We know that the skills to get a job are different from the skills to be good at a job. From week zero, we immerse students in professional growth and development via workshops, projects, meetups, and work simulations.

Whiteboarding, mock interviews, professional networking, and more begin as soon as students start the program so that they're confident and competent when the time comes to prove they're ready for the job.

### 4) Soft Skills

In today's tech world, it's not enough to be good at technical skills, you need to be a clear communicator as well.

We push our students to work on their public speaking skills, to publish blog posts to online tech communities and publications, and to speak at conferences and meetups.

This not only prepares students to be team players and clear communicators, but creates amazing networking opportunities.

### 5) Included in All Holberton School Sprints

Technical writing: It is an invaluable skill and an excellent way to articulate and share your knowledge.

Collaboration: It's key to successful business. You will learn project management, interpersonal communication, and team collaboration skills.

The Framework: it provides the structure, order, and balance necessary to maintain a productive peer learning environment and will help you succeed throughout your career.

Whiteboarding: it is an essential skill in the tech industry, both for effective planning and for excelling in tech interviews.

Mock Interviews: it is not enough for you to know the answers to the questions; you need to be able to clearly communicate your thought processes and understanding

# What You'll Learn

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## Foundations of Computer Science

This foundational knowledge of how computers and programming languages work will allow you to optimize and debug anything later on in your professional career. You 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, you'll work in C and Unix programming, graphical programming, data structures, assembly language, and algorithms as well as reverse engineering and security protocols.

From there, you are introduced to higher-level languages, increasingly advanced algorithms, space and time complexity, database management, and Front-End programming. Using the latest technologies, you will begin to create a complete web application project that will span the rest of the foundations sprints.

The final sprint of foundations emphasizes automation, scalability, and reliability, so that you are familiar with the infrastructure and best practices similar to those in tech powerhouses. Alongside a continuation in web development, you'll also advance in algorithmic understanding, technical writing, debugging, and project management.

## Examples of Projects

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

Curriculum  
Foundations 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



## Augmented Reality & Virtual Reality

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### Create New Worlds

Augmented Reality and Virtual Reality (AR/VR) is more than the latest gaming technology. With AR/VR, students in California can tour the pyramids of Egypt, doctors can practice lifesaving procedures, or you can even virtually test out furniture in your own living room. 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. If you love art, education, games, or storytelling, our Augmented Reality & Virtual Reality program might be the right fit for you.

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 you get a career-ready education.

You 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 your proficiency in Unity development, you 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 your own design

## Curriculum Augmented Reality & Virtual Reality

Foundations of  
Computer Science  
&  
Software Engineering

04

### 4th Sprint

- 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

06

### 6th Sprint

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

Graduate





### The application Process

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Our selection process is based only on talent and motivation. We don't care what degrees you may or may not have if you have any previous programming experience. If you possess curiosity, determination, and drive to succeed, then we want you as a Holberton School student.

Our automated admissions process aims to remove human biases. It was created specifically to identify smart, motivated people and doesn't take into account previous education, work experience, gender, ethnicity, or age. There's also no cost to apply. — the only requirements are you must be 18 years old.

Start your application today: <https://apply.holbertonschool.com/>

### Flexible Tuition Options

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We don't think that financial capacity should be a barrier. That's why at Holberton School, we offer flexible tuition options that allow you to focus on school, not tuition.

Holberton through its alliance with Anáhuac, bring this opportunity to México with a flexible financial plan. We offer minimum payments that allow you to focus on your education.

Twice a week, we have live meetings where you can check the total cost of the program you are interested in, scholarships, and personalized financing options.

Contact us and an advisor will review your case to provide you the best scenario.



## Contact us

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Connect with your local campus.

Check out our [Locations](#) page to find contact information and explore events, workshops, and networking opportunities in your city.

You can contact us by mail: [lisset.cervera@anahuac.mx](mailto:lisset.cervera@anahuac.mx) or by Whatsapp: +52 55 7235 1486.

Also, you can find us on social media like Holberton México.