

# ALX Software Engineering Programme

The Fountain of Truth

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**Student Guide**



# Welcome to the ALX SE Program Guide.

This is your one-stop shop for all things related to your participation in this ALX SE Programme Experience.

# Introduction to the ALX SE Programme

# Welcome to the ALX Software Engineering Program Guide.

In this document you would learn and discover everything you need to know about your participation in the ALX Software Engineering programme.

This is your personal map to understanding everything about this program, Unsure about the first step to take on your first, second or fifth day, the answer is probably in here. If you are wondering how to do something, the process document is probably linked somewhere in here.

We have carefully designed this document to break down your journey in this program in terms of approach, principles, methodology, requirements, and design.

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# Our Goal

Through this programme our major goal is to evolve the next generation of software engineers which includes you. This involves providing an agile learning environment that is focused on getting you started with the basics of software development and engaging you in a variety of technical projects which would increase your knowledge base and employability potential.

This program is structured around two key categories--

## Technical Skills

Hands on experience in developing software as well as establishing theoretical foundations.



## Soft and Professional Skills

Equipping young leaders with just the right amount of work ready skills that could ensure they are connected to paid opportunities faster.

# Program Objectives

We are on a mission and through this software engineering programme experience our objective is to;

- 1.** Develop a growing pool of Software Engineering talent
- 2.** Create and manage a learning environment that trains technology enthusiast with little or no level of experience at scale.
- 3.** Increase the employability potential of participants in this programme.

It is our hope that through this program candidates can discover a new career path that could contribute to the development of their immediate communities as they acquire the necessary developer skills in their quest of building functional projects.

For us, this program would contribute to the growing pool of talent and play a part in strengthening the population of SE's in Africa that can be connected to paid-opportunities.

# How This Program Works



## LEARNING THE BASICS

Students get to **kickstart their SE journeys** by engaging with foundation programming resources



## PROJECT BASED

Students work on **projects** alongside peers (PLD's) to build programming muscles



## COMMUNITY FOCUSED

All our students are part of a strong **community of impact-driven doers and builders**



# Our Program Curriculum

In this part we take you on a deep-dive into this programme curriculum, what you can expect as you interface with the technical topics and sessions.

# Curriculum Overview

The software engineering curriculum is a peer-driven curriculum designed by Holberton with the ultimate goal of teaching you to **“Own Your Own Learning”** to ultimately develop the skill and the muscle to be a better software engineers.

The content, delivery, methodology, ordering, and occasional vagueness of the curriculum is by design.

Holberton has a deep commitment to providing high-quality education; we do not just want to help students understand something in a given project - we want them to have the tools to continue to learn for life.

Its core components are:

- Foundations
- Specializations

# Your Programme Curriculum

## FOUNDATIONS

### Sprint 1

- Git & 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 Shell

### Sprint 2

- Python - first statements
- Python - import & 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

### Sprint 3

- 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
- Webstack debugging
- Portfolio project

## SPECIALIZATIONS

### Sprint 4

- ES6 introduction / promise
- ES6 classes / data manipulation
- TypeScript
- HTML / CSS advanced
- Developer tools
- Responsive design
- Webpack
- React introduction / props
- React component
- React inline-styling
- React state / immutable
- React Redux - action creator/normalizr
- React Redux - reducer/selector
- React Redux - connector/provider

### Sprint 5

- ES6 introduction / promise
- ES6 classes / data manipulation
- TypeScript
- Python
- async
- MySQL advanced
- NoSQL introduction
- Redis introduction
- API Pagination
- Caching algorithms
- Unit & integration tests
- i18n
- Personal data
- User authentications
- Node JS introduction
- Queuing system
- GraphQL API
- Async file API

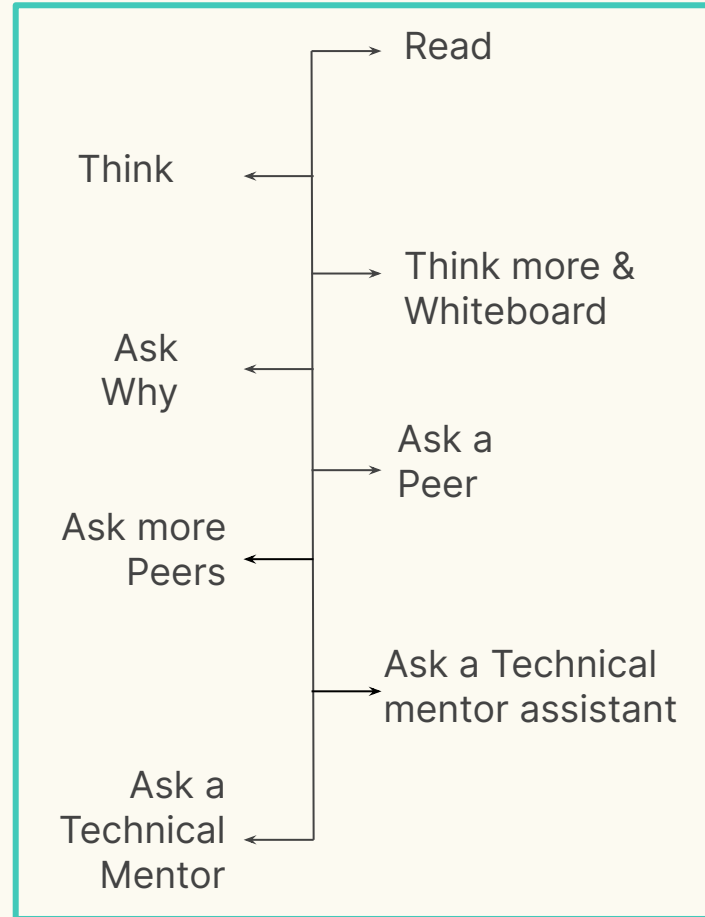
You would be required to complete learning contents and projects in all of these. All of these learning activities are scored and graded- On completion of this learning requirements, you would be offered a transcript as proof of engagement

# The Framework

## (Overview)

We built out this framework to represent a learning methodology that fosters a safe, collaborative space for you to critically think as well as grow in your career while offering encouragement and development across the our learning community.

We believe that this framework is the result of a balance between self-development and collaboration- one that supports the concept of Owning Your Learning but subscribes to the truth that we, indeed, go farther when we go together.

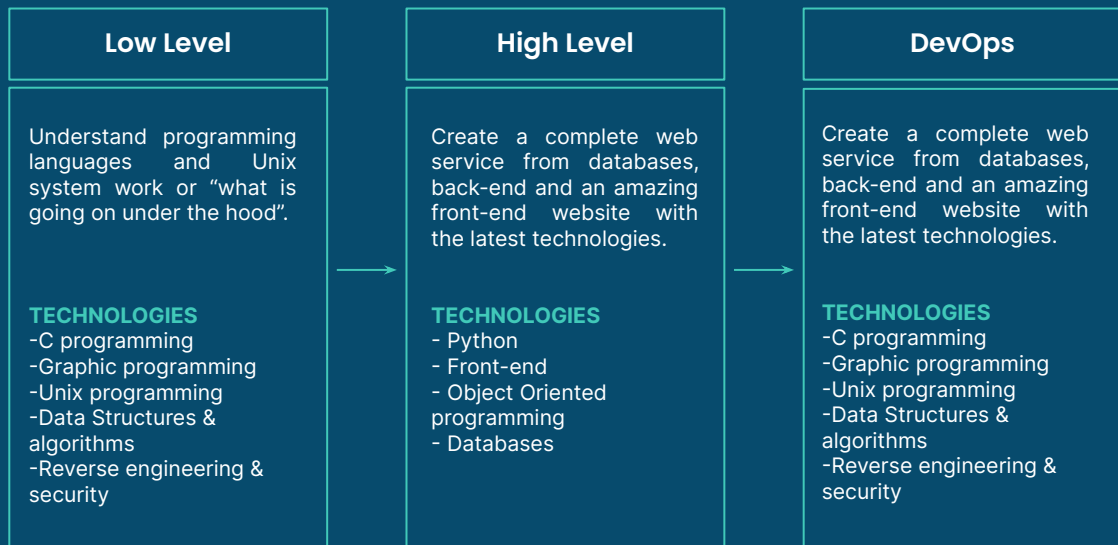


## Our **LEARNING APPROACH**

In this part you would understand better the learning approach that we have mapped out for you. These includes technology languages, learning platforms as well as learning resources and engagement exercises that could foster learning.

# Programme Structure

## FOUNDATIONS (9 Months)



## SPECIALIZATION (3 Months)



These are foundation languages you need to launch your career in software technology, we have carefully mapped out these technologies in terms of their level of complexity.

# The Intranet

The Intranet is our learning, communication and engagement platform used to provide learning resources, engage with students and also support all key stakeholders who interface with this SE programme.

Program  
Intranet

The screenshot displays the alx intranet interface at [www.alx-intranet.hbtn.io](http://www.alx-intranet.hbtn.io). The user is logged in as 'Staff' and can switch to 'Student' mode. The interface is divided into several sections:

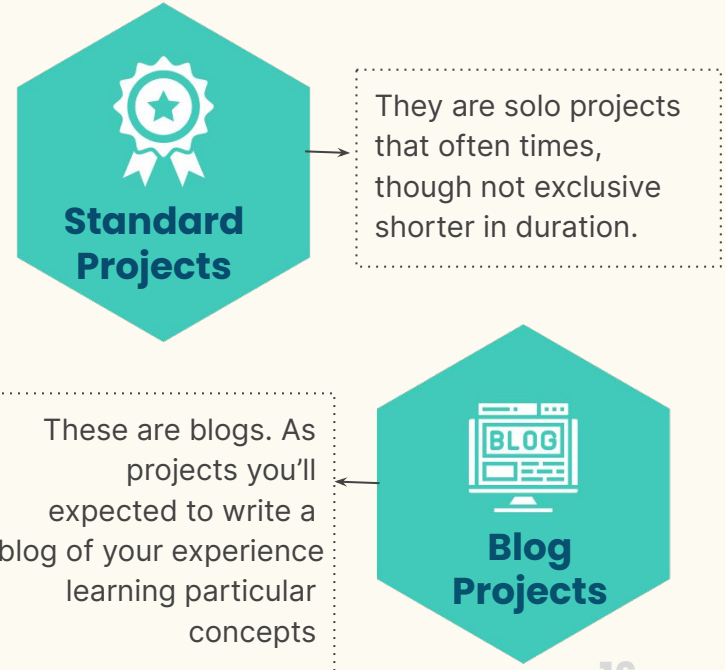
- Current peer learning days:**
  - 388 Peer learning day "Peer learning day #2" - AFR-0121 cohort
  - Date: **Fri 12/10**
  - For projects:
    - 1191 : 0x00. Advanced HTML
    - 1192 : 0x01. Developer tools
    - 1215 : 0x02. Minimum Operations
    - 1238 : 0x01. Python - Async
    - 1231 : 0x02. Python - Async Comprehension
    - 1232 : 0x00. MySQL advanced
  - See groups - Edit groups
- Future projects:**
  - 258 0x08. Python - More Classes and Objects - AFR-0821 cohort - Foundations
  - 252 0x09. Python - Everything is object - AFR-0821 cohort - Foundations
- Current projects:**
- QA reviews to do:**
  - 1189 0x01. Developer tools - AFR-0121 cohort - Short Specializations started on Wed 12/08, **deadline for a second chance before 12/11 (in about 21 hours)**  
12 QA reviews are pending (project ongoing)
  - 235 0x16. C - Simple Shell - AFR-1021 cohort - Foundations started on Wed 12/08, **deadline before 12/22 (in 12 days)**  
60 QA reviews are pending (project ongoing)
  - 298 0x04. AirBnB clone - Web framework - AFR-0121 cohort - Foundations Project over  
1 QA review is pending (New Review)
  - 361 Research & Project approval (Part 1) - AFR-0121 cohort - Foundations Project over  
5 QA reviews are pending (New Review)
  - 389 0x06. AirBnB clone - Web dynamic - AFR-0121 cohort - Foundations Project over  
4 QA reviews are pending (New Review)
  - 294 0x19. Postmortem - AFR-0121 cohort - Foundations Project over

# Project/Task

This provides an overview of the nature of projects you will take on while engaged in the programme.

You would be required to complete all of these projects on time and support other students with reviews when necessary.

In this first week we have mapped out mandatory assignments for you to take on– Let's get started!



They are group and team projects that are longer in duration. These facilitate not only technical growth in regards to repository management, but also emotional intelligence and conflict resolution

**Group/Team Projects**

These are blogs. As projects you'll expected to write a blog of your experience learning particular concepts

**Blog Projects**



# How We Engage With You As A Learner.

We have designed dedicated activities to foster your learning by connecting with your community for support while equipping you with key work-ready skills; Collaboration, communication across teams.

Activity	Description/Function
<a href="#">Peer Learning Days</a>	PLD's start at 9 am and end at 3 pm unless stated otherwise. However, given the nature of the programmes [remote], execution of PLD's are left in the hands of the participants.
<b>Live Coding Sessions</b>	Live coding sessions are a great way for participants to review and reinforce your knowledge and concepts with the guide of mentors..
<b>Evaluation Quizzes</b>	Evaluation quizzes are taken monthly to test comprehension and understanding of concepts. They are a good indication that the students need to work on reviewing concepts.
<b>Mock Interviews</b>	Mock Interviews are one of the ways we kick-off work-readiness and talent preparations before learners from a cohort graduate and begin to take on job interviews.
<b>Campus slack channel</b>	This is your campus(country)-specific channel for engagement and interaction.
<a href="#">Buddy System</a>	The buddy system is an opportunity for you to grow and develop your network. It's a chance to form a close-knit circle of deep friendships that works as a support system and motivation for you as you navigate the program.

## Our PROGRAM MODALITIES

In this section we take a deep dive into all key modalities involved in this Programme  
We leverage these modalities to not only properly engage with you but also support you as you interface with this SE programme.

# Component 1: Staying Active In The Programme

A key participation metric for this programme is staying active on the **Intranet**. This includes login in daily to digest learning resources, completing assigned task and project and reviewing attached projects.

The **intranet** is designed to automatically validate active participants who have an average score of **80%** in their foundations and assign specialization tracks to them.

It is important that you hit a **80%** mark during the Foundation stage of your curriculum.

The following criteria are used to manually validate your participation and to also identify if you have hit the mandatory 80% cutoff.

- You must be an active students on the intranet.
- You must have completed 80% of the projects in all the 3 sprints.
- In each sprint, You must have an average score of 30% on each project per sprint.

## Component 2: An Introduction To Your Technical Mentor(Role)

We have assigned some of the best technology experts to guide you in this programme. Their role is really simple;

- Focus on amplifying your technical expertise.
- Clear blockers and obstacles that you may face while in the programme.
- Support you towards programme success, by engaging with you in specially designed facilitator sessions.
- Monitor your progress as you engage with this curriculum
- Guide and prepare you for potential career opportunities

### How Can I Access A Technical Mentor

Step 1: Meet your technical mentors

By completing the resources provided in the onboarding package, we have gone ahead to identify all technical mentors available to you in this program.

Step 2: Reason for engagement.

Due to the growing size of our learning community we have built a standardized process for engaging with technical mentors. The first step to this engagement is utilizing the slack #Ask-Mentor channel.

# Component 2: An Introduction To Your Technical Mentor(Role)

## How Can I Access A Technical Mentor

### Step 3: Mentor Feedback & Response time

Our standard response and feedback time is between 6-18 hours. This is due to the size of our learning community and the intricacy involved in mentors response and feedback.

Our technical mentors have been trained to deal with students needs on a case by case basis.

# Component 3:

## Deferment/Withdrawal/Dismissal

### What's the difference between deferment, withdrawal, dismissal

Deferment: the student asks to be integrated in the first or second next cohort and will restart its studies when he paused

Withdrawal: the student decides to withdraw and restart again

Dismissal: the student get dismissed from the Programme

### Who can defer?

a. Participants who have completed probation in sprint 1 agreed by the Program & Community team; b. Any student between sprints 2-4 whose reasons fall under those agreed by the Program & Community team

### Who can withdraw?

a. Participants who are yet to complete onboarding (first 2 weeks of the program); b. Participants who are yet to complete probation (80% cut-off mark); c. Any participant who has made it past probation but wishes to leave the program

### Who can be dismissed?

a. The student is dismissed from the program by the Program & Community team or Technical Mentors as guided by the code of conduct; b. Student do not reach the 80% threshold during the probation phase

# Component 3: Deferment/Dismissal

**Can you withdraw if you are during the Probation period?**

Yes, but you cannot defer

**What is considered a “controllable life change”?**

a. I got a job; b. Mild illnesses ie Headache, Malaria etc

**Can you defer if you face a controllable life change?**

No

**What is considered an “uncontrollable life change”?**

a. Death/loss; b. Instability in country; c. Government/country instability; d. Severe health challenge

**Can you defer if you face an uncontrollable life change?**

Yes

**Can you defer if you do not have a PC or it is temporarily unavailable?**

No, it is possible to code with your phone, unless you are in Sprint 2 or 3 - in this last case you can defer

**Can you defer if you lack motivation?**

No, you can do it!

# Component 3: Deferment/Dismissal



## How can you defer or withdraw?

Fill out this form (link) and you will be redirected to the right path



# Our LEARNING COMMUNITY

In this section we take a deep -dive into our community, from engagements, to our support structure as well as our network. From this section you can access all tools.

# The ALX SE Community

Our community is made up of every participant and learning stakeholder in this program. Our community prides itself as a hub of aspiring technologists. As a community we leverage support from each and every member and our watchword is paced growth.



## Support Structure

How we will support students throughout the programme; Peer Support, Squads, Check-In, Live Sessions.



## Slack Support Network

The support you receive on our slack community, all the relevant channels, and what to expect from them.



## Asking For Help

Our SE community creates an environment for you to get help when needed.

# Peer Support

Our first approach towards peer support is through a concept called PLD's

## What is a PLD

Peer Learning Days are one of the ways we can ensure that every student in our community understands the available learning content and resources shared.

We leverage this method to ensure that you on the right part to collectively growing in technical, soft, and professional skills.

PLDs are when you will collaboratively review prior projects with an intranet-assigned group of cohort peers.

With your group, you will review these recent concepts and tasks by defining your objectives and clarifying action items for success.

# Campuses

## What is a Campus?

You are paired with other student of approximately 30 participants or more within the same country or region. This is a smaller subset of participants that you can engage with and you can work closely together, think of them as your cohort buddies.

## What our expectations are from Campuses?

- Sharing of Weekly Standups
- Team engagement to solve blockers
- Live Weekly Check-in Call including a practice peer coaching breakout session

# Peer Support

## How often do we check-in on students?

Every week

## How do we check-in/keep in touch with students?

Students are expected to keep in touch through weekly standups

Standups are to be shared every week on your Campus channel and your peers will do the same as well. Below is the weekly standup script;

***Last week I accomplished :*** (include task you worked on last week).

***This week I'm planning to :*** (include task you plan to achieve this week).

***Blockers :*** (include things you need help resolving).

***Appreciation :*** (include shouts out to individuals who helped you while stuck last week).

***Channel:*** Campys channel

***When:*** Weekly on Monday

# Live Sessions

Live sessions are one of the ways we keep you engaged as well as foster your, we hold several live sessions on a routine basis;

Activity	Description/Function
Monthly Campus Check-in	Students are expected to attend and engage in monthly check-in sessions
Live Learning Sessions	The ALX Software Eng team holds Live Learning sessions lead by our Technical Mentors. During these sessions, our mentors do a deep-dive into a particular topic
Walk-in sessions	These are weekly spaces held by our Technical Mentors to bond, assist and engage with our participants
Technical Meetups	We hold meetups led by our technical mentors and external speakers where we focus on specific topics.

# Thank you!

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ALX Software Engineering Program