

# ALX Software Engineering Programme

The Fountain of Truth

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**Student Guide**

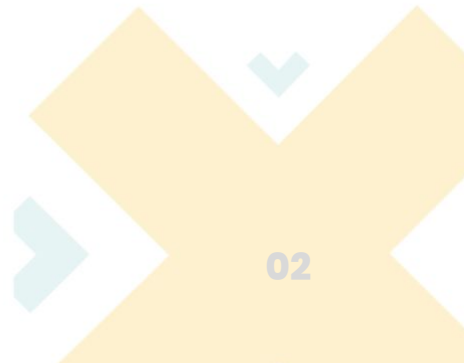




# Welcome

To the **ALX Software Engineering Programme** and congratulations for choosing to take this journey with us - This guide is your personal GPS to all things related to your participation in this learning Experience.

Let's get started!



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# Our Goal

We are focused on contributing to your growth as a Software Engineer as we build the next generation of quality Software Engineers which includes you.

To achieve this we operate an agile learning environment that introduces you to the basic concept of software development.

This program is structured to empower you with two major categories of skills -

## 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 with the ultimate goal of teaching you to **“Own Your Own Learning”**.

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

We have 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.

This program and curriculum is split into two phases Its core components are:

- Foundations Phase (9 Months)
- Specializations Phase (3 Months)



# Your Programme Curriculum

## FOUNDATIONS

### Section 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

### Section 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

### Section 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

### Section 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

### Section 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

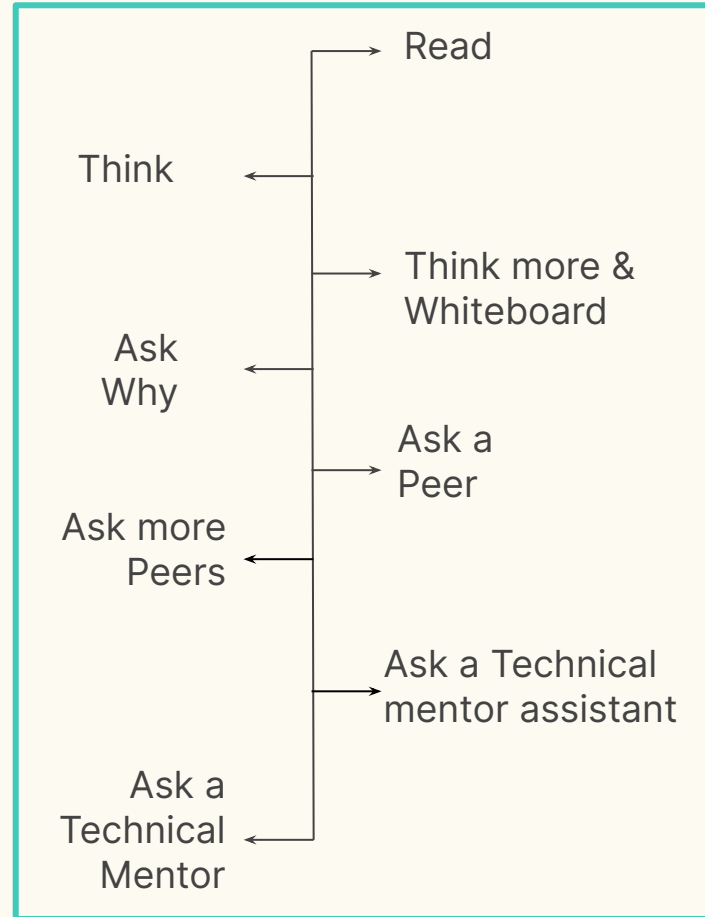
You would be required to complete learning contents and projects in all of these. All of these learning activities are scored and graded- On completion of this learning requirements, you would be offered a transcript as proof of engagement

# 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.

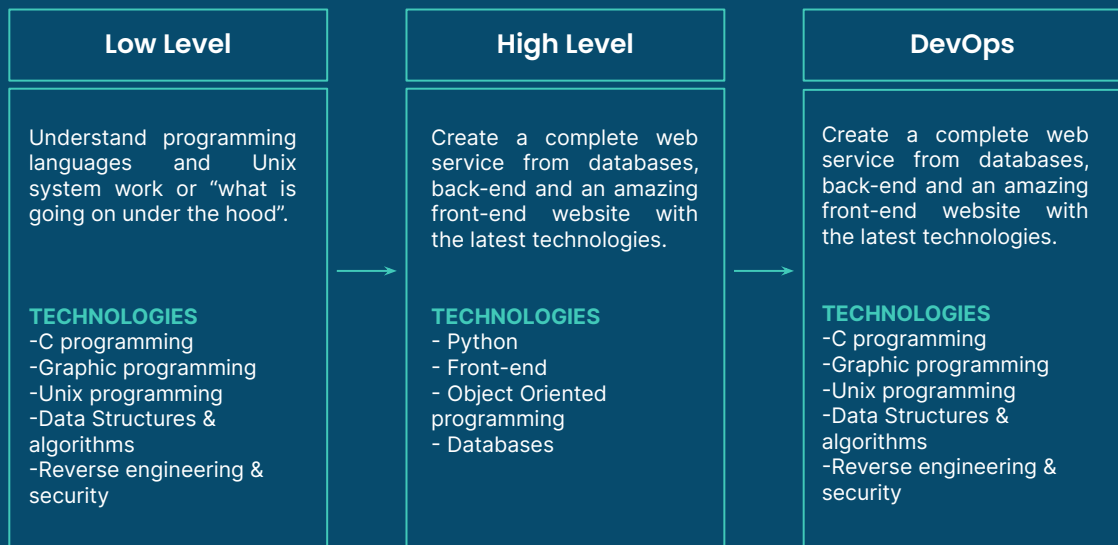


## Our **LEARNING APPROACH**

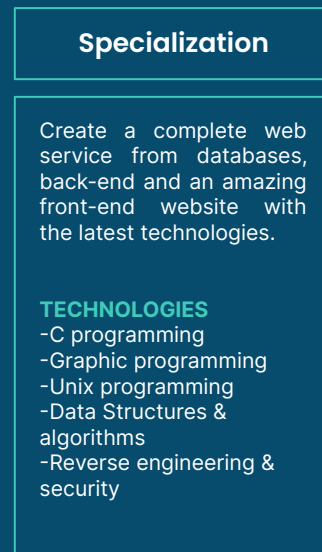
In this part you would understand better the learning approach that we have mapped out for you. These includes technology languages, learning platforms as well as learning resources and engagement exercises that could foster learning.

# 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. This is where all of your learning happenings. We launch new projects on this platform as well as the platform where you submit tasks that you have completed so they can be graded.

Program  
Intranet

You will receive log-in instructions in the next few emails you will receive from us.

[www.alx-intranet.hbtn.io](http://www.alx-intranet.hbtn.io)

You are currently connected as **Staff** [Switch to: Student](#)

**Current peer learning days**

198 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**

250 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**

119 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)

290 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

# 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>Campus slack channel</b>	This is your campus(country)-specific channel for engagement and interaction.
<b>Announcements</b>	Leverage your cohorts #Announcement channels on slack to get hear the latest happenings in this learning community.
<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.

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<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.
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# 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!





# 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 sections.
- In each section, You must have an average score of 30% on each project per section.

# 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 mention using @cNmentor - replacing N with your cohort number in the appropriate 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?

- Participants who have completed probation in section 1 agreed by the Program & Community team
- Any student between sections 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 Section 2 or 3 - in this last case you can defer

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

No, you can do it!

## 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, Buddy Groups, 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.

# Our Learning Community



We've got a line-up of sessions to keep you engaged as well as foster your, we hold these sessions on a routine basis and they all happen on Youtube.

Activity	Description/Function
Live Learning Sessions	Technical Mentors assigned to your cohort hold weekly Live Learning Sessions, the focus of these sessions are to give an overview of a new concept in line with a project in your curriculum. Think of it as an introductory class.
Walk-in sessions	These are weekly spaces held by our Technical Mentors to bond, assist and engage with our participants. Experiencing blockers or you just need to have a chat with a mentor? This is where you can get help.
Expert Sessions	We bring in the experts so that you don't have to go searching for them. From technical topics, to workshops on soft skills, to topics that teach you great networking skills, we have you covered. These happen bi-weekly. Look out for more info from the community team.
Live Coding Session	Monthly sessions facilitated by <a href="#">Julien Barbier</a> that expounds on technical concepts that are bound to increase your technical knowledge.
Student Live Discussions	From topics on Imposter Syndrome, Time management, and building a winning study plan - In this session, we let you do the talking by sharing your experiences for the benefit of other members in this learning community.
Town-Hall Sessions	Through our town-hall session, you have control of the event flow. Got a question, need to share your feedback this is where it all happens, plus we use this time to update you on the latest happenings in our learning community.
Milestone Celebration	Every day of being active in this learning program is truly worth celebrating - But we have a line up of important milestones that require a ton of celebration; new sprint/section, specialization Phase, and graduation.

# Thank you!

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ALX Software Engineering Program