SOFTWARE ENGINEERING PREPARATORY COURSE

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Pre-preparation Course Tools

- Strong Motivation
- Determination
- Smart & Hard Work
- Team Work
- Laptop
- Internet Connection

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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

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Program Structure

FOUNDATIONS (9 Months)

Low Level

Understand programming languages and Unix system work or "what is going on under the hood".

TECHNOLOGIES
- C programming
- Graphic programming
- Unix programming
- Data Structures & algorithms
- Reverse engineering & security

High Level

Create a complete web service from databases, back-end and an amazing front-end website with the latest technologies.

TECHNOLOGIES
- Python
- Front-end
- Object Oriented programming
- Databases

DevOps

Create a complete web service from databases, back-end and an amazing front-end website with the latest technologies.

TECHNOLOGIES
- C programming
- Graphic programming
- Unix programming
- Data Structures & algorithms
- Reverse engineering & security

SPECIALIZATION (3 Months)

Specialization

Create a complete web service from databases, back-end and an amazing front-end website with the latest technologies.

TECHNOLOGIES
- C programming
- Graphic programming
- Unix programming
- Data Structures & algorithms
- Reverse engineering & security

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Main Course

- Starting February, 20th 2023

- 9 Months Duration
  - Module 1: Foundations - (9 Months)
  - Module 2: Specialization - (3 Months)

- Connection with Fellow students.

- TechONE Project Work.

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Prep Course Study Plan
DAILY TIMELINE

- Self Studies & Project / Assignment Completion & 1(One) hour Break
  - 24 / 7

- Group Discussion (Via Zoom & Face to Face). All discussion will be recorded for future studies.
  - Saturday – 10 am - (Done)

- Ask Questions Via Google Classroom or Whatsapp

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Prep Course Study Platform
Google Classroom & WHATSAPP

- Class Code
  - d6qokri

- Questions
  - Your Fellow Interns are your first point of Contact. Instructors will contribute or add up further explanation if necessary.

  - Course Instructors are your last resort. Situation where no interns know the answer

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INTRANET

ALX INTRANET

PROJECT PAGE

- Project Details
  - Lecturer name
  - Project deadline

- Project Resources
  - Study Links
  - Learning Objective
  - General Requirements

- Quiz Questions
  - Multiple Choice Questions

- Tasks

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- How to Log in to Intranet
  https://www.youtube.com/watch?v=FVkuPN6AmDk

- How to use Intranet
  https://www.youtube.com/watch?v=OIiCn730SUw

- How to Navigate the Intranet Dashboard
  https://www.youtube.com/watch?v=woZ70ZgsXY8

  https://www.youtube.com/watch?v=_5wNLx0Npf8

- Getting to Know Intranet
  https://www.youtube.com/watch?v=FfaO9m4pMeI

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- Deep Dive in to Intranet
  https://www.youtube.com/watch?v=-vKgUaTxtvI

  https://www.youtube.com/watch?v=nu5r-eypN44

  https://www.youtube.com/watch?v=nqM7U6RFlAY

  https://www.youtube.com/watch?v=QyxedH7rSBE

  https://www.youtube.com/watch?v=-vKgUaTxtvI&t=3s

- How to Use slack on ALX

  https://www.youtube.com/watch?v=vaT2XHEcRAI

ALX PASS STUDENT EXPERIENCE

- https://www.youtube.com/watch?v=rH24zv_mEgw

- https://www.youtube.com/watch?v=ucV6poetjEg

- https://www.youtube.com/watch?v=tJPcbFd-ugQ

- https://www.youtube.com/watch?v=f1JrJYeGVEE

- https://www.youtube.com/watch?v=qHaXH8bIigw

- https://www.youtube.com/watch?v=xj6qotgROAg

- https://www.youtube.com/watch?v=93TJ8iQWrI0

How the Computer Works

- https://www.explainthatstuff.com/howcomputerswork.html

- https://www.makeuseof.com/how-does-a-computer-work

- https://www.youtube.com/watch?v=mCq8-xTH7jA

- https://www.youtube.com/watch?v=OAx_6-wdsIM&list=PLzdnOPI1iJNcsRwJhvksEo1tJqjIqWbN-

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GIT & Command Line Editors

- **VIM or VI**

  https://www.vim.org/download.php
  https://www.youtube.com/watch?v=rsa_2dzPIAA

- **EMACS**

  https://www.gnu.org/software/emacs/download.html

  https://www.youtube.com/watch?v=XqPMcUJv0rc
  https://www.youtube.com/watch?v=22VvosQXVLM
  https://www.youtube.com/watch?v=sZo28gECfbU
  https://www2.hawaii.edu/~walbritt/ics211/materials/emacs.htm

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INTRODUCTION TO BASH

- https://cs.lmu.edu/~ray/notes/bash/

- https://livecodestream.dev/post/introduction-to-bash-for-beginners/

- https://www.developer.com/open-source/an-introduction-to-bash-scripting-developer-com/

- https://www.developer.com/open-source/an-introduction-to-bash-scripting-developer-com/

- https://www.mygreatlearning.com/iot/tutorials/electronics-wearable-devices

C PROGRAMMING
Useful links

- https://www.javatpoint.com/c-programming-language-tutorial

- https://www.tutorialspoint.com/cprogramming/index.htm

- https://www.programiz.com/c-programming/comments

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C PROGRAMMING
First Statement

- https://www.geeksforgeeks.org/c-language-introduction/

- https://www.studytonight.com/c/first-c-program.php

- https://www.youtube.com/watch?v=LM6IjCbtpZA

- https://www.youtube.com/watch?v=o317uTnYXAg

- https://www.youtube.com/watch?v=xMqsKCmru5U

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C PROGRAMMING
Pointers

- https://www.youtube.com/watch?v=ta-HPQUoT34

- https://www.youtube.com/watch?v=o317uTnYXAg

- https://www.youtube.com/watch?v=xMqsKCmru5U

- https://www.youtube.com/watch?v=EGeTZ2Fx0Rg

- PEER DISCUSSION

- https://www.youtube.com/watch?v=bT5GTqZaYTk

- https://www.youtube.com/watch?v=KzLC_9VAoX0

- https://www.youtube.com/watch?v=WxWv9_8xlac

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C PROGRAMMING
Recursion

- https://www.w3schools.com/c/c_functions_recursion.php

- https://www.tutorialspoint.com/cprogramming/c_recursion.htm

- https://www.youtube.com/watch?v=V1wdyu0VIgM

- https://www.youtube.com/watch?v=FuC6qY-2jN4

- https://www.programiz.com/c-programming/c-recursion

- PEER DISCUSSION

- https://www.youtube.com/watch?v=0BtTPJOLPj0

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C PROGRAMMING
Static Library

- https://medium.com/@StueyGK/what-is-c-static-library-fb895b911db1

- https://www.geeksforgeeks.org/static-vs-dynamic-libraries/

- https://medium.datadriveninvestor.com/c-static-libraries-e620f1c1514f

- https://dev.to/iamkhalil42/all-you-need-to-know-about-c-static-libraries-1o0b

- https://www.youtube.com/watch?v=WrabDz_sEdM

- https://medium.com/@eightlimbed/how-to-create-and-use-a-c-static-library-eec33d502aeb

PEER DISCUSSION

- https://www.youtube.com/watch?v=0BtTPJOLPj0

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C PROGRAMMING
Memory Allocation

https://medium.com/@StueyGK/what-is-c-static-library-fb895b911db1

https://www.programiz.com/c-programming/c-dynamic-memory-allocation

https://www.geeksforgeeks.org/dynamic-memory-allocation-in-c-using-malloc-calloc-free-and-realloc/

https://www.javatpoint.com/dynamic-memory-allocation-in-c

https://www.youtube.com/watch?v=P2vaRhWNilw

https://www.youtube.com/watch?v=WuLOkFP2aO0

- PEER DISCUSSION

- https://www.youtube.com/watch?v=-za3kDtaMvY

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C PROGRAMMING Preprocessor

- https://www.tutorialspoint.com/cprogramming/c_preprocessors.htm
- https://www.programiz.com/c-programming/c-preprocessor-macros
- https://www.geeksforgeeks.org/cc-preprocessors/
- https://www.cprogramming.com/tutorial/cpreprocessor.html
- https://www.youtube.com/watch?v=1YEuQ9R7zZk
- https://www.youtube.com/watch?v=5_8GGo262sA

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C PROGRAMMING
Variadic Functions

- https://www.geeksforgeeks.org/variadic-functions-in-c/
- https://www.computerworld.com/article/2786058/variadic-functions.html
- https://medium.com/swlh/variadic-function-in-c-programming-d3632315a48e
- https://www.thegeekstuff.com/2017/05/c-variadic-functions/
- https://www.youtube.com/watch?v=TnCJ1n1DenA

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- https://www.youtube.com/watch?v=Lh7xydr8zzU

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C PROGRAMMING
File I/O

- https://www.tutorialspoint.com/cprogramming/c_file_io.htm
- https://www.geeksforgeeks.org/c-file-io/
- https://www.cprogramming.com/tutorial/cfileio.html
- https://www.guru99.com/c-file-input-output.html

- https://www.youtube.com/watch?v=KUfJS0IXjYE
- https://www.youtube.com/watch?v=DeIUSgA55BY
- https://www.youtube.com/watch?v=LPN3dpVCVyc

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C PROGRAMMING
Singly Linked List

- https://www.geeksforgeeks.org/what-is-linked-list/
- https://www.javatpoint.com/singly-linked-list
- https://www.simplilearn.com/tutorials/c-tutorial/singly-linked-list-in-c
- https://prepinsta.com/c-program/singly-linked-list/
- https://www.youtube.com/watch?v=K0-7jDeam58
- https://www.youtube.com/watch?v=weYdFokGavs

PEER DISCUSSION

- https://www.youtube.com/watch?v=WRnXN2CHsTc

C PROGRAMMING
Creating Printf

- http://www.firmcodes.com/write-printf-function-c/
- https://medium.com/@allannandweza/printf-project-at-alx-holberton-school-9986ec59678d
- https://www.tutorialspoint.com/c_standard_library/c_function_printf.htm
- https://www.youtube.com/watch?v=WmFkXgzaTmA

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C PROGRAMMING
Creating You Own Shell

- https://brennan.io/2015/01/16/write-a-shell-in-c/
- https://www.geeksforgeeks.org/making-linux-shell-c/
- https://www.youtube.com/watch?v=mGmRYpBTo-A
- https://blog.ehoneahobed.com/building-a-simple-shell-in-c-part-1

PEER DISCUSSION

- https://www.youtube.com/watch?app=desktop&v=4jYFqFsu03A

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C PROGRAMMING
Creating You Own Shell

- https://brennan.io/2015/01/16/write-a-shell-in-c/
- https://www.geeksforgeeks.org/making-linux-shell-c/
- https://www.youtube.com/watch?v=mGmRYpBTo-A
- https://blog.ehoneahobed.com/building-a-simple-shell-in-c-part-1

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