Planning is bringing the future into the present so that you can do someting about it now - Winston Churchill

My Learning Plan

a written plan containing my past, present and mostly future.

By

Mahdi Haghverdi

Supervised by

some nice people: My Friends

2023 1402

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Preface

After going up and down in my life, I finally found the way to study and learn well. This document has everything I want to do and resource I want to check.

After spending one whole semester in the university[1], it is got clear to me, that meanwhile studying, learning **new** things, is hard! It's possible but it's hard. So summers are the times which I have to value a lot and to make the most outta 'em. Also *Learning Journey must not be fixed-planned* and human must start learning at anytime. So because of all this, this document will contain many resources and things I want to learn but not fixed-planned. These are the goals and they must be achieved continuously.

At the time of writing this, there are 5 days remaining of the year, a long and hard year both for Iran, my love, and myself. I learned and grew a lot during this year. I spend a whole semester in university. Studied a lot, learned how to study well and meet many new and nice people.

But after all, I have to create a path to my actual career! This is the most important thing which I have to take care of. After working, searching and talking to many people, I've finally made my decision and chosen: *Data Science*. I really like this field, it's very amazing but hard to learn :) Beside this, I wanna learn backend engineering as well, 'cause it is much faster (faster to get result, lol) and has a slightly smaller learning curve.

This plan will be started from the summer of 1402 (2023), but I will be working and adding things to this document from time to time; there may be some new chapters or reorganization of the chapter but not now :D

[1] the 3rd semester

This will be a hot summer. It gets hot because of so many hours I want to study, both with video courses and with reading books. To learn data science I asked someone in our university who already is a data scientist, and he introduced me to the deep learning course of *Jeremy Howard*. This course is freely available on YouTube. Also this course needs a book nearby (written by Jeremy Howard) called *Deep Learning for Coders With Fastai and PyTorch*.

Besides learning data science, learning new things and refreshing my Python skills is something that I would never miss and enjoy a lot. The focus of this summer will be on the CPython implementation itself, so I've chosen some nice books on this field. I have gathered some more general books on Python too, but they would have a lesser priority.

Watching video courses and reading books are the main activities of the summer, but without spending or more precisely, *acquiring* time to rest, nobody can learn anything; listening to music and podcast and watching movies are the main non-active and biking is the main physical activity of my summer.

Some knowledge needs to be learned by video courses, and then be completed by reading books and researching in a long journey.

Me

1 Courses

Well, the major part of the summer is the courses, in this chapter I will introduce the courses I want to watch and some useful information about them.

Eash course is tagged with these:

- Learning curse
  - `Hard`
  - `Easy`
- Video duration
  - `Long`
  - `Short`
- Video Count: `Many`

Each course will have a subsection names as "Timing and Scheduling". In this subsection I will talk about the difficulty of the course and how I will watch that course starting from summer and afterwards.

1.1 FastAPI

> "FastAPI framework, high performance, easy to learn, fast to code, ready for production"
>
> fastapi.tiangolo.com

Easy Short Many

We all know FastAPI and there is no need for more introduction. The course I wanna watch is https://youtu.be/0sOvCWFmrtA

The course is a 19-hour long video which is downloaded and cut already. The important things are:

- The course is created one year ago and it is slightly outdated, so the documentation[1] must be read along the course.
- Course will just show you how to use FastAPI and the real learning happens when doing projects.
- It's good to define nice projects whenever I came to an idea e.g. *The API to send pictures of https://unsplash.com to my friends* :)

1.1.1 Timing and Scheduling

This is a course which is pretty long: about 19 hours of content, but it has a noticeable difference with the DL course: it has nearly 150 lessons and the durations of the lessons is short. Also FastAPI is easy, it is so so so much easier that DL. Besides all of this I wanna learn FastAPI fast and through the course away and do small to medium size projects with it. With all this considerations the timing and scheduling of this course will be as follows: I will watch and learn by concept. For example in week or two or three days I would learn the CRUD[2] operations of FastAPI.

[1] https://fastapi.tiangolo.com

[2] Create, Read, Update and Delete; It is said to point the basic operations of a web API and database

Doing projects with FastAPI is one of the critical and important things which I have to dedicate my time to do. Ideas for projects are much and will come to mind easily but doing them takes time and effort. After all **I should do projects.**

I am learning FastAPI because back-end has very nice opportunity to get a job as a junior developer, also in MLOps[3] I have to know back-end and Ops stuff well (that's why I wanna learn docker as well.)

[3] A career which is a mixture of Machine Learning + Development + Operations. It's all about data science but in a more DevOps manner.

I find television very educating. Every time somebody turns on the set, I go into the other room and read a book.

Groucho Marx

There is more treasure in books than in all the pirate's loot on Treasure Island.

Walt Disney

2 Books

You may argue me about what I want to say, however I found it true: "If you want to learn *something*, the real source is the books about it." This is absolutely true. No video course and no article and nothing else may contain the most valuable information about something. All the video courses and simple article ARE come from the books.

In this chapter I may introduce many invaluable books (most technical books but it may contain other books as well.)

Each section of this chapter has the name of the book which is a link to the post of that book in the store: `Skybooks.ir`, where I buy the books from. Then there maybe some tags under the name of the books, the whole tags are categorized in three categories:

1. Reading priority
    - `must-be-read`
    - `better-to-read`
    - `later-to-read`
2. Buying considerations:

(a) Number of pages

- `near-one-thousand-pages`
- `near-seven-hundred-pages`
- `near-five-hundred-pages`
- `near-two-hundred-pages`

(b) Price:

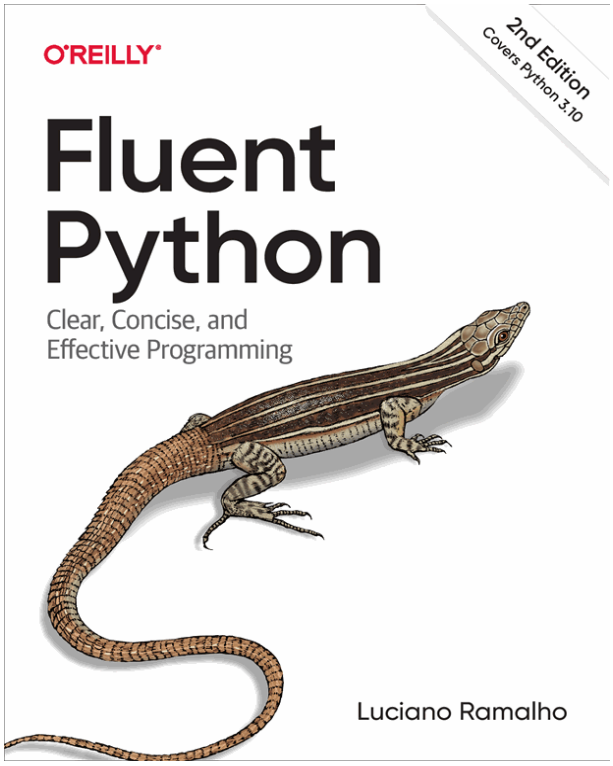
- `number T`
- `number T`
- `number T`
- `number T`
- `number T`

3. Book read: `read`
4. Printed or not: `printed`

The last section of this chapter will discuss how and when the books will be read by me :D

2.1 Fluent Python

better-to-read near-one-thousand-pages 505 T



Book link: https://skybooks.ir/products/Fluent-Python

Python's simplicity lets you become productive quickly, but often this means you aren't using everything it has to offer. With the updated edition of this hands-on guide, you'll learn how to write effective, modern Python 3 code by leveraging its best ideas. Don't waste time bending Python to fit patterns you learned in other languages. Discover and apply idiomatic Python 3 features beyond your past experience. Author Luciano Ramalho guides you through Python's core language features and libraries and teaches you how to make your code shorter, faster, and more readable.

Featuring major updates throughout the book, Fluent Python, second edition, covers:

1. Special methods: The key to the consistent behavior of Python objects
2. Data structures: Sequences, dicts, sets, Unicode, and data classes
3. Functions as objects: First-class functions, related design patterns, and type hints in function declarations
4. Object-oriented idioms: Composition, inheritance, mixins, interfaces, operator overloading, static typing and protocols
5. Control flow: Context managers, generators, coroutines, async/await, and thread/process pools
6. Metaprogramming: Properties, attribute descriptors, class decorators, and new class metaprogramming hooks that are simpler than meta-classes

2.2 Inside the Python Virtual Machine

must-be-read near-two-hundred-pages 88 T printed

Book link: https://skybooks.ir/products/Inside-The-Python-Virtual-Machine

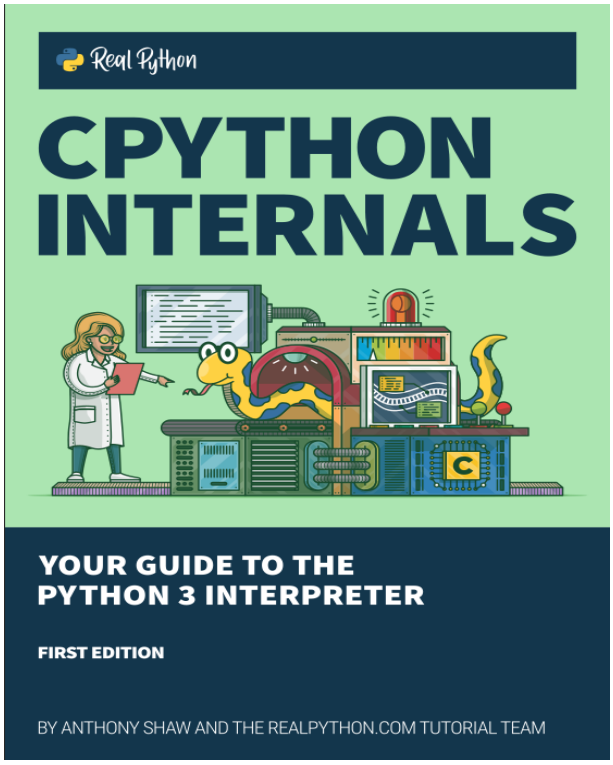
Inside the Python Virtual Machine provides a guided tour under the covers of the Python interpreter for the curious pythonista. It attempts to show the user what happens from the moment the user executes a piece of Python code to the point when the interpreter returns the result of executing the piece of code.

This book will provide the readers with an understanding of the various processes that go into compiling and executing a python program removing most of the mystery surrounding how the python interpreter executes source code.

The books starts out with a description of the compilation phase with emphasis on the less generic parts of the compilation phase. It then proceeds to discuss python objects and their implementation in CPython. This is followed by a discussion of various objects types that are central to the interpreter such as frame objects and code objects. The process of evaluating code objects by the interpreter loop is also discussed as well as how to extend the Python programming language with your own constructs.

2.3 CPython Internals

must-be-read near-five-hundred-pages 209 T printed



Book link: https://skybooks.ir/products/CPython-Internals

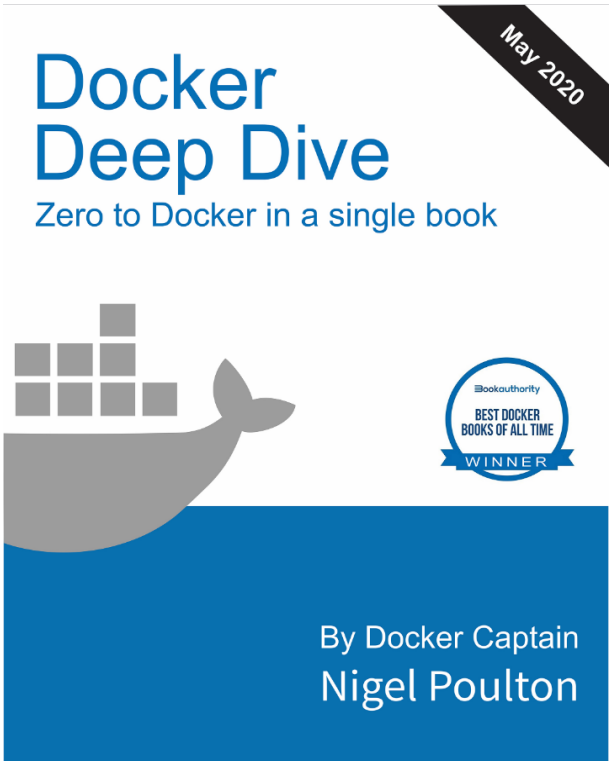
CPython Internals: Your Guide to the Python 3 Interpreter.

Are there certain parts of Python that just seem like magic? Once you see how Python works at the interpreter level, you'll be able to optimize your applications and fully leverage the power of Python.

In CPython Internals, you'll unlock the inner workings of the Python language, learn how to compile the Python interpreter from source code, and cover what you'll need to know to confidently start contributing to CPython yourself!

2.4 Docker Deep Dive

better-to-read near-two-hundred-pages 155 T



Book link: https://skybooks.ir/products/Docker-Deep-Dive

Most applications, even the funky cloud-native microservices ones, need high-performance, production-grade infrastructure to run on. Having impeccable knowledge of Docker will help you to thrive in the modern cloud-first world. With this book, you'll gain the skills you need to work with Docker and its containers.

The book begins with an introduction to containers and explains its functionality and application in the real world. You'll then get an overview of VMware, Kubernetes, and Docker and learn to install Docker on Windows, Mac, and Linux. Once you've understood the Ops and Dev perspective of

Docker, you'll be able to see the big picture and understand what Docker exactly does. The book then turns its attention to the more technical aspects, guiding your through practical exercises covering Docker engine, Docker images, and Docker containers. You'll learn techniques for containerizing an app, deploying apps with Docker Compose, and managing cloud-native applications with Swarm. You'll also build Docker networks and Docker overlay networks and handle applications that write persistent data. Finally, you'll deploy apps with Docker stacks and secure your Docker environment.

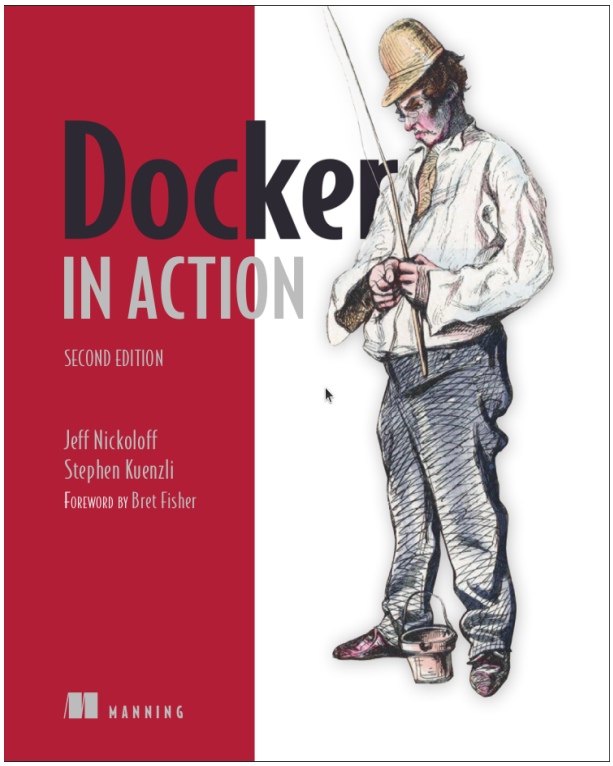
By the end of this book, you'll be well-versed in Docker and containers and have developed the skills to create, deploy, and run applications on the cloud.

What you will learn:

- Become familiar with the applications of Docker and containers
- Discover how to pull images into Docker host's local registry
- Find out how to containerize an app
- Build and test a Docker overlay network in the swarm mode
- Use Docker compose to deploy and manage multi-container applications
- Securely share sensitive data with containers and Swarm services

2.5 Docker in Action

must-be-read near-five-hundred-pages 189 T printed



"Jeff and Stephen took their battle-hardened experience and updated this already great book with new details and examples."

From the Foreword by Bret Fisher, Docker Captain and Container Consultant

Book link: https://skybooks.ir/products/Docker-in-Action

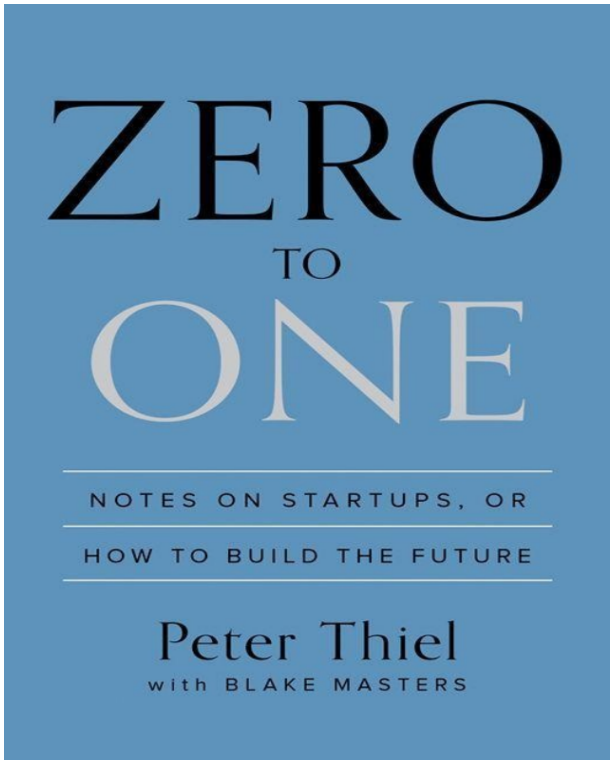
Docker in Action, Second Edition teaches you the skills and knowledge you need to create, deploy, and manage applications hosted in Docker containers. This bestseller has been fully updated with new examples, best practices, and a number of entirely new chapters.

about the technology
The idea behind Docker is simple—package just your application and its dependencies into a lightweight, isolated virtual environment called a container. Applications running inside containers are easy to install, manage, and remove. This simple idea is used in everything from creating safe, portable development environments to streamlining deployment and scaling for microservices. In short, Docker is everywhere.

about the book
Docker in Action, Second Edition teaches you to create, deploy, and manage applications hosted in Docker containers running on Linux. Fully updated, with four new chapters and revised best practices and examples, this second edition begins with a clear explanation of the Docker model. Then, you go hands-on with packaging applications, testing, installing, running programs securely, and deploying them across a cluster of hosts. With examples showing how Docker benefits the whole dev lifecycle, you'll discover techniques for everything from dev-and-test machines to full-scale cloud deployments.

2.6 Zero to One

later-to-read near-two-hundred-pages 110 T



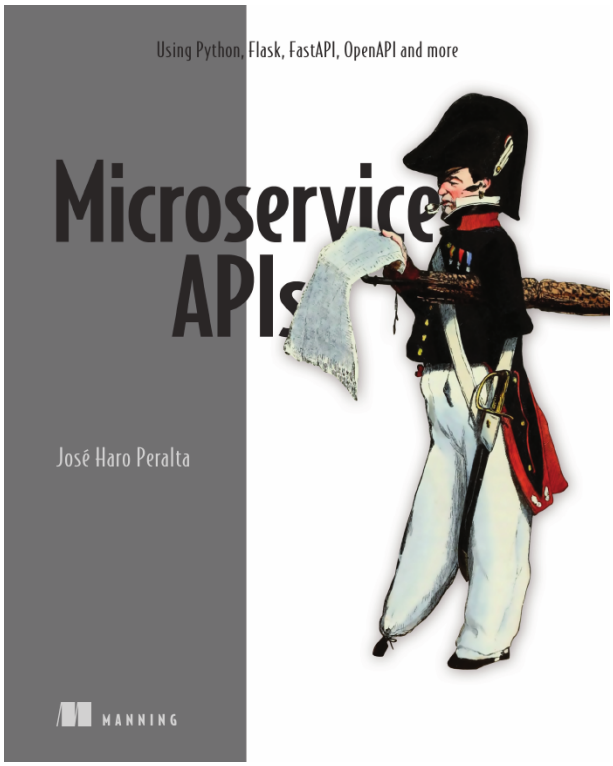
Book link: https://skybooks.ir/products/Zero-to-One

Thiel starts from the bold premise that we live in an age of technological stagnation, even if we're too distracted by our new mobile devices to notice. Progress has stalled in every industry except computers, and globalization is hardly the revolution people think it is. It's true that the world can get marginally richer by building new copies of old inventions, making horizontal progress from "1 to n." But true innovators have nothing to copy. The most valuable companies of the future will make vertical progress from "0 to 1," creating entirely new industries and products that have never existed before. Zero to One is about how to build these companies. Tomorrow's champions will not win by competing ruthlessly in today's marketplace. They will escape competition altogether, because their businesses will be unique. In

today's post-internet bubble world, conventional wisdom dictates that all the good ideas are taken, and the economy becomes a tournament in which everyone competes to reach the top. Zero to One shows how to quit the zero-sum tournament by finding an untapped market, creating a new product, and quickly scaling up a monopoly business that captures lasting value. Planning an escape from competition is essential for every business and every individual, not just for technology startups. The greatest secret of the modern era is that there are still unique frontiers to explore and new problems to solve. Zero to One shows how to pursue them using the most important, most difficult, and most underrated skill in every job or industry: thinking for yourself"–Provided by publisher.

2.7 Microservice APIs: Using Python, Flask, FastAPI, OpenAPI and more

better-to-read near-five-hundred-pages 250 T



> "An insightful guide for creating REST and GraphQL APIs, with neat examples using FastAPI and Flask. The service implementation patterns chapter is a must-read for every developer."
>
> William Jamir Silva, Adjust

Book link: https://skybooks.ir/products/Microservice-APIs

Strategies, best practices, and patterns that will help you design resilient microservices architecture and streamline your API integrations.

In Microservice APIs, you'll discover:

- Service decomposition strategies for microservices
- Documentation-driven development for APIs
- Best practices for designing REST and GraphQL APIs
- Documenting REST APIs with the OpenAPI specification (formerly Swagger)
- Documenting GraphQL APIs using the Schema Definition Language
- Building microservices APIs with Flask, FastAPI, Ariadne, and other frameworks
- Service implementation patterns for loosely coupled services
- Property-based testing to validate your APIs, and using automated API testing frameworks like schemathesis and Dredd
- Adding authentication and authorization to your microservice APIs using OAuth and OpenID Connect (OIDC)
- Deploying and operating microservices in AWS with Docker and Kubernetes

Microservice APIs teaches you practical techniques for designing robust microservices with APIs that are easy to understand, consume, and maintain. You'll benefit from author José Haro Peralta's years of experience experimenting with microservices architecture, dodging pitfalls and learning from mistakes he's made. Inside you'll find strategies for delivering successful API integrations, implementing services with clear boundaries, managing cloud deployments, and handling microservices security. Written in a framework-agnostic manner, its universal principles can easily be applied to your favorite stack and toolset.

about the technology
Clean, clear APIs are essential to the success of microservice applications. Well-designed APIs enable reliable integrations between services and help simplify maintenance, scaling, and redesigns. This book teaches you the patterns, protocols, and strategies you need to design, build, and deploy effective REST and GraphQL microservices APIs.

about the book

Microservice APIs gathers proven techniques for creating and building easy-to-consume APIs for microservices applications. Rich with proven advice and Python-based examples, this practical book focuses on implementation over philosophy. You'll learn how to build robust microservice APIs, test and protect them, and deploy them to the cloud following principles and patterns that work in any language.

2.8 Reading and Writing Plan

For the summer of 1402 (2023) the book which will be read are:

1. Inside the Python Virtual Machine

   This book has many to say, many new things of CPython virtual machine. I will say how I will treat this book and CPython Internals books :D

   It will be read in Saturdays and Sundays.

2. CPython Internals

   Well, a long and comprehensive course on CPython itself. I asked to writer, Anthony Shaw, how to read this book and he said: Don't rust! just read chapter by chapter and do the exercise of each chapter when you finished it.

   It will be read on Mondays and Tuesdays.

3. Docker in Action

   A long book full of really new information! I have not touched docker yet, so this book should be read carefully.

   It will be read on Wednesdays and Thursdays.

2.8.1 Additional information about Inside the Python Virtual Machine and CPython Internals books

In order to learn something, the best way is to teach it to others :D Yes this is approved both by experience and academicly researched by scientist which say "The learning effectiveness of teaching a thing is 90 %". I really wanna learn these two books and in order to achieve that, I will write articles about them and put my articles in `https://virgool.io/@liewpl`[1] and `https://medium.com`[2]

[1] Persian version
[2] English version

Replacing just a few key negative habits with a few positive habits can easily be the difference between being mostly unhappy and being happy almost all of the time.

Tynan, Superhuman by Habit

3 Habits

To continue to live and rest I found some ways to spend my leisure time, just like the books they've got small tags to make them more clear.

The tags:

1. `always` which says this item has no specific time.
2. `weekends` the weekends are good for this item
3. `time-to-time` you can do it whenever you want to
4. `activity` needs body activity
5. `rest` is done to rest and NOT to think about anything else

3.1 Podcast

> "Listening to podcast, reading a book, listening to an audiobook and watching films isn't waste of time. It's how somebody becomes wise!"
>
> Deyth Banger

`time-to-time` `activity`

Talk Python to Me is a weekly podcast hosted by developer and entrepreneur Michael Kennedy. We dive deep into the popular packages and software developers, data scientists, and incredible hobbyists doing amazing things with Python. If you're new to Python, you'll quickly learn the ins and outs of the community by hearing from the leaders. And if you've been Pythoning for years, you'll learn about your favorite packages and the hot new ones coming out of open source.

Listening to old and new Python podcasts, specially from *Talk Python to Me* channel helps a lot, It provides many information, introduces mane new technologies and brings many good people to the show.

3.2 Music

> "Music doesn't lie. If there is something to be changed in this world, then it can only happen through music."
>
> Jimi Hendrix

`always`

As always: *I live because of my musics* :)

3.3 Films

> "Movies are like an expensive form of therapy for me. "
>
> Tim Burton

`weekends` `rest`

Watching new films and series, enjoys a LOT. The dedicated series which I want to watch is *The Mentalist*. A TV show which remembers me of Sherlock!

Also I will download the films which I haven't watch in 1080p quality and enjoy the leisure :)

3.4 Biking

> "Life is like riding a bicycle. To keep your balance you must keep moving"
>
> Albert Einstein

`time-to-time` `activity`

Physical activity to become fresh again, and to empty the mind outta the learned stuff is really important and Biking has to be done in summer.

Find out what you like doing best, and get someone to pay you for it.

Katharine Whithorn

The only way to do great work is to love what you do. If you haven't found it yet, keep looking. Don't settle.

Steve Jobs

4 Career

Well, **the career to choose**. It may be a simple question: *What do you wanna do buddy?* But the answer? absolutely not. You have to chose something that you will be doing in the rest of your life... I've talked about *What* and *Why* I have chosen in this chapter :D

Choosing what to do. If you are young (somehow under 16 or 17) you may have many options in your head, or have none, it's totally natural. You are not OLD enough and your brain doesn't care about this, but after a while, becoming an adult, your brain, will create something in your head that you say to yourself "I have to finally make my decision and choose something to do and to be!" Well it happened for me. When I was 17 (11th grade at high school) I thought: "well I don't what to be?! How about to follow and be a good example of the best of the things I see?"

Our calculus teacher was the best ever I saw, well I decided to be a very nice math teacher. I talked to him and he told: "You are absoultly a foo, go and find something which really fits you. It will a waste for you to be tearcher!!" He was somehow right, I reallized in a while. I love teaching but it is not my type, I needed something more attractive.

Once a day, a friend of mine told me: "Go and find yourself a good video course for programming. You will definitely love programming, I see it inside of you buddy." Well after some searching I found *Python masterclass* by *Tim Buchalka* AND pandemic hit :)) I started watching this reallllllllly niiiiiiiiice course and finally found it: "**Programming**", with no doubt programming will be the thing I was seeking :D

The journey started. I was seeing nearly 5 videos per day, seriously taking notes and reading Python documentation. I was the happiest Python learner in the world. I read, nearly every part of the documentation, every *type*[1] which was tought by Tim, I read the documentation afterwards and learned way more than the course.

Time passed and I got into 12th grade and abandoned learning Python due to *entrance exam of university* or in short *KonKoor*. I really stopped learning, after a very long year and one day after the exam, I downloaded nearly 60GB of videos just for one course: *Python Deep Dive 1-4*. This is the most brilliant course ever, it really teaches you the best things and the most important things you HAVE TO know. I finished it before starting of the first semester of my university.

[1] type: the datatypes which are built-in to Python such as `str`, `int` and `dict` types

Thanks to Allah, I was accepted as a *Computer Engineering* student at *Isfahan University*. I started joining Python communities created in Telegram, and after the first semester finished, I became one of the Admins of those groups :D

Then I found someone who I really like and is one of my best friends :) *Seyed Iliya*. He is really nice, and a really nice Python developer as well. We started working on real world projects and had a collaboration of something called JsonicDB[2]

At that time, WE wanted to be professional back-end engineers and started watching courses on that field, BUT:

- for me: the 3rd semester started and it was not online (thanks Allah for that)
- for him: He had to study for KonKoor

So everything was nearly stopped again :/

~~However going to university, although just for one semester, changed my way, it really changed it. After studying math, searching for the hot fields in programming and meeting new people with new expertise, I made my one-step-to-final decision: *Data Science*.~~

~~Data science is sexy isn't it? It needs a deep knowledge of the both worlds, programming and science, also learning it takes time and effort. The 3rd semester passes and I more fall in love with the field.~~

~~After searching and making my final decisions, I met Homayoun Sadeghi, a DevOps expert. I remembered the days I liked back-end and DevOps world and missed it :(but there were a solution for it: *MLOps* field, one of the hardest fields anyone can choose and the final decision was made: "I want to be an MLOps specialist :D"~~

~~I have to confess that I really like this journey AND this is a really hard field to learn and to be a good one in it. It needs many knowledge about~~

[2] a database toolkit, written specifically for JSON datatype

~~maaaaaaaaanay things, It is shaped from three worlds: Machine learning (data science) + Development (programming) + Operation (the server and all of its stuff world).~~

~~After all this is what I chose and this is the things which shows my learning and career way, I may or may not change it future. I just concentrate on learning and learning and learning.~~

Well, I changed my mine, with no doubt I wanna be a fucking nice back-end developer :)

Thanks