Written by your dude, Ghassen Faidi.

I wrote this to share the lessons I learned from my mistakes last year, hoping it might help someone avoid similar struggles.
This guide contains some subjectice advice, keep that in mind, and also remember that everyone learns differently. you may find this guide useful, but you may also find it completely useless, that's totally fine.

1. Index

2. C Programming

I made a **video** that contains most of the things I wanted to say about C.
You can watch it here: Watch it on YouTube

Notes

- **Why Learn C, and how?**: I recommend starting with this video (Arabic) to understand the importance of learning C-like languages and how to approach learning

programming in general.

- **Focus on one resource**: I think a big mistake I made is following multiple resources at the same time. I recommend that you find **one** course/book/playlist and stick with it til the end to avoid getting distracted.
- **Text Editors and IDEs (where you write the code)**:
  - You can use any text editor or IDE you want. The most used ones are *Visual Studio* and *Visual Studio Code*. Despite their similar names, they are different and have different **compilers** (that "run" the code). Keep in mind that compatibility issues may occur if you write code in one and import it into the other.
  - ⚡**Avoid Online Compilers**: They lack features and are too easy to use, leading to lost valuable experience. I don't recommend them.
- **Understand the difference Between C and C++**: Try searching online to understand the difference so you don't get confused.
- C lacks a lot of predefined functions, so you may want to make your own library of functions.
- I think debugging is a great skill to have, it helps you find the logical errors in your code much more quickly. learn it if you have some extra time.
- Do your best to get good at **Recursion**, it's a fundamental topic that will always need.
- Do your best to get good at **Pointers** and **Dynamic Memory Allocation (malloc)**: This will be needed in Algorithms in semester 2. even if the professor doesn't teach it, learn it yourself.

Some resources:

- **INSAT's Lecture Notes**: These notes are really good.
- **Python Tutor Visualization Website**: This is a great resource for visualizing concepts especially **pointers**.
- **2021/2022 exams** (credit: Jasser Felhi)
- **Playlist**: it is in C++, but teaches a critical concept : Functional Composition.
- Hackerrank has contains some good problems you can try yo solve
- Exercism is also a good option
- This shortcut is helpful in big projects
  (Again, don't distract yourself with so many resources, pick one or two and focus on them)

If you have a good level of English language fluency.

- **Pointers Tutorial**: This is a good (but a bit advanced) written tutorial on pointers.
- **Book Recommendation**: "The C Programming Language: A Modern Approach."
  I has many great exercices
  - Article: **Should you read books?** (in brief: not really)

3. English

In this class you review some grammar and learn some business English, you can learn vocabulary like curriculum vitae, turnover, letter of application... etc.
Well, In the third week, the class was almost empty, it seems not so many people care about it. well, consider if it's worth your time to attend English classes.
Either ways, before the exam make sure to review the lecture notes in the Mega account

- Semester 2 English Vocabulary
- If you're not good at English. sadly it's critical in your success in this field, many great books and courses are only available in English.
    - I recommend Ibrahim Adel's channels and apps (Taleek and ZamericanEnglish), if you can spend 30m per day studying it you'll become good at English in one or two years.

4. ASD (Algorithms)

- Algorithms Book

5. Optique

- Youtube: I recommend this video to understand the difference between real and virtual images.
- You need good understanding of trigonometry (sin/cos/tan...etc), if you're BAC INFO, you sadly have to learn it yourself, Khan Academy is a good ressource. and ask your classmates for help.
- This simulator is fun to use

6. Web Statique I

- First, understand what is web development:
    - Youtube Video (Arabic)
- I don't recommend using Visual Studio Code because it has autocompletion (completes the code for you) and that's too easy and make you rely too much on it, and in exams you need to write everything on paper, I recommend using Notepad++
    - If you're going to use Notepad++, enable "Auto close tag": Youtube Video
- But if the professor gives you a project, it'd better to use Visual Studio Code because it's much faster to write code in it.
    - Install the LiveServer extension
    - **Advanced**: Visual Studio Tips&Tricks

- The best HTML course I've found is Osama Mohammed's course (Elzero):
  - Course (there also are great exercises!)
  - Youtube
- If you don't like Egyptian accent, you may want to check FreeCodeCamp on YouTube, they have good reputation.
- There are many other great resources:
  (but don't let yourself get distracted, choose ONE resource and stick with it)

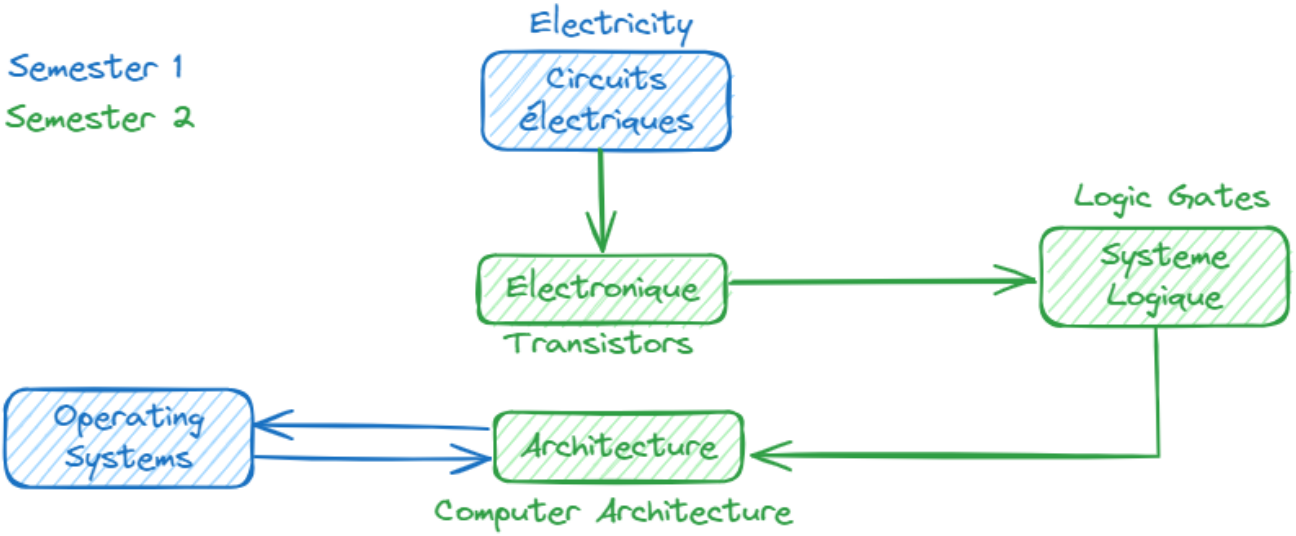
7. Algebre/Analyse

This is a message for the BAC INFO:

- In my experience, Calculus (Analyse) was extremely hard; because I didn't have a good foundation, and if you're like me, you may feel the same, you may feel that this is the hardest math experience you've ever encountered: insane trigonometry and crazy stuff.
- There are four points I want to make for the BAC INFO:
  - Don't give up, if you put a LOT of effort, you may get something close to 10/20...
  - you may also put a lot of effort, yet get less than 5/20, totally normal, but **if you do your best, you won't have any regrets.** (when I got 9/20 in Analyse 1, I actually celebrated it with my friends, I didn't have any regrets because I tried my best)
  - You can survive without being great at math, I got a fine grade (14/20) even though I did so bad at math
  - but, you may actually have the potential to be good at math, I don't want you to believe that's inevitable to get bad grades. you can do much better that I did. everyone has their own learning journey, don't compare yourself to others, don't compare yourself to guys from Bac Math, most of those fellas have gone through hell in BAC to be that good, thier skill didn't come from nowhere. focus on **your** own journey.

8. Circuits électriques

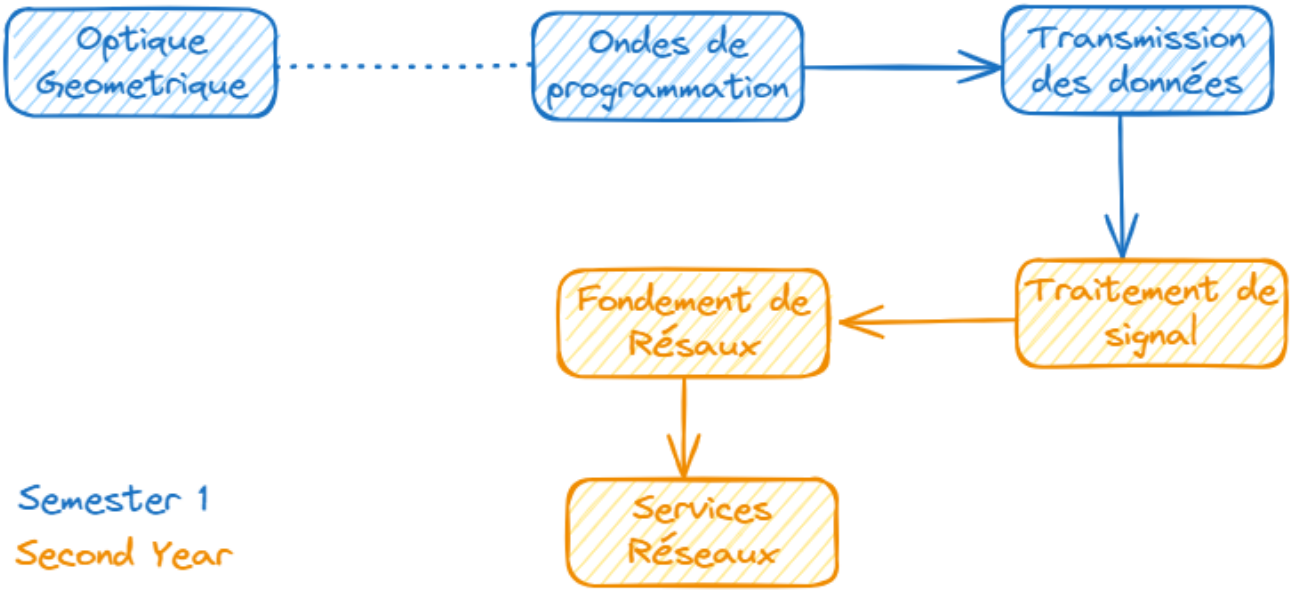
Why are we even studying this? that's what I kept asking myself! well now I see the big picture:
The final goal of all these material is that, after the first year of education, you'll have a solid understanding how a computer works. it's a long learning journey, and sometimes a boring one, but it's worth it.



- You'll need Thevenin Theorm in second semeter in Electronics.
- I can't give you recommendation how to study Circuits because I didn't do well at it. but some of my classmates did really well, try asking them how to study it. (don't be shy, asking others can save you a lot of time)

9. Ones et Propagations

Why are we even studying this?
This is an Electromagnetism class, it's the most preferred way to teach physics to Computer Science students, why? I don't really know.
My current understanding is that it gives you deeper understanding of how networks work.



I did nothing but follow the professor's instructions and solve the problems she assigned and did well, I don't have any recommendations of how you study it.
Again if you're BAC INFO, you need to review trigonometry.

10. Operating Systems

The class is very theoretical, and exams will ask you write a lot of definitions...
Make sure to study older exams, some questions repeat.

I enjoyed more the practical side of it: (Linux and Command Line)
But to be honest, **it won't really affect your grades at all**, so you have to decide if it's worth your time:

- I recommend this Command Line Playlist
- Install Ubuntu in a VM. try it out and learn how to use it.
- But I recommend WSL (Windows Subsystem for Linux), which installs Ubuntu as a command line in windows, it's much faster and much more useful in my experience, and especially if emulating Ubuntu in VirtualBox is slow in your computer.
  - Youtube Video
- Learn how to install packages: try these in linux shell: Youtube Video

```
sudo apt update
sudo apt install (packageName)
# Useful Packages
tldr # better manual pages: example "tldr mv" (will explain to you the
command mv)
broot # (or 'br') lets you navigate much more easily
```

- Learn about **PATH** in windows and Linux and how to add programs to it.
- again, this won't be critical at all for your grades, **don't focus too much on it**, and you have the entire summer to discover more if you wish.

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11. Python Programming

- Python is so popular, there many great courses and books, anything will probably be fine.
- a small summary I made
- The best Python course I've found is Osama Mohammed's course, it's marvelous, in depth, and starts from the basics:
  - Mastering Python (there are exercises too)
  - YouTube Playlist
- Get good at Python's Dictionaries, they're useful for many kinds of problems
- A big part of the class and final exam is Data Structures, may sure you're understand Arrays, Matrices, Stacks, Queues and Trees and solve problems online (the problems in class aren't enough)

    - This one of the most popular and fundamental Stack problems, try solving it: Valid Parentheses Problem

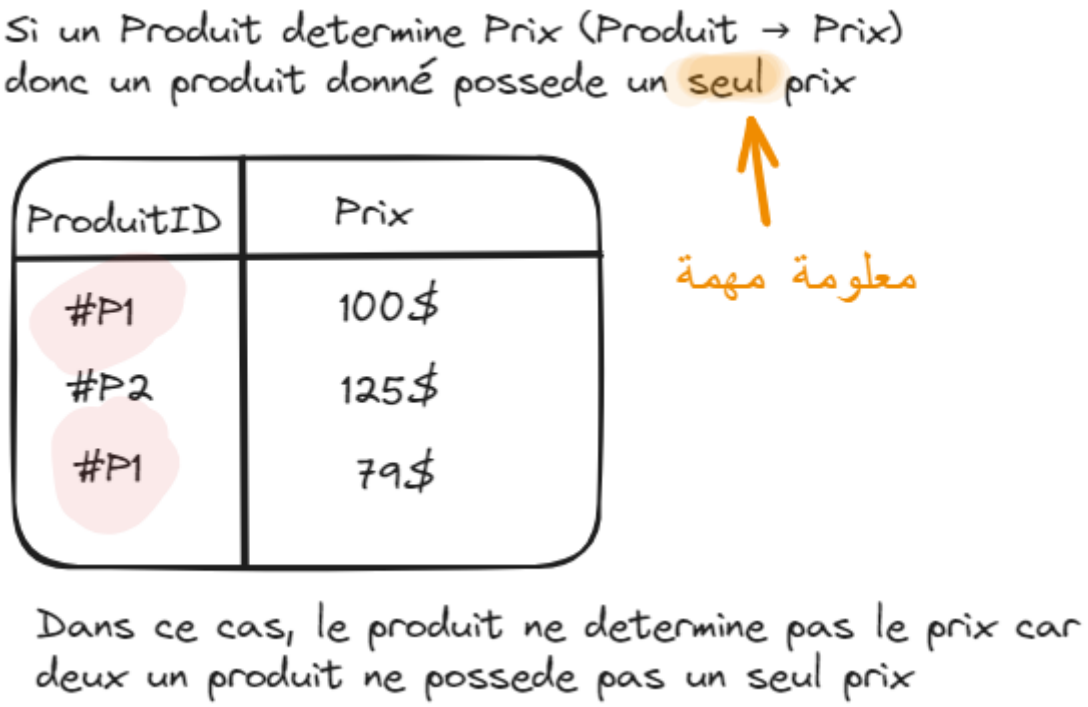
require good English

- Helsinki University has a written course: Python Programming MOOC 2023
- again, don't get distracted by the many resources, choose one of these (or something else) and stick with it

12. Database

Why study databases?

- These videos by professor Joseph Hellerstein from Berkeley University are a great intro to databases and why you should learn them.
- This video is also a good introduction
- This playlist helped me with MCD (ER: Entité-Relation)
- I spend an tremendous amount of type trying to learn Normalization, I spend weeks struggling with it. I wasted a lot of time until I finally understood it.
    - These two are the best video on the topic: video 1 video 2
- They key to solve any normalization problem is this fact:
  Si `Produit → Prix` donc un produit donné **possede** un **seul** prix



- You have to solve so many normalization problems: TD (with solutions)
- This is a good video to understand what is Normalization: video
- There are tons of SQL problems in Hackerrank: I really recommend it.
- This is a good paid course(20$): you can take for free if you can't pay or afford it (there are 100% Coupon in the website)

13. Automatique

Why do we study this? I don't know. but it's helpful if you like Robotics
you'll study two things in this class, Automatique (Control Theory) and Automatisme (Automation)

- This video is a nice introduction
- This is another fun video (it's fine if you don't understand much)
- These videos helped understand how to draw Bode Diagram
- This playlist looks good and may be helpful, I didn't watch it, but I know the channel and they have good reputation.
- This summary (not mine) helped me a bit.
- it's not an easy subject, but **just don't give up** ; focus on what the professor gives you, it's enough. and automatisme is much easier and it is the focus of the final exam, so no matter how you did in the midterm it's gonna be okay (إن شاء الله)
- This Automatisme playlist is in a horrible quality, but it helped me get 17 in the final exam, I owe it to the man who made it. you may find better videos though.
- This are my notes and summaries

14. Web Statique II (CSS)

- I recommended many of Osama Mohammed's courses, and I'm also gonna recommend his CSS course, it's brillant and full of knowledge you won't find anywhere even in books. you don't have to complete the course, if it's a topic you didn't study in class you can skip it and return to it later.
  - Youtube
  - Exercises
- This game will help you learn selectors: CSS Diner
- You can also check FreeCodeCamp or TheOdinProject
- You won't study a lot of Javascript in class, just focus on what the professor gives you, and later you can study it on your own if you wish.

15. ASD II

- I hate this class, for various reasons, but algorithms are fun and crucial in your education.
- In most companies, they ask you about data structures in interviews, so it's better to get good at them from now on.
- I recommend implementing your own version of the data structures in C, then visualizing them in this website

- It's extremely important to focus on defintng data (partie de declaration des variables) where you define data types and data structuers, you have to be able to write them down on your own without much thinking. **you cannot solve a problem if you don't define data correctly**.

16. Architetcture

- In my experience what we studied in the class was enough, I just keep practicing the TDs and was able to get a good grade
  Require Good english
- This playlist may help you
- This playlist gave me a deeper understanding of computer architecture, it's good.

17. The Imposter Syndrome

It's your first year, you may know nothing about Computer Science and programming, you may feel anxious, especially watching people sitting the first row, answering every damn question the professor asks... and then, you even start to doubt yourself. I experienced this (especially in Math)
You should be aware of the **Imposter Syndrome**, many suffer from it without knowing it, and in computer science, this **illusion** of inadequacy occurs to a LOT of new students (especially female students from what I've heard)

> Imposter syndrome involves frequent feelings of inadequacy.

It's not my specialy to talk about it, but I just recommend reading about it.
I recommend watching this powerful video by the professor Richard Felder, it's the best video I found on this topic, it's in low video quality but it's really worth watching: Youtube
and reading his paper on this subject: PDF

> Boy, these people are really good. They get this stuff, they can answer the teacher's questions, they can do the homework, they can do fine on the test. But I," the tape inside the head continues, "I'm really not." Right? I've managed to fool them all over the years, the tape goes, my friends, my family, my teachers, into thinking that I'm this real hotshot who belongs at this first-class university taking engineering, taking science, taking economics, whatever I'm taking.
> But I know better.
> The tape continues, "The very next tough question I get in class, the very next hard test that I have to take, that's what's going to finally once and for all reveal me as the fraud, the phony, the imposter that I know I am."

I must also say, this is not to make you feel good about yourself or something, all this doesn't mean you're a bad nor it means you're a good student , BUT the point is that, **you've**

worked hard to be where you are, and I'm dead sure you can continue to sccueed (ان شاء الله). don't compare yourself to others, it's your own journey, with its ups and downs.
And as I said, honestly this is not my place to talk about this topic, but mental health is just too neglected. take care of yourself, because nobody else will do.

18. Asking questions in class

> Knowledge cannot be attained by the shy or the arrogant. **(The shy are restrained by their hesitation to inquire**, while the arrogant are hindered by their pride) — an Arabic Proverb (AI translated)

I faced this problem myself, I though I was because of shyness, but it turned out because of my weakness, I was just afraid that people may think I'm stupid or something if ask some question.
but at some point, I realized, why do I even care?
well, humans naturally care about how people perceive us, it's in our human nature, that's why many of us post stuff on social media, and it's not wrong in its own, but if it hinders you, that's a problem.
people, your fellows and professors, are simply not Gods, there's no one that deserves feeling stressed in front of except God.

19. Miscellaneous (random tips)

- If you're new to computers it's completely fine! you have to spend some time getting use to windows and learn shortcuts, here are some practical tips:
  - Learn your laptop's Touchpad Gestures
  - Open the Clipboard
  - Install WinRar and learn how to compress/extract files
  - Useful Windows Shortcuts
  - Learn Windows Powertoys
  - Try ShareX
  - Install an ad blocker
- Try to avoid using LLMs (like ChatGPT) in your work, if you let it do the thinking instead of you, you won't learn much.
- There's prayer rooms in the university: Revision room > up the stairs > to the right
- There's a library full of great books, you can sign in for free, it may not be helpful for you now, but you should know it exists.
- There's a revision room if you don't want to study, a place where people are so noisy and sit on top of tables and chat, some play cards too. cool...
- Everytime it's the end of a holiday, there will be a heated discussion in the group: should we not go and take another week as a holiday? turn off the notifications, and get

a cup of tea.

- You can add `filetype:pdf` to search for pdfs only, it's helpful when you search for TDs
- In the library in front of the university you can by a book that contains older exams, it wasn't so useful to me in most of the times, but it may be worth buying. especially if you're nervous about your first exams.
- A wise man one said: focus on the fundamentals, **stay away from the trends**, AI, Blockchain and Web3... just focus on the core fundamentals that will pave your way to success! the rest will come later.