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# Unit 1: Programming languages

## 1. What happens when you start learning a new programming language? Explain the different stages. How can you know which programming language you should learn?

When you start learning a new language, you’re going to learn a lot and if you’re following a good tutorial it should even be fun but after you learn the basic concepts of something, you may find that the next concepts are more challenging. Well you may want to give up but that’s when you’ll want to work even harder and push through your confusion. Take good notes and learn as much as you can. And by pushing yourself you’ll find that you can learn anything.

You need to ask yourselves two questions first.

What do you want to do ? If you’re interested in working for a specific company, you’ll want to take a look at their job boards because they’ll list specific requirements. Don’t worry if you don’t meet any of them now because you will. But this will give you an idea of the direction that you are heading. (Example : machine learning -> Python)

What do you want to build ? If you have an idea for a project, you might already be creating it. But knowing what you want to make solves the “What programming language should I learn first” question quickly. Because the language is just a tool to get you where you want to go. (Example : designing website -> JavaScript)

Once you select the language, you’ll discover that you can learn with podcasts, video tutorials, books, apps conferences, meetups, and so on. Even though, you won’t understand everything in these resources, you might want to immerse yourself in the language and take it all in.

## 2. Choose a programming language. Describe the benefits and drawbacks of this language.

I’m going to choose the programming language Go, also known as Golang. It’s a compiled, statically typed, and general-purpose programming language developed by Google.

Let’s talk about their benefits first and after its drawbacks.

Go is very easy to understand and easy to read. Its syntax is clean and accessible to newcomers and there aren’t a lot of complex functions to learn. It has close similarities with C-style languages so programmers who know well C, C++ or C# will find it easy.

This language takes a batteries-included approach. So, you don’t have to import or learn complicated secondary libraries to use it. And its standard library reduces the risk of errors from conflicting function names.

Simpler code is safer than complicated code. Like I said before, Go is a statically typed language, so you don’t have to be worried about difficulties to identify errors. And there’s a garbage collector that helps to prevent memory from flowing your code. So, identifying errors is easier than it is.

Now, I will talk about its drawbacks.

One of Go’s main advantages, which is the ease of use, is also one of its biggest weaknesses. It may be an easy language to pick up, but that brings with it, a lack of versatility. That is, maybe other languages more complex can propose for example a bunch of abstraction that allow coders to achieve complex results with less.

It’s still a young language. Golang can’t, in many ways, compete with older languages. Even if its library is smartly designed and efficient, it has to compete with languages like Java that has a library supported by an engaged community and a huge collection of code built in.

The third drawback is that Go is not based on virtual machine. So yes, it’s easier to use but in this case, the bad may very well outweigh the good. Virtual machines offer more efficient code and if you write very complex program with Go, you could quickly spoil your RAM.

### Vocabulary:

Statically typed = programming language in which variable types are explicitly declared and are determined at compile time.

Compiled language = programming language whose implementations are compilers (translators that generate machine code from source code).

Garbage collector = a program that automatically removes unwanted data held temporarily in memory during processing.

## 3. Select 2 programming languages used for the same purpose. Justify which language you would use through a comparison.

I will compare Python and Java. Both of them are general-purpose programming languages.

First of all, I would like to talk about their type of programming languages. Let me explain:   
Python is an interpreted programming language whereas Java is a compiled language. What is the difference ?

So, Python, as an interpreted language, converts human-readable code to machine-readable-code, as the program executes commands, making it easier to revise or debug.   
Whereas, Java, as a compiled language must translate source code into machine code before run time, making the code harder to revise or debug.

Now I will talk about how easy it is to learn these languages.

Python is a very user-friendly language, making it the perfect choice for junior developers and programming newcomers. Getting started on Python is very easy and very fast, but of course, you need much more time to learn how to use it well. But with Java, it takes a lot of time to start writing in it and get to know it well, and each API is a different story.

I know that they are both general-purpose languages, but I would like to talk about their role in machine learning. I’m interested in this field, so I made some specific research.

Python is considered as the leader of programming languages for machine learning with 57% of data scientists and machine learning developers using it.   
It gives direct access to its users for predictive analytics. Developers who are looking to frame better questions and expand their capabilities of existing machine learning systems prefer to use this language.

Java is the second most famous language used by data scientists and machine learning developers. It provides with simple debugging process, graphical representation of data, better user interaction and so on.   
It is a functional programming language that will allow future machine learning systems with speed, accuracy, and precision.

So, what would I choose ? I have much more knowledge in Java than in Python thanks to my lessons in Paul Lambin institute. But I would choose Python just because of its popularity as the leader of programming languages for machine learning. And the fact that it’s very easy to learn makes it even better.

Machine learning is a part of artificial intelligence which is described as the science to getting computers do things without being directly programmed. It focuses on the study of computing algorithms and data into the system to allow it to make decisions without writing manual code.

predictive analytics : making predictions about unknown future events.

# Unit 2: UX & UI design

## 4. What is UX design? What is UI design?

UX design stands for User Experience design. And UX design is a human-first way of designing products, it’s all about the user’s interaction or experience with the product or service(how easy is it for the user to complete their desired tasks). UX can cover everything from physical product to digital experiences (like online shopping).

UI design stands for User Interface design. And UI is what you use to interact with the product, and it focuses on the user’s visual experience. UI design covers all the screens and visual interactive touch points that the user moves through when navigating from A to B(scrolling down a page).

We can say that in term of functions, UX is how things work and UI how things look.

## 5. How are UX and UI design related? And how are they different?

I will explain it with an analogy : imagine that the product is the human body and the bones would be the code that gives the body its structure. The organs represent the UX design measuring and optimizing against input for supporting life functions. UI design represents the cosmetics of the body. Its presentation, its sensors, and reactions.

So UX is focused on user’s journey to solve a particular problem. UI design is focused on how a product surfaces or interfaces look and function.

Now that I talked about how these two are related, let me talk about how they are different.

UX is highly analytical, rooted in psychology and cognitive behavior. It’s all about problem solving and understanding how the user thinks. UI is much more focused on the visuals, on whether or not the product is aesthetically and interactively pleasing.

UX is all about making a product functional and useful while UI is concerned with making it beautiful and interactive.

UX ensures that the user can open an app or website and easily do what they were there to do. On the other hand, UI is a chance to make a real emotional connection with the user.

Ultimately UX is a huge concept that applies to everything. It’s the entire experience that the user has with a product or brand. And UI, by definition, is just about digital interfaces.

## 6. What are the ‘Why’, the ‘What’ and the ‘How’ of product use? Explain the difference.

The Why involves the users’ motivations for adopting a product, whether they relate to a task they wish to perform with it or to values and views which users associate with the ownership and use of the product.

The What addresses the things people can do with a product -it’s a functionality.

Finally, the How relates to the design of functionality in an accessible and aesthetically pleasant way.

(UX designers start with the Why before determining the What and then, finally the How in order to create products that users can form meaningful experiences with).

## 7. Select 2 key factors of UX design. Describe each factor + Give examples.

The first key factor that I chose is “Findable”.

Findable refers to the idea that the product must be easy to find. If you’re working with digital and information products such as webpages, the content within them must be easy to find, too.

For example : if Netflix users can’t find something, a movie or a tv-serie, they’re in the mood for on a Friday night, it doesn’t matter how much great content is hidden beneath the surface. They’ll stop using the service.

The second key factor that I chose is “Desirable”.

Desirability is conveyed in design through branding, image, identity, aesthetics, and emotional design. The more desirable a product is, the more likely it is that the user who has it will brag about it and create desire in other users.

To understand desirability, let me give you an example : think of a Skoda and a Porsche. They’re to some extent both useful, usable, findable, accessible, credible, and valuable. But, for most people, Porsche is much more desirable than Skoda. I’m not saying that Skoda is undesirable. But if I had the choice of having either a Porsche or Skoda for free, I would choose the Porsche for sure, and I think that most people will opt for the Porsche as well.

## 8. Select 2 guidelines to design for accessibility. Explain why you should implement them and how.

The first guideline that I chose is “Not using color alone to make critical information understandable”.

When you’re communicating something important, showing an action, or prompting a response, don’t use color as the only visual cue. Why ? Because people with low visual acuity or color blindness will have a hard time understanding your content.

So, what should you do ? You should try to use an indicator other than color such as text labels or patterns. You should not rely on colored text alone to show errors on the screen, you can add an icon or include a title to the message. You should consider adding a visual cue such as font weight or underline text style to a linked text in a paragraph, so the links stand out.

The second guideline that I chose is “Designing usable focus states”.

On some websites, there are blue outlines that sometimes show up around links, inputs, and buttons. These outlines are called focus indicators. The default focus indicators are not very pretty, and people just hide them. But if you get rid of this default style, you should replace it with something else.

Why is that ? Because focus indicators help people know which element has the keyboard focus and help them understand where they are when navigating your site. These are used by people who are blind and require screen readers, and power users who prefer this type of navigation.

So, what should you do ? So, the elements that should be focusable are links, form fields, widgets, buttons, and menu items. You need to have a focus indicator that makes them look different from the elements around them. Knowing that, you can design focus indicators that fit the style of the site and goes well with the brand. You need to create a state that is highly visible, with a good contrast, so it stands out from the rest of the content.

# Unit 3: Business English

## 9. What are the four tips to run team meetings. Explain.

The four tips are : Prepare, communicate, facilitate, and wrap up.  
Prepare :

In our first tip, there are 3 elements : purpose, people, and props.   
First the purpose : When you are preparing for the meeting. You have to ask yourself some questions : Why are you having this meeting ? Who needs to be there ? Why do they need to be there ? What do they need to prepare beforehand ? What do you, as the project manager, need to be prepared beforehand ?

Secondly, the people : Again, you have to ask yourself : who’s supposed to be there and why are they there ? Are they decision-makers ? Are they there to provide input ? Why do you need them there ?

And then, props. How are you going to facilitate and run your meeting ? Do you need props, do you need laptop ? What do you need for people to use and for you to facilitate the meeting ?

Communicate :

Our second key element is communicating to people beforehand, inviting them to the meeting. Let them know what’s on the agenda : you need to let them know when they are supposed to be there. Why they’re supposed to be there in five minutes beforehand.

You need to let people know in advance because they might have other schedules too. So, they can prepare on their schedule, get together what they need to show up and maybe ask any questions, maybe contact you or other members on the team before.

Actions items : You need to make sure that the previous action items have been completed before the meeting.

Facilitate :

Facilitating the meeting. You want to make sure everything’s on time and on topic. So, you want to make sure that you really stick to the timeline of the meeting so if you have different items on the agenda, you need to know how long you’re going to spend on that.

And there are people who have other agendas who will try to take over your meeting, so you have to facilitate that and stay on topic. If someone brings up a topic that’s not on your agenda and not important for the purpose of that meeting, you have to put that on a parking lot so you can talk about it at the end of the meeting.

If someone asks a question about a topic that will be discussed later in the meeting, you can tell them to hold that thought, that way the person will feel considered.

Wrap up :

The important item in this step is to wrap up with action items and next steps. So what action items are to be left done at the end and who’s supposed to do it, when are they supposed to complete it.

And then for the next steps : letting people know when you will be meeting again or what decisions will have to be made.

## 10. What are the pros and cons of conference calls?

Cons :   
- Missed messages : you can’t see the other people, so you will miss vital non-verbal cues and 93% of communication is non-verbal : body language, eye and head movement.  
- Caller confusion : without a visual component, it can often be confusing in an audio conference who is on the call and who is speaking. (people talking over one another)  
- Other problems : due to their connection, people leave the conference, noise in the background

Pros :   
- Simplicity : very simple to use -> familiar with the phone : entering a phone number  
- Mobility : anyone can join from their smartphone, wherever they are (some meetings can be far)  
- Calendar Integrations : Scheduling conference call is quite easy because of the integration with systems like Microsoft Outlook which quickly allows invite creation with all of the relevant dial-in numbers and pass codes.

## 11. What is scripting? What are the 4 parts of a good script?

Scripting is simply planning what you’re going to say. Either in your mind, or you may want to take it a step further and write down what you plan to say.

A good script should include :   
- an introduction : tell the person who you are.   
- a lead statement : make a quick statement designed to get the person’s attention.  
- a body : state your purpose for the call.   
- a close : accomplish your goal, ask for information, schedule the meeting, and so on.

## 12. When should you send emails? Why? What are the typical signoff mistakes? What should you use instead?

Save business e-mails for business hours because you don’t want your message to get lost during off hours.

Signoff mistakes include things like elaborate quotations, corporate logos that won’t load identically in every platform and extensive signatures. So, what you should do is to keep it short : name, title, company, and phone.

## 13. What is the trap in email correspondence? “Your email is a reflection of you.” Explain.

Email can seem so informal, so many people fall into this trap and forget that email correspondence lasts forever. So, even if it seems informal, don’t “email angry”. Emailing with bad news, firing a client or vendor, expressing anger, reprimanding someone, badmouthing other people in emails are all major no-no’s.

Every e-mail you send adds to, or detracts from your reputation. If your e-mail is scattered, disorganized, and filled with mistakes, the recipient will be inclined to think of you as a scattered, careless, and disorganized businessperson. Other people’s opinions matter and in the professional world, their perception of you will be critical to your success.

# Unit 4: Public Speaking

## 14. Why should you know your audience? Why should you structure your presentation?

Knowing your audience will allow you to understand the type of content they are going to be expecting.

Dig up as much as you can about who your audience is, what industries they work in and what positions they generally hold. This allows you to really tailor the content and delivery of the presentation in a way that would really make it memorable.

You won’t give the same presentation to a group of high school students who are interested in entrepreneurship that you would to a room of start-up founders and CEOs because their expectations and level of understanding will be on completely different levels.

If you structure your presentation in a way that each idea, each section builds on the one before it. You help your audience connect with the content and create logical links between the concepts. This is a great way to make more complex ideas easier for the audience to understand and remember.

## 15. What should you avoid regarding your posture? Is it okay to walk? What gestures should you avoid?

Regarding your posture, you should avoid shuffling your feet back and forth. You don’t want to sway your hips, and you don’t want to cross and uncross your legs repetitively. You don’t want to pace around like a wild person.

If you want to walk in a presentation, it’s okay to walk a little bit but make sure that when you walk, you stop, and you say a little bit before you walk again. So, walk with a purpose, stop, share your message, and then maybe a minute or so later, walk again.

Let’s talk about the gestures you should avoid. So, you don’t want to put your hands in your pockets. You don’t want to put your hands behind your back. You don’t want to grab on to different parts of your body for security. Because all that looks very distracting.

# Unit 5: Mobile applications

## 16. Select 2 successful e-government apps. Describe them.

The first successful e-government app that I chose is the “Snap, Send Solve” app.

Residents of Christchurch in New Zealand can now report everything from potholes to broken playground equipment or suspected pests through this app. In its first year, nearly 10 000 incidents have been reported this way. So how does it work ? The app works by identifying the location the photo is taken using the phone’s GPS data. It then sends an email to the council, including the picture, which is then allocated to the relevant department. According to the council, this app is generating significant cost savings already.

The second successful e-government app that I chose is the app in Hungary.

Patients in Hungary can access their medical information through an app in Hungary. The Hungarian government decided, in a bid to save costs, to shift all its hospital records to a central government-controlled server after the 2008 financial crash. It is now piloting a project to allow patients to access this information through a free app, providing disease information and access to personal health records. Patients can upload information too about their weight, blood pressure, glucose levels, diet, and exercise for personalized advice. The next stage, that is still under development now, is to add telemedicine service, allowing them to have consultations with their doctor through a messaging interface.

## 17. Explain which country has the best e-government apps according to you.

According to me, the country that has the best e-government apps is Denmark.   
In 2018, Denmark was ranked first with a near-perfect E-Government Development Index rating of 0.9150. With that sentence alone, I can tell that Denmark has the best e-government apps. Because its development in e-government is the best in the world.

Indeed, Denmark has become the most digitalized country in the world due to a high-level of public sector involvement in the lives of citizens. It was made mandatory to use digital tools in the communication between citizens and government. And if citizens and businesses can operate digitally, it frees up front line staff to better serve citizens who struggle to help themselves. So, it’s a development that has resulted in big efficiency gains.

Now let’s talk about its digital history and its apps.

First of all, you should know that Denmark introduced in 1968, the CPR-register, a central database of every person residing in Denmark. After a few years, the digitalization of the public sector began.

In 2001, a digital signature was created. All public sector bodies were obliged to be open to receiving emails, and authorities started communicating digitally internally.

In 2004, “Easy Account” was created to enable Danish authorities and institutions to transfer money directly to citizens’ bank accounts such as tax refunds, social welfare payments, salaries, and so on.

In 2007, a cross-government identify verification system “EasyID” appears. It is the secure key to the digital Denmark which makes it simple for the citizens to access a wide range of services online.

And in 2011, an app called “Digital Post” was made mandatory. It’s a digital letter box that can be consulted in a smartphone or a computer. It provides everyone in Denmark with a secure email. So, all messages from government to citizen or from business to government are sent digitally.

Now I’ve explained to you why Denmark has the best digital government apps in the world for me. For me, they have established a great digital strategy in the public sector.

## 18. What are the pros and cons of Native apps?

Native apps are applications that are downloaded from the Apple or play stores.

Pros :

Native apps offer silky smooth performance, the best user experience, an app icon is available on the device, they can receive push notifications, it runs inside the Operating System and can use the platform’s APIs (ex : camera, audio, network, storage, gps).

Cons :

Developers need to master each of the platform’s native languages. The source code only works on the target platform, it’s slower to market due to multiple source codes.

## 19. What are the pros and cons of Web apps?

Web apps are websites designed for mobiles.

Pros :

It’s cross-platform, it’s a single code base, its fast production and it has a lower development cost because of single code base.

Cons :

You will have sluggish performance depending on the device, it requires a lot of loading, network connections are required, they are not available in the app stores, they have extremely limited API access, no application icon, they live solely in the browser.

## 20. What are the pros and cons of Hybrid apps?

Hybrid apps are applications that are available on the app stores and the web portions of it can be updated server-side.

Pros :

You have a single source code, access to all the platform’s APIs. It’s less time to deploy, portions can be updated on the fly, it’s available in the app stores and has an application icon on the device.

Cons :

May be dependent on middleware, middleware may also be slow to update, they’re more bug-prone, some bug fixes require the middleware updates themselves, some bug fixes are outside of your control, meaning you’re completely dependent on middleware to fix them. They usually have slower performance and more issues from device fragmentation.

# Unit 6: Dark patterns & Digital Nudging

## 21. What are dark patterns? What kind of dark pattern can you find on Amazon?

Dark patterns are features of interface design crafted to trick users into doing things they might not want to do, but which benefit the business in question.

The dark pattern that we can find on Amazon is “Roach Motel”, it’s a design that makes it easy to get into a situation but hard to get out.

In Amazon, it’s very easy to create account, you just have to complete a form and that’s it, you have now an Amazon account. But it is very complicated to delete your account. Indeed, you need to do a lot of searching on the website because you won’t easily find where to close your account. It’s not on your “Your account” page but in the “Help” page that is accessible by going all the way down to the bottom of the page.

And you need to select the “correct” options to find the button “Close my account”. But there is one problem you can’t delete your account yourself, so you have to chat with an Amazon associate who’s going to tell you all the reasons account deletion is a bad idea.

## 22. Describe what ‘confirmshaming’ is. Describe what ‘forced continuity’ is. + Examples.

Confirmshaming is the act of guilting the user into opting into something. The option to decline is worded in such a way as to shame the user into compliance.

For example: on the website bestproducts.com there is a popup that comes up and text is written in it : “Do you want to be notified when some of your favorite products go on sale ?” and there are two options : “Heck yeah” and “Nope, I’m rich”. Obviously, the option to refuse to be notified is worded in a way to shame the user.

Forced continuity is when your free trial with a service comes to an end and your credit card silently starts getting charged without any warning. In some cases, this is made even worse by making it difficult to cancel the membership.

Let me give you a very famous example : Netflix. You can use Netflix for free for one month. But to start your free month, you have to give your credit card details. So, when your free month ends, you will be charged without any notifications informing your free trial has come to an end and that the recurring payment is about to begin.

## 23. What is the ‘scarcity effect’? What is the ‘decoy effect’? What Is the ‘middle option bias’?

Scarcity effect :

The scarcity effect is when an option is perceived as being scarcer, it actually becomes more attractive in a person’s mind.   
For example : on online shopping websites, there are some items where there will be some kind of warning “There are only 3 left !” in red. So, it makes the item more attractive to me and it makes me want to buy it quickly because I would think that if I don’t buy it now, it will be sold-out.

Decoy effect :

The decoy effect is when the decoy is an option that normally no one would choose but that makes another option look more attractive so just by adding a decoy option next to a preferred option, more people will choose the preferred option.

Middle-option bias :

The middle-option bias refers to people’s tendency to choose the middle option of several sequentially ordered options. So, if you have different options at a low, medium, and high price point. People tend to neither choose the cheapest options nor the most expensive options but tend to go for the middle option.

Vocabulary : bias -> an unfair personal opinion that influences your judgment.

## 24. Select 2 mental tricks in UX design used to give the user an illusion of control. Explain.

The first mental trick I chose is progress bars.

So, we’ve all encountered a progress bar at some point, for example when we are downloading something.

The progress bar will tell us that there is “one minute left”. It keeps us waiting, but at least we know what’s going on. But it’s been three minutes that it tells us “one minute left”!

The truth is that it lies to us, because download speeds are inconsistent, and as a result there is no way to know how long a download might take. Thus, the purpose of the progress bar is just to make the time feel shorter.

The second mental trick I chose is skeuomorphism.

Skeuomorphism, or the use of “real world” images to represent things in the digital world, is another way of impacting user perception. A well-known example is the recycle bin icon used for discarding files.

Another example is : Skype uses a fake “static” noise, the same static noise during phone calls, because users associate silence with a call being dropped. So, the unnecessary “static” makes the users happy, and stops them from worrying that their call was lost.