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1 Unit 1: IT job profiles

1.1 Bit by bit

Keywords for the following images:





White-collar worker/clerks (ambtenaar)	Programming languages	Servers
Colleagues	Coding	Databases
IT-consultant	Writing code	System- and networkadministrator
	Implement	

Fields and degrees you need to apply to any of these jobs:

Fields:

- Applied Information Technology
- Computer Science
- Computer Engineering

Degrees:

- Bachelor's degree / Bachelor of Science (BSc)
- Associate's degree (2 years)
- Master of Science (Msc)

Pages to check:

Page 17-18 ex 2 Some vocabulary

1.2 At a crossroads

Table with different situation to greet someone or close your mail:

	Greeting	Complimentary close
When you don't know the recipient	Dear Sir or Madam	Yours faithfully
When you know the male recipient	Dear Mr. Smith	Yours sincerely
When you know the female recipient	Dear Ms., Mrs., Miss Smith	Yours sincerely
When you don't know the gender of the recipient	Dear Sam Briton	Yours sincerely
If you don't know the name of the recipient	Dear all/Dear customer/	Yours sincerely

Formal ways to greet someone or close your mail:

Greeting	Complimentary close	
Dear Tom	Many thanks	
Hi Tom	All the best	
Hello Tom	Take care	
	Bye for now	
	See you soon	

Writing polite mails:

- Add **please** to sentences
 - o Could you please let me know when the next information session will take place?
- Use 'could' or 'would like'
 - o I would like to inquire about the price of tickets.
- Avoid imperatives, even when adding please
 - Can you please send me more information on this product?

Exchanging information:

- Requesting information
 - o I would be grateful if you could ...
 - o Would you be able to help ...?
 - o Could you please send me ...?
- Replies
 - o Thank you for your inquiry/email.
 - Thank you for your interest.
- Attachments
 - o Attached please find ...
 - o Please find attached ...
 - o I am pleased to send you ...
- Giving good news
 - o I am delighted to inform you that ...
- Giving bad news
 - o I regret to tell you that ...

Pages to check:

Page 19 ex 1 An e-mail

1.3 Return-on-data:

Top 9 most in-demand tech jobs of 2023, TechTarget

- Software developer, developer engineer or software engineer
- 2. Data scientist, data engineer
- 3. Artificial intelligence specialist, machine learning engineer
- 4. IT manager, systems manager, IT director, CIO, CTO
- Information security analyst (cybersecurity)
- 6. Computer systems analyst
- 7. Computer network architect, systems and network administrator
- 8. Site reliability engineer (dev + technical troubleshooting)
- DevOps engineer (e.g. automation tools, CICD)

Top 5 in-demand tech skills for 2023, Forbes

Data Communicator/Storyteller
 the ability to communicate insights
 in ways that are effective - meaning
 putting them in the hands of the right
 people at the right time. However, they
 must also be engaging, which is where

the storytelling element comes in.

- 2. Cybersecurity
- UX/UI Design due to the democratization of technology (everyone has to work with it)
- 4. Digital Marketing (attention economy)5. Artificial Intelligence / Machine
- Artificial Intelligence / Machine Learning

Data engineer is the most important job of all IT.

What is a data engineer?

he/she manages and organizes data and works it out if there are certain trends or inconsistencies that may have an impact on business goals.

What is big data?

Very large sets of data that are produced by people using the internet, and that can only be stored.

Why do companies need a Data Engineer?

Many enterprises in different sectors such as marketing, healthcare, ... collect big data but they often lack the necessary expertise. This is where the Data Engineer comes in: **he effectively manages the overflow of data at a company.**

Meaning of three different words:

[Satori] is a transparent **data proxy** that analyses **queries** for data and builds a comprehensive view of what data you have, where it's located and how it's being used and provides tools to enforce security and **privacy policies** on data access.

- Data proxy:
 - Gateway between you and the internet (e.g. Firewall, web filter)
- Data query:
 - o Keyword or command you use to look for data (in a DB)
- Privacy policies:
 - o (sg. Policy) = guidelines that have been officially agreed upon by a group of people

Pages to check:

Page 26-27 ex 4: A Role play on how to have a conversation

Page 38-42: Skills lab

2 Unit 2: Developers

2.1 Typical developer

What is the order for most skilled developers based on how you call them:

Coder / Programmer / Developer / Software Developer

Here are some descriptions for different sort of developers (bold is unqite):

- Coder
 - Is skilled in one coding language
 - o Is a beginner in the field
- Programmer
 - o Focusses more on one particular aspect of a project
 - o Is equal to junior developer
 - o Is skilled in two to three programming languages
 - o Writes clean, error-free codes
 - o Has more algorithmic knowledge

Developer

- Start to finish overseers of a project
- o Is skilled in two to three programming languages
- Writes clean, error-free codes
- Has more algorithmic knowledge
- o Is responsible for overall design of application

Software Engineer

- o Is the most expert coder
- o Desings and implements the overall architecture of the application
- Writes clean, error-free codes
- o Has more algorithmic knowledge

2.2 Code war

Pyhting vs Java:



agreement	consequence	contrast	examples	conclusion
moreover	therefore	however	for example	in conclusion
furthermore	as a result	nevertheless	in other words	in brief
additionally	consequently	nonetheless		in short
	thus	although		
		albeit		
		on the other hand		

Linking words:

- Are the glue
- Signpost (i.e. Signal) discourse and control communication
 - Show turns
 - Join ideas together
 - Show attitude
 - Add information
 - o Summarize
 - Change topic
 - Express contrast
- Increase readability



Programming vocabulary – talking about code:

Functions	- define a function (4) - call a function	
Scripts	- run a script (7)	
Statements	- execute a statement (8)	
(a block of) code	- run through a block of code	

Programming paradigms (declarative and imperative):

	Declarative/imperative?	Programming languages?
Can be compared to asking a friend to fix your computer, you do not care how he does it as long as it works in the end.	declarative	C, C++, Java, Kotlin, PHP, Python, Ruby, Wolfram language
Can be compared to asking a friend to fix your computer, where the friend then explains meticulously what should be done to fix it	imperative	SQL, regular expressions, Prolog, OWL, SPARQL,

What makes a website bad?

A bad website is one that fails to meet user expectations, hinders navigation, or presents a subpar user experience. These websites exhibit poor design choices, ranging from slow loading speeds and non-responsive layouts to cluttered interfaces and inconsistent branding.

Which highlighted words express contract and similarties:

Contrast	Similarities
more suited than	moreover
better compared to unlike	

Comparing and contrasting:

Adjective + er	More + adjective
Fast -> faster	Expensive -> more expensive

Holding a meeting, things to say:

Chair: the most important person

Participants: the people who follow the meeting

Taking notes/minutes: writing things down

Take the floor: you now give someone the word

Have the floor: you now have the word

Extra woordenschat:

Participants



- chair
- invitees
- those in attendance / attendees
- those absent without notice
- those apologized from the meeting

Actions



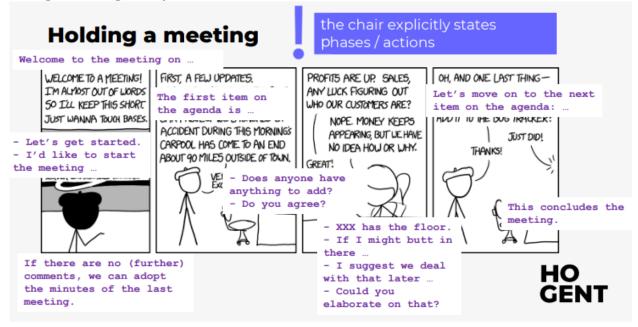
- to chair the meeting/ to preside over the meeting
- to start the meeting
- to adopt the minutes
- to take notes / minutes
- to draw up & share the
- agenda - to move the meeting
- to take the floor
- to keep track of time
- to adjourn / close / end the meeting

On the agenda



- date, time, location
- attendance
- adoption of the minutes
- progress on current projects
- new items of concern
- (re)prioritization of current and future projects
- AOB

Holing a meeting example:



Declarative vs imperative:

Declarative: C, C++, Java, Ruby, Python

Imperative: SQL

Tools to use when you can't see:

- Screen readers
- A really good IDE (Integrated Development Environment)
- Github

Pages to check:

page 48-49 ex 3 and 1
 page 51-52 ex 2
 Linking words
 Vocabulary

page 53
 A website for blind people

• page 56-57 Vocabulary

page 58-61 A rollplay for holding a meeting

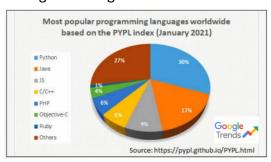
2.3 Case study

Developers: front-end, back-end and full stack:

• Front-end: works on the UI.

• Back-end: works on the UX/systems

• Full stack: works on both

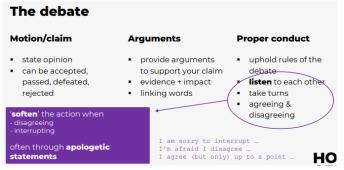


Most popular coding languages:

	Syntax	Community and ecosystem	Popularity?	Learning curve?	Use cases
Java	Verbose (stress on object- oriented programming)	Extensive libraries and frameworks	Popular	Steep -> complex syntax	Enterprise applications / android app development
swift	Concise and expressive (OOP and functional prog.)	Strong ecosystem iOS, macOS, watchOS,	Popular for Apple	More beginner- friendly: cleaner syntax	iOS, macOS, watchOS, tvOS app development
JavaScript	Flexible and forgiving syntax (OOP & functional)	Extensive libraries and frameworks	Popular	Relatively easy to start with	Web development, building interactive websites
•	Clean & readable, emphasis on code readability	Extensive libraries and frameworks	Highly popular	Simple and readable	Web development, data analysis, machine learning

2.4 The Debate

How a debate works:



- 10' Find 2-3 arguments to support your viewpoint. Which evidence can you find? Write down key arguments.
- Call around to others working on the same scenario and exchange viewpoints (always 2-3 in a call). Use phrases to
 - build your argument
 - express agreement and disagreement
 - delay response
 - ask the other to repeat their argument hold the floor

- First you have your opinion on something
- After you need to provide arguments in order to support your opinion
- Now you discuss and debate further to pick your conclusion or not

Vocabulary for holding a meeting:

Building an argument

- I'm in favour/against because...
- I'd like to start by saying
- First of all, ...
- In my opinion
- The way I see it
- As far as I'm concerned
- From my point of view

Holding the floor

- Sorry, I haven't finished yet - Might I just continue

Agreeing

- I agree with you (up to a point, but)
- This is exactly what I think

Disagreeing

- I'm afraid I don't agree
- In my opinon, we should
- Contrary to your point of view
- I beg to differ
- But what about

Delaying strategies

- Let me think about that and get back to you
- That is a difficult question to
- That's an interesting point. However, have you thought about...

Asking to repeat

- Sorry, I didn't quite catch that
- Sorry, can you repeat that?



Pages to check:

page 65-70 Skills lab

3 Unit 3: Network Speak

3.1 Network speak

What does a network engineer do?

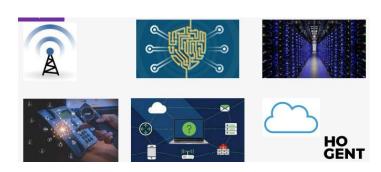
- Designs, builds, implements & maintains the computer networks organisations or business use: intranet, extranet, phone, LAN, MAN, WAN, GAN
- Maintenance, monitoring, troubleshooting & innovation of these critical systems.
 - Job satisfaction
 - Lifestyle & pay
 - Flexibility
 - o Potential for growth
 - Variety of work

Vocabulary:

vocabulary:		
Word	Defenition	
Router	Hardware device designed to receive, analyse and move incoming packets to another network.	
Switch	A hardware device that filters and forwards network packets, but is often not capable of much more	
To map something out	To plan something in detail	
To configure		
Ring topology	Network configuration where device connections create a circular data path	
Mesh topology		
Hub	Most basic networking device that connects multiple computers or other network devices together	
Backbone	Portion of a computer network that is capable of carrying the majority of traffic on the network at high speeds. It often connects large networks or companies together.	
Bandwith	When referring to a data connection, this is the total maximum transfer rate of a network cable or device. The more a computer has, the faster it can send and receive information.	
Bottleneck	When too much data enrters one source and causes a computer or network to slow down or become unresponsive	

Types of nextGen Technologie?:

- 4G
- Defense mechanisms?
- Cloud
- Servers
- .
- ..



3.2 Backbone of an organization

What are the benefits of implementing IT in healthcare:

- Improving patient care and experiences
- Real-time information exchange
- Flexibility for patients and clinicians

What is athenahealth:

A company that focuses on health records and allows you to share them easily

What phrase is used to confirm a request to meet?

I would happily attend

What phrase is used to find a suitable meeting time?

At your earliest convenience

Confirming and making arrangements:

Request

I'd like to book an appointment. I need to book an appointment.

Polite request

Can I book an appointment? Could I book an appointment?

Opening statement

Following your email inquiry, ...

Stating your purpose

I'd like to arrange a time to present ... Could we arrange a time to ...

Request a convenient meeting time

When would be a suitable time for us to OK, I'll meet you at 7 a.m. on 10/10 at ... meet you?

Suggesting a suitable meeting time

Please let me know when you are available to meet me.

Declining a request to meet

Thank you for your offer to meet us but ...

Accepting a request to meet

I appreciate your offer to demonstrate...

Delaying a request to meet

Please get back to us in a few months.

Suggesting specific meeting times

Are you available on...?

Saying a date/time is convenient

Friday, 10/10 at 10 a.m. suits me fine.

Discussing where to meet

Could we arrange a demonstration of ... I'll meet you in our reception at 8 a.m.

Confirming arrangements

Closing

I look forward to meeting you.

Writing with dates:

I'll see you on Monday.

Can you confirm that by Tuesday?

I'm going to meet our new client in February. I'm meeting my colleague at 11 a.m. on Monday.

Diplomatic language use (using tentative language):

Use past tense of modals: could, would, might

Add adverbs: perhaps, maybe, just, a bit/a little, quite

 Add adjectives: a small ...; a slight ...

it seems ...; it appears ... Tentative phrases:

 Turn into negative question isn't the quotation too expensive? Wouldn't you say the quotation is too expensive?

the quotation is quite expensive, isn't it? Use tag questions:

Use one (or more) of the following options:

past tense of modals	adverbs	adjectives
tentative phrases	negative question	tag question

When to use which term for arrangements:

Part of timetables and programs	Present simple
Happens in the future, you've already decided and arranged to do it	Present continuous
You intend to do it, but unclear whether you've made arrangements	Going to
Spur of the moment decision	Will

Pages to check:

page 81 ex 5 Working with dates in a mail

3.3 Unveilling the hidden giants

Pages to check:

page 84 ex 2 Vocabulary

3.4 Content delivery networks

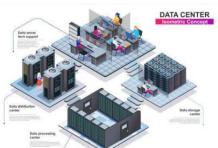
What is a data center?

A large group of networked computer servers typically used by organizations for the remote storage, processing, or distribution of large amounts of data.

Pages to check:

85-88 Question about a text + vocabulary

93-96 Skills lab

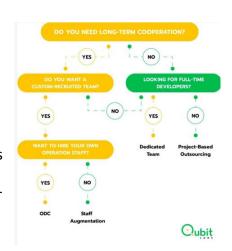


4 Unit 4: Outsourcing

4.1 A developer of the world

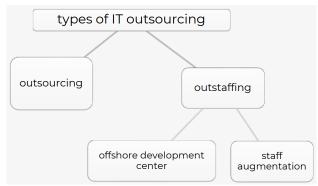
What is outsourcing?

- Company contracts out
- non-core non-core business processes/operations (less critical work, services, or projects) for cheaper pay to
- third-party or specialized service provider (individual or firm)



Types of outsourcing:





When planning to do outsourcing, you need to look at a couple of factors:

• English language proficiency

 Written & oral communication important for daily discussions and project brainstorming

Cost reduction

Reduce cost of development without compromising quality

Cultural fit

- Look for a match in mentality
- Communication methods
- Business customs
- Work ethics

Ease of collaboration

o Time zone differences

Reliable vendor pool

Market with a stellar reputation and a wide range of experienced vendors

Reasons to outsource?

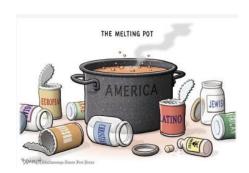
- 1/3 companies in the EU is looking for programmers (Erni)
- 50% of companies in the EU have difficulty recruiting IT developers due to shortage of skilled professionals
- 83% of SMEs in Austria complain about difficulty of finding qualified experts (EY)
- 48% of UK companies outsource software development oversees (YouGov)

Difference between the waterfall and V-model process:

- Waterfall
 - Linear and sequential
 - o All requirements should be clear from the beginning onwards
- V-model
 - Sequential manner in V-shape
 - Verification and validation
 - o Model next-phase only start after the completion of the first phase

Outsourcing – overcoming the cultural gap:

Cultural compatibility	Cultural adaptibility
2 cultures are able to co-exist successfully	1 culture is willing to change in order to suit different conditions



Pages to check:

104 ex 2 Question about a text

4.2 Hofdstede Power framework:

Word	Definition	
Power distance	Focuses on inequality in a society. It's the degree to which people with less power in a society accept the fact that power is distributed unequally.	
Individualism versus collectivsm	interest of a single person. In a minority of societies the interests of one	
Uncertainty avoidance	How does a society deal with not knowing what is going to happen in the future? The lower your score, the more relaxed you are as a society.	
Tenderness versus toughness	A society can stress achievement, heroism, assertiveness and material rewards. As opposed to this a society can also be more cooperative, modest and care for the weak.	
Long-term orientation versus short-term orientation	On the one hand, a society can oppose societal change and value the norms and traditions they've always had. On the other hand, a society can take a more pragmatic approach in which they encourage thrift and efforts in modern education in order to prepare for the future.	
Indulgence versus restraint	A society can feel that they are free to do what they want, can do fun activities with friends, Some societies feel that doing what they want is wrong because of social norms and prohibitions.	

4.3 Corporate culture

What is the difference between corporate culture and culture?

- Corporate culture:
 - The principles and values that should inform the behavior of all the employees of the company. For most companies innovation is a key value, followed by integrity and respect.
- Culture:
 - Specific traditions to each country

Why is it important to know the cultural differences when doing business with another business?

Other businesses and countries have other ways of leaving and therefor the small things like gestures can mean a whole other thing that can be a whole different meaning.

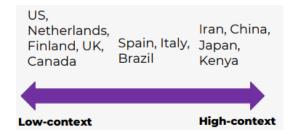
4.4 Communication is key

Low-context vs High-context:

- Low:
 - Favor written communications
 - E-mails/texts/online messaging
 - quick frequent messages revolving around basic questions
 - Typical of individualistic societies
 - precise, simple and clear

• High:

- Prefer oral communications
 - Longer forms of communication
 - Typical of collectivist societies
 - Messages are often implied
- o sophisticated, nuanced and layered



What do you need to find out before meeting professionals from other countries?

- Something about their country
- Political situation
- Cultural differences
- The role of women in business
- The economy
- Competitors
- The market
- Which topics are good for small talk
- Which topics to avoid
- Attitudes towards foreigners and their conventions

How communication can be improved:

- Establish clear communication protocols (e.g. Go around the table)
 - Eliciting ideas
- Everyone needs to offer pros and cons during a debate (thus spreading responsibility)
 - Surfacing disagreement
- Use positive framing for critical feedback
 - Address the entire team e.g.
 - Giving feedback

Opinion piece:

Topic and theme

- O What is the primary focus of my opinion piece?
- What is the point I'm trying to make? Why is it important?
- o topic is usually mentioned in your first paragraph

Openings

- O Why should the reader be interested in what I have to say?
- O What is the foundation for my argument?
- Use hooks: Anecdotes/quotations/metaphors /rhetorical questions/surprising facts/...

Research

o How can I back up my opinion with additional research?

Endings

- o How am I going to answer the statement made in my introduction?
- o How am I going to call the reader to action?
- o Everything should tie together in the end

Voice

- O Who am I writing to?
- o Is it conversational, descriptive, informative, informed, observant, ...?

Use hooks:

Anecdote

 At a certain point, my boss asked me to develop software that would detect when the diesel engine was being tested, and then it had to change performance to improve results. I considered this to be unethical and refused.

Quotation

o "To live is the rarest thing in the world. Most people exist, that is all." – Oscar Wilde

Rhetorical question

o How many developers have been asked to program something unethical?

Surprising fact

o Did you know that there are 7106 living languages worldwide?

Final checklist:

Clarity

o Is it to the point? Is your opinion clearly epxressed?

Coherence/unity

Use of linking words, one topic per paragraph

Voice and tone

o Who is your audience?

Consistency of your opinion

o Does it make sense? Are there any contradictions?

Sources

o Have you used sources?

Modal verbs:

Possibilities	Certainty	Abilities	Permission	Requests	Obligations	suggestions
can could be able to may might	must should shall	can could be able to	can could may	could would will	must had to	should could

Conditionals:

	Conditional clause	Main clause
Zero conditional (cause-effect)	Present simple If water <u>reaches</u> 100 degrees,	Present simple it boils.
First conditional (likely possibility)	Present simple If I <u>study</u> for the exam,	Will + infinitive I <u>will pass</u> .
Second conditional (unlikely possibility)	Past simple If I <u>won</u> the lottery,	Would + infinitive I <u>would buy</u> a Ferrari.
Third conditional (hypothetical situation in the past)	Past perfect If I <u>had drunk</u> less last night,	Would + have + PP I would have gone to class today.

Pages to check:

page 122-124 Skills lab

5 Unit 5: CSR (Corporate Social Responsibility – Maatschappelijk Verantwoord Ondernemen)

What is CSR-loop for a company (for a bottle of water)?
Oil rig → Refinery → Factory → Store → Consumer → Landfile

Lead-in: what is CSR?

6 Unit 6: Innovation

6.1 Questions from the contentslide

What is the industrial revolution?

- Now we are in 4.0 because of the automation, interconnectedness and data change
- 3.0 was because of the internet 1968/9
- 2.0 was because of the 'loopende band' in the 1870
- 1.0 was because of the Steam Engine 1760 1780

Name advantages and disadvantages of 5G?

- Advantages
 - o It's faster and is going to be used for self-driving cars.
 - Lane splitting → bespoke (customized) network (the radiation is focused more on one device)

С

- Disadvantages
 - Costly infrastructure
 - o Operators will have to share it
 - A lot of maintenance

Explain what disruption is?

Link industrial revolution to disruption:

Give examples of disruptive technologies and explain why they are disruptive:

6.2 Industry 4.0

Check the following pages:

pg. 155 ex 1 and 2

pg. 156 ex 2

pg. 159 ex 5

pg. 160

pg. 176-178

6.3 Disruption

Check the following pages:

pg. 163 ex 1

pg. 164 ex 2

Innovation and destructive:

- Innovation: making a new product
- Destructive (cannibalism): your new product is so great that older products/enterprises might go bankrupt.

Reading a memo:

- State the problem
- Explain to the reader why they should feel concerned.
- Focus on the result you want to obtain
- Expand on what you want the reader to do and when they have to do it