

List of topics for L3

General topic	Specific topic	Details	Sources
Git	Why do we need Git?	What are the benefits of using Git?	Theory - https://git-scm.com/book/en/v2 Chapters 1-3 Practical task - Level 2. GIT + IDE
	What's a commit and what's a branch	What's inside a commit? What's a branch exactly? What are the pointers in Git?	
	Clone a repo	Why do we need to clone a repo? What are the benefits from it comparing with downloading an archive?	
	Statuses of files in repo	What kinds of statuses are in there? How are they changing?	
	Adding files to a repo	How to add files to repo?	
	List of changes (local changes)	How to see all of the recent changes?	
	Changing a commit	How to change already created commit? How to edit message there? Files?	
	Commit history	How to see history of changes for specific file? Method?	
	Cancelling the action	How to undo merge? How to delete a commit? What's the difference between revert and reset?	
	Adding a remote repo	How to add remote repo? How to manage multiple remote repos?	
	Checkout a branch	How to checkout a branch?	
	View available branches	How to view all available branches?	
	Delete branch	How to delete branch? Will there be difference for merged and unmerged ones?	
	Merge	In which cases do we need to merge changes? How to perform it? What are the conflicts and how to solve them?	
	Squash	How to perform squash? What will be a result? What do we need to do before that?	
	How to set up name and email of author	What are the types of credentials in git? How to see them? When they'll be used?	
	Gitignore	How to set up gitignore for your programming language? How to ignore specific files?	
	Pull/Fetch	When do we need to use pull/fetch?	
CI/CD	Restricting the number of stored results	How to restrict number of stored results? What are the options of this restriction?	Practical task - [En] Level 2. CI (Jenkins) Jenkins documentation - wiki
	VCS set up	How to set up VCS connection in CI/CD?	
	Set up test execution	How to set up test execution for your programming language?	
	How to set up pre- and post-build steps	What we can do as a part of pre/post conditions?	
	Build triggers: manual, VCS change, another job, API request	In which case would we want to use each of them	
	Build on time schedule (crone expression)	How to run Jenkins job on time schedule?	
	Saving and publishing build artifacts	How to attach an artifact to a build?	
Programming Languages Constructs	Initialisation, static fields, types cast	When do we need to cast types? What's the static field? Static block?	
	Types of data (string, Integer, etc.), wraps for elementary types	Why do we need wrap classes for elementary types?	
	Simple and composite arithmetical operations, increment/decrement, logical operations		
	OOP principles in your language	How each of them can be used in your programming language	
	Syntax of the programming language, global and local variables		
	if-else, loop keywords (continue, break), other operators (while, do-while)		
	Loops		

	Classes, abstract classes, interfaces, difference between a class and an object		
	Access modifiers	What's the difference between them, when to use	
	Exceptions. How to catch, how to throw	Different types of exceptions, how to create your own	
	Comments, when do we need them		
	Libraries to work with strings		
	Collections (array list, linked list, hash map)	Difference between implementations, when to use	
	Libraries to work with text files, xml, json, api	From your experience which ones to use in specific cases	
Unit-testing tools	Pre- and post-conditions, what should be in, order of execution		
	Categories, other annotations before test	How to group/ignore/etc. tests?	
	Base class - what's that for, what should be in		
	What's a unit-test		
	Why do we need unit-tests		
	Why do we need auto-tests		
	Metrics for test coverage		
	Soft assert	What's the difference between hard and soft assertions	
Automation tools (Selenium)	Waits (implicit, explicit, fluent) and their intersection		
	FindElement vs findElements		
	types of click	When to use, what's the difference	
	locators - how to tell if it's good or bad		
	Frames		
	Alerts		
	Window size		
	Navigation		
	Capabilities	Incognito, download folder, window size, etc	
	Closing window	close/quit difference	
General Technical questions			
Windows	User Account Control		
	Service in windows	Difference between services and processes, how to kill service	
	CMD - basic commands	copy, move file, cd, etc.	
	RDP	how to connect, what do we need	
	Domain		
Network	TCP/UDP	Difference between them, when do we want to use each of them	
	DHCP		
	DNS		
	VPN		
	MAC-address		
	ping/ipconfig/tracert		
	Shared resources and permissions		
Virtual Machines	VirtualBox guest additions	why do we need to install them?	
	Types of connection	Most popular ones for VMs	
	Snapshots	Cold and hot snapshots, what's in each of them	
	How to create and set up a VM		
	Shared Folder		

Web	Knowing main browsers for operational systems		
	Criteria of selecting a browser for testing		
	Cookies + cache		
	HTTP vs HTTPS	Protocols SSL and TLS, differences in ports (80 & 443)	
	Get vs POST	Where do we send parameters, basic response codes	
	How to catch an HTTP request	fiddler/dev tools	
DBMS	Consoles		
	Connection URL		
	Basic syntax	different types of Join, select, limit, etc.	
	Relational DB type	primary/foreign keys, etc.	
Linux	Basic bash syntax		
	Types of users (sudo)		
	How to install an app		