Algorithms

- BigO notation
- Sorting algorithms (define how algorithm works and what's a big o notation)

Podstawy kryptografii

- What algorithm would you use to hash a password?
- symmetric asymmetric cryptography

Java Basics

- Java 7, Java 8 → 2 favorite features, try-with-resources
- LinkedList vs ArrayList what is more optimal at what operations?
- 'final','volatile' and threads
- Immutable objects, how to create an immutable object.
- Thread basics: how to implement a thread? **What ways you know of making objects thread-safe?**
- Boxing/autoboxing
- HashMap -hashing array, contract between equals/hashcode
- Asynchronous processing

Version control

- Git rebase, git revert, git reset

Web security

- XSS, HSTS, CSRF
- OAuth 2.0 authentication vs Basic authentication

OODesign

- Encapsulation, Clean code

Testing

- What kind of tests do you know?
- Mocks/stubs/fakes

Spring

- IoC vs DI
- How do you provide configuration metadata to the Spring Container?
- Auto-wiring
- The default scope of a Spring Bean is `Singleton`.

Design patterns

- Command, Visitor, Observer ,Template method vs Strategy pattern, Decorator

HTTP

- Get idempotent, SOAP vs REST, RESTful methods, REST versioning support
- Http methods: what about PATCH?

DB

- ACID, ORM (Object-relational-mapping)
- DB transaction isolation levels: serializable, repeatable reads, read_commited, read_uncomitted
- Indeksy? Jakie struktury danych?
- SQL Injection attack
- SQL vs NoSQL

Software architecture

- Microservices, Microservices vs SOA, CQRS, Event sourcing, DDD, BDD

Web & frontend

- What is the difference between sessionStorage, localStorage and cookies?
- [AngularJS] What is the difference between controller and service?
- [AngularJS] How to share data between controllers?

Distributed computing

- Strategies of holding distributed data.
- CAP Theorem (Consistency Availability Partition tolerance)
  Consistency - Every read receives the most recent write or an error
  Availability - Every request receives a (non-error) response – without guarantee that it contains the most recent write
  Partition tolerance - The system continues to operate despite an arbitrary number of messages being dropped (or delayed) by the network between nodes

Linux commands

- Top processes
- Finding what program runs on port
- Find what takes most place in directory

ArrayList vs LinkedList

Performance

ArrayList (index-based)

Search: O(1) -> index access

Removal: worst-case O(n) when removing head as array must be rewritten, best-case O(1) on tail removal

Insertion: worst-case O(n), O(1) when append at the tail/beginning

LinkedList

Search: O(n) -> needs to traverse across all nodes

Removal: O(1) -> repointing the nodes

Insertion: O(1) -> repointing the nodes

OO Principles

S SRP

Single responsibility principle

a class should have only a single responsibility (i.e. only one potential change in the software's specification should be able to affect the specification of the class)

O OCP

Open/closed principle

“software entities … should be open for extension, but closed for modification.”

L LSP

Liskov substitution principle

“objects in a program should be replaceable with instances of their subtypes without altering the correctness of that program.” See also design by contract.

I ISP

Interface segregation principle

“many client-specific interfaces are better than one general-purpose interface.”

D DIP

Dependency inversion principle
one should “Depend upon Abstractions. Do not depend upon concretions.”