

# Software Proficiencies and Research

This document aims to provide a summary of the areas of research, training and my general level of proficiency within Java, Kotlin, Android and cloud technologies. The below corresponds to a concise summary of the contents of collated research contained within the 'Research' folder in this repository.

## Java SE

| Top Level |                |
|-----------|----------------|
| Class     | Abstract Class |
| Interface | Enum           |

| Nested Types       |                                                                                                                |
|--------------------|----------------------------------------------------------------------------------------------------------------|
| Types              | Local Class<br>Inner Class<br>Static Nested Class<br>Anonymous Class<br>Lambda Expressions<br>Method Reference |
| Members            | Permitted Members<br>Access to Outer Scopes<br>Shadowing<br>Final or Effective Final                           |
| Nesting Principles | Memory Depiction<br>Instantiation From External Scopes                                                         |

| Static Nested Class                |  |
|------------------------------------|--|
| Effective Top Level Class          |  |
| Internal Memory Depiction          |  |
| Permitted Access to Outer Scopes   |  |
| Instantiation From External Scopes |  |

| Anonymous Class        |  |
|------------------------|--|
| Header / Body Syntax   |  |
| Anonymous Object       |  |
| Extended Class         |  |
| Inline Implementation  |  |
| Access to Outer Scopes |  |

| Lambda Expression        |  |
|--------------------------|--|
| Purpose / Intended Use   |  |
| Functional Interface     |  |
| Parameters / Body Syntax |  |
| Zero Parameters          |  |
| Multiple Parameters      |  |
| Explicit Parameters      |  |
| Implicit Target Type     |  |
| Access to Outer Scopes   |  |

| Enum                            |                                                                                  |
|---------------------------------|----------------------------------------------------------------------------------|
| <b>Declaration / Definition</b> | Header / Body Syntax<br>Enum Constants<br>Enum Constructor<br>Memory Composition |
| <b>Instantiation</b>            | Declaration<br>Referencing<br>Restrictions                                       |

| Blocks                |  |
|-----------------------|--|
| Permitted Usage       |  |
| Permitted Members     |  |
| Unpermitted Members   |  |
| Initialisation Blocks |  |
| Initialisation Blocks |  |
| Labelled Blocks       |  |

| Class                           |                                                                                                                                                                                                                                                                                                                   |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Declaration / Definition</b> | Header / Body Syntax<br>Access Modifiers<br>Memory Composition<br>Static<br>Non-Static<br>Overloading<br>Overriding<br>Shadowing<br>Fields<br>Instance<br>Class<br>Constants<br>Constructors<br>Default No Argument<br>Super Constructor<br>Constructor Chaining<br>Initialisation Blocks<br>non-Static<br>Static |
| <b>Instantiation</b>            | Declaration<br>Allocation<br>Initialisation<br>Variable Referencing                                                                                                                                                                                                                                               |
| Methods                         | Signature<br>Parameter List<br>Parameter Type<br>[ByValue]<br>Primitive<br>Arrays<br>VarArgs<br>Object Variable<br>Interface Variable<br>Method Ref.<br>Lambda Expression<br>Ambiguity<br>Scope / Access<br>Covariant Return Type                                                                                 |
| Extending                       | Compatibility                                                                                                                                                                                                                                                                                                     |
| Interface Implementation        | Single<br>Multiple<br>Generic                                                                                                                                                                                                                                                                                     |
| Member Referencing              | Garbage Collection                                                                                                                                                                                                                                                                                                |

| Interface                       |                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Declaration / Definition</b> | Header / Body<br>Structure<br>Syntax<br>Memory Composition<br>Implicit Access Modifiers<br>Members<br>Permitted<br>Unpermitted<br>Fields<br>Constants Only<br>Methods<br>Abstract<br>Static<br>Default<br>Extending<br>Multiple Inheritance<br>non-Static Members<br>Aggregation<br>Non-Ambiguity<br>Non-Clashing<br>Consolidation |
| <b>Class Implementation</b>     | Abstract Method Implementation<br>Abstract Method Aggregation<br>No Ambiguity                                                                                                                                                                                                                                                      |
| <b>Interface Variables</b>      | Polymorphism<br>Anonymous Objects<br>Compatibility                                                                                                                                                                                                                                                                                 |
| <b>Types</b>                    | Normal<br>Functional<br>Semantic<br>Annotation                                                                                                                                                                                                                                                                                     |

| Arrays                                        |                                               |
|-----------------------------------------------|-----------------------------------------------|
| Declaration / Allocation / Initialisation     | Utility Methods                               |
| Utility Classes<br>System<br>java.util.Arrays | Sorting<br>Collection Conversion<br>Searching |
|                                               | Copying<br>Comparison                         |

| Annotations                                 |                                                                                                                                  |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Declaration<br>Elements                     | Types<br>Annotation [Predefined]<br>Annotation Type [Custom]<br>Container Annotation Type<br>Meta-Annotations<br>Type Annotation |
| Deployment<br>Single<br>Multiple / Repeated |                                                                                                                                  |



## Techniques and Data Structures

**Dynamic Programming**

1D  
2D  
Top-Down  
Bottom-Up / Tabulation

Divide and Conquer  
Greedy  
Backtracking  
Path / Level Tracking  
Sliding / Dynamic Window  
Binary Search  
Big O (Time / Space)

Linked List  
Stack  
Queue  
Deque  
Heap

Min Heap  
Max Heap  
Priority Queue

**Recursion**

Recursive Method Structure  
Preprocessing  
Postprocessing  
Base / Ongoing Case  
Call Tree  
Tail Recursion

Hash Table / Map  
Prefix Array  
Suffix Array  
Disjoint Set / Union Find

**Graphs / Trees**

Binary Tree  
Binary Search Tree  
Balanced Binary Search Tree  
Minimum Spanning Tree  
n-ary Tree  
Trie

**Graph / Tree Traversal**

Directed      BFS / DFS  
Undirected      preOrder  
Acyclic      inOrder  
Edge List      postOrder  
Adjacency List

## Multithreading / Concurrency

**Interface**

Runnable  
Callable  
Future  
Lock  
Condition  
ExecutorService  
    ThreadPoolExecutor  
    FixedThreadPool  
ScheduledExecutorService  
    ScheduledThreadPool  
BlockingQueue<E>  
ConcurrentMap<K,V>

**Class**

Thread  
ReentrantLocks  
Semaphore  
Executors  
CountDownLatch  
CyclicBarrier  
AtomicInteger  
ConcurrentHashMap<K,V>  
Exchanger<V>  
PriorityBlockingQueue<E>  
PriorityBlockingQueue<E> with Comparable Element

**Fork / Join**

Class  
ForkJoinPool  
RecursiveAction  
RecursiveTask<V>  
Sequential v Parallel (via Fork / Join)

**Serial v Parallel**

Mergesort  
Find Sum  
Streams

**States**

Livelock  
Deadlock

**Techniques**

Synchronisation Blocks  
Wait / Notify  
Volatile Memory  
Object Locks  
Object Locks with Conditions  
Producer / Consumer

## Packages

Management / Organisation  
Naming Conventions  
Referencing

Importing Static Members  
Import Wildcards  
Importing Top Level Components

## SOLID Principles

Single Responsibility  
Open-Closed  
Liskov Substitution  
Interface Segregation  
Dependency Inversion

## Infrastructure

JDK  
    SE: Standard Edition  
    EE: Enterprise Edition  
    ME: Micro Edition  
JRE / JVM  
    JIT Compiler  
        CLASSPATH  
        Source Directory  
        Java API Library  
Class Loaders  
    Bootstrap  
    Extension  
    System / Application  
Memory Allocation  
    Heap  
    Stack  
    Program Counter

## Miscellaneous

final      instanceof  
null      .equals()  
super      .hashCode()  
this  
Constructor Chaining  
Local Reference  
Method Argument / Return  
Statements / Expressions / Blocks  
Composition      Hierachy  
Types      Concatenation  
Composition v Aggregation

## Spring

**Projects**

Spring Boot      Spring Batch / Integration  
Spring MVC      Spring Security  
Spring Validation      Spring Security For OAuth  
Spring Data      Spring Security Authorisation Server

**Bean Declaration / Definition**

via XML  
via Annotation  
via Bean Method (@Bean)  
via Component Scanning (@Component)  
via Configuration Classes (@Configuration)

**Dependency / Bean Injection**

via Constructor  
via Setter  
via Field  
via Autowiring

**Spring Initializr**

Project Creation / Structure  
    Source Code      Manifest File  
    Resources      Executable \*.jar / \*.war  
    Test      Mavern / Gradle Build  
    application.properties  
    application.yml  
Starter Dependency Selection

**Spring Tool Suite**

IDE Plugin  
Spring Boot Dashboard

**Configuration**

DSL Configuration  
Configuration Properties  
Profiles

**Spring MVC Web Application / REST Endpoint**

Embedded Tomcat Server  
Thymeleaf Templates

@Controller  
@RestController  
    @RequestMapping  
    @GetMapping  
    @PostMapping  
    @PutMapping  
    @DeleteMapping  
    @PatchMapping  
    @SessionAttributes  
    @ModelAttribute  
    @RequestBody  
    @ResponseStatus  
    RestTemplate  
    ResponseEntity  
    Object Mapping  
    JSON / XML Payload  
    Pagination  
    Cross Origin Resource Sharing  
    Path Variables  
    HATEOAS

**Testing**

@SpringBootTest  
@WebMvcTest  
@Test

**Dev Tools**

Auto Restart  
Auto Refresh  
No Caching  
H2 Console

**Lombok**

@Data (Data Class)  
Getter / Setter Auto Populate

**Logging**

@Slf4j  
Logback

**Persistence**

Spring Data JDBC/JPA/...  
JDBCTemplate  
Schema (via \*.sql)  
SpEL  
@Repository  
@Table  
@Data  
@Id  
@Query

**Security**

User Authentication  
Security Filter Chains  
3rd Party Authentication  
OAuth2  
JWT  
OpenIDConnect  
Cross Site Request Forgery  
Client Repositories

**Messaging**

Asynchronous Brokers  
    JMS  
    RabbitMQ  
    Kafka  
Push / Pull Models  
Message Converters  
Message Header / Payload  
Message Listeners  
JMSTemplate  
RabbitMQTemplate  
KafkaTemplate

**XML HTTP REST****XML**

Purpose  
Standards  
XML Document  
    Prologue  
    Elements  
        Tags  
        Attributes  
        Root  
        Siblings  
        Entity Reference  
Well Formed  
Comments  
Namespaces  
XMLHttpRequest  
XML Parser  
XML DOM  
XPath  
XSLT  
XQuery  
XLink  
XPointer  
DTD / XML Schema

**HTTP**

Purpose  
Properties  
    Connectionless  
    Media Independent  
    Stateless  
    Versions

**MIME Type**

Format  
Components  
    Type  
    Tree / Subtype  
    Suffix  
    Parameters  
Registration Trees  
    Standards Tree  
    Vendor / Producer Tree  
    Personal / Vanity Tree  
    Unregistered Tree

**REST API**

Purpose  
Client / Server  
Stateless  
Uniform Interface  
    Resource Identification: URI  
    Resource Manipulation: GET, PUT, POST, DELETE...  
    Resource Description: Content-Type: application/json

**Workflows****Continuous Integration > Continuous Delivery / Deployment**

Low Risk  
Progress  
Automation  
User Feedback

**Test Automation**

Unit Test Suite  
Regression Test Suite  
Performance Test Suite

**Scrum**

Purpose  
Team / Roles  
    Product Owner  
    Scrum Master  
    Developers  
Sprint Events / Workflow  
    Plan  
    Development  
    Review  
    Retrospective

**Maven / Gradle**

Purpose  
Project Structure  
    \*.pom / build.gradle  
    Modules  
    Dependencies  
    Plugins  
Maven WAR  
Maven Cargo  
Build Lifecycle  
mvnrepository.com  
Goals / Tasks

**DevOps**

Purpose  
Advantages  
Pipeline  
    Idea > Code > Build > Deploy > Manage > Learn > Idea...  
Velocity  
Quality  
Value Stream Map

**Artifacts**

Product Goal  
Product Backlog  
Increment (of Value)  
Sprint Backlog  
Sprint Goal  
Items  
Plan of Delivery  
Burndown Chart

**TDD**

Cycle: Red > Green > Refactor > Red...  
Unit Tests  
    Solution Space  
    Output Space  
    Constraint  
    Certainty / Flexibility  
    Uncertainty Principle  
    Value / Property Testing  
Test Patterns  
    Self Shunt  
    Humble Object  
Test Doubles  
    Dummy  
    Stub  
    Spy  
Mock  
Fake

## Kotlin

| Class                           |                         |                             | Collections              |               |                    |
|---------------------------------|-------------------------|-----------------------------|--------------------------|---------------|--------------------|
| Declaration / Definition        |                         | Data Class                  |                          |               |                    |
| Constructors                    |                         | Purpose                     | List                     |               |                    |
| Primary                         |                         | Creation                    | Map                      |               |                    |
| Secondary                       |                         | Built-In Implementations    | Set                      |               |                    |
| Init Block                      |                         | .toString()                 | Mutable / Read-Only      |               |                    |
| Properties                      |                         | .equals / ==                | Casting                  |               |                    |
| Member Functions                |                         | .hashCode()                 | Extension Functions      |               |                    |
|                                 |                         | .copy()                     | .filter()                |               |                    |
| Extension                       |                         | .println()                  | .any()                   |               |                    |
| Interface Implementation        |                         | .component1()...            | .map()                   |               |                    |
| Delegation (by)                 |                         |                             | .mapNotNull()            |               |                    |
| Operator Overloading            |                         |                             | .none()                  |               |                    |
|                                 |                         | Copying                     | .find()                  |               |                    |
|                                 |                         | Destruction Declarations    | .first()                 |               |                    |
|                                 |                         |                             | .firstOrNull()           |               |                    |
|                                 |                         |                             | .count()                 |               |                    |
|                                 |                         |                             | .partition()             |               |                    |
|                                 |                         |                             | .groupBy()               |               |                    |
|                                 |                         |                             | .groupingBy()            |               |                    |
|                                 |                         |                             | .maxBy()                 |               |                    |
|                                 |                         |                             | .minBy()                 |               |                    |
|                                 |                         |                             | .getOrPut()              |               |                    |
|                                 |                         |                             | .sortByDescending()      |               |                    |
| Properties                      |                         | Enum Class                  |                          |               |                    |
|                                 |                         | Sealed Class                |                          |               |                    |
|                                 |                         | Nested / Inner Class        |                          |               |                    |
|                                 |                         | Generics                    |                          |               |                    |
| Backing Field                   |                         | Classes                     |                          |               |                    |
| get() set()                     |                         | Interfaces                  |                          |               |                    |
| value field                     |                         | Functions                   |                          |               |                    |
| Lazy                            |                         | Extension Functions         |                          |               |                    |
| lateinit                        |                         |                             |                          |               |                    |
| val var                         |                         | Type Arguments / Parameters |                          |               |                    |
| Default value                   |                         | Bound / Unbounded           |                          |               |                    |
| Delegation (by)                 |                         | Nullable / non-Nullable     |                          |               |                    |
| Extension Properties            |                         |                             |                          |               |                    |
| Creating                        |                         |                             |                          |               |                    |
| Referencing                     |                         |                             |                          |               |                    |
| Receiver (via this)             |                         |                             |                          |               |                    |
| Language                        |                         |                             |                          |               |                    |
| History                         |                         | OOP / Functional Styling    | equals() / == / ===      | Inlining      |                    |
| Purpose                         |                         | Statically Typed            | Constants                | Arrays        |                    |
| Java / JVM Interoperability     |                         | Concision                   | Pairs                    |               |                    |
| Java Interpretation             |                         | Modules / Packages          |                          |               |                    |
| Java Equivalents                |                         | Top Level                   |                          |               |                    |
| Access Modifiers                |                         | Loops                       | Types                    |               |                    |
| private                         | internal                | in                          | Type Inference           | Type Casting  | Unit / Nothing     |
| protected                       | public                  | until                       | is / as / as?            | Smart Casting | val / var          |
|                                 |                         | downTo                      | .let()                   | ?             | Any                |
|                                 |                         | Range                       |                          |               |                    |
|                                 |                         | ..                          |                          |               |                    |
| Conditionals                    |                         | Strings                     | Common Library Functions |               |                    |
| Expressions                     |                         | Templates                   | .takeIf()                | .use()        | .withLock()        |
| Comparisons                     |                         | Multiline                   | .takeUnless()            | .with()       | .apply() / .also() |
| when                            |                         | Data Type Conversion        | .repeat()                |               |                    |
| if-else chain                   |                         | Concatenation               |                          |               |                    |
| Type Checking                   |                         | Exceptions                  | Common Annotations       |               |                    |
| Ranges                          |                         | Structure / Form / @Throws  | @JvmName                 | @JvmStatic    |                    |
| Enum                            |                         | try catch                   | @JvmOverloads            | @JvmField     |                    |
| Pairs                           |                         | Assignable                  |                          |               |                    |
|                                 |                         | Function Wrappers           |                          |               |                    |
|                                 |                         | .require()                  |                          |               |                    |
| Nullable / non-Nullable         |                         |                             |                          |               |                    |
| Purpose                         | Elvis Operator          |                             |                          |               |                    |
| Safe Call                       | non-Null Assertion !!   |                             |                          |               |                    |
| Language                        |                         |                             |                          |               |                    |
| Java / Kotlin Interoperability  |                         |                             |                          |               |                    |
| via Annotation                  |                         |                             |                          |               |                    |
| via Explicit Type Specification |                         |                             |                          |               |                    |
| via Intrinsic Checks            |                         |                             |                          |               |                    |
| NPE Safety                      |                         |                             |                          |               |                    |
| Platform Types                  |                         |                             |                          |               |                    |
| Functions                       |                         |                             | Sequences                |               |                    |
| Top-Level                       | Anonymous               | Extending                   | Purpose                  |               |                    |
| Member                          | Local                   | Overriding                  | Stream Equivalent        |               |                    |
|                                 |                         |                             | Collection Alternative   |               |                    |
| Forms                           |                         | Member References           | Intermediate Operations  |               |                    |
| As Variable                     | Named Parameters        | Bound / Unbound             | Terminal Operations      |               |                    |
| As Parameter                    | Default Arguments       |                             |                          |               |                    |
| As Return                       | Function Expressions    | Extension Functions         | Lazy                     |               |                    |
|                                 |                         | Purpose                     | Yield                    |               |                    |
| Function Types                  |                         | Creating                    | .asSequence()            |               |                    |
| Implicit / Explicit             | nullable / non-nullable | Managing                    | .generateSequence()      |               |                    |
|                                 |                         | Limitations                 |                          |               |                    |
|                                 |                         | Invocation from Java        |                          |               |                    |
|                                 |                         | infix                       |                          |               |                    |

| Android Studio            |                        |                           |                               |
|---------------------------|------------------------|---------------------------|-------------------------------|
| Project Structure / Files |                        | UI                        |                               |
| Source Code               | Gradle                 | Layout XML                | Composable                    |
| Resources                 | Manifest File          | LinearLayout              | CoordinatorLayout             |
| Libraries                 | APK file               | FrameLayout               | AppBarLayout                  |
| UI / Layouts              | Emulation              | ScrollView                | CollapsingToolbarLayout       |
|                           |                        | Padding/Margin            | Blueprints                    |
|                           |                        | Weighting                 | Layout Inflation              |
| Code Editor               | USB Direct             | Gravity                   | Layout Nesting                |
| Design Editor             | AVD                    | Themes                    | Collapsing Toolbar            |
| Architectures             | Intents                | AppBar                    | Scrolling Toolbar             |
|                           | Broadcasts             | Toolbar                   | Material Design               |
|                           | Services               |                           |                               |
| MVC                       | Work Manager           |                           | Navigation Bar                |
| MVI                       |                        |                           | Navigation Drawer             |
| MVVM                      |                        |                           |                               |
| MPC                       |                        |                           |                               |
| Views                     |                        | Activity                  |                               |
|                           | TextView               | Lifecycle State / Methods | Save / Restore State          |
|                           | Button                 | Lifecycle (Visibility)    | Bundle                        |
| Checkbox                  | Radio Button/Groups    | Lifecycle (Foreground)    | Device Rotation               |
| Chip/Groups               | Floating Action Button |                           |                               |
| Spinner                   | Toast                  |                           |                               |
|                           | Snackbars              |                           |                               |
|                           | View Groups            |                           |                               |
| View Binding              | Compose                |                           |                               |
| View Models               | Live Data              |                           |                               |
| View Model Factories      | Mutable Live Data      |                           |                               |
| View Model Provider       | Data Binding           |                           |                               |
|                           |                        | Multiscreen               |                               |
|                           |                        | Fragments                 | FragmentManager               |
|                           |                        | Fragment Lifecycle        | Actions                       |
|                           |                        | Navigation Component      | Safe Args / Directions / Args |
|                           |                        | Navigation Graphs         | Back Stack                    |
|                           |                        | Navigation Host           |                               |
|                           |                        | Navigation Controller     |                               |

| Architectures           |                            |      |
|-------------------------|----------------------------|------|
| Monolith                | Advantages                 |      |
|                         | Disadvantages              |      |
| Microservices           | Advantages                 |      |
|                         | Disadvantages              |      |
|                         | Characteristics            |      |
|                         | Inter-Communication        |      |
|                         | Request / Response         |      |
|                         | Event Driven               |      |
|                         | Event Messaging            |      |
|                         | Event Streaming            |      |
|                         | Design Patterns            |      |
|                         | Backend-for-frontend (BFF) |      |
| Serverless              | Entity and Aggregate       |      |
|                         | Service Discovery          |      |
|                         | Adapter                    |      |
|                         | Design Anti-Patterns       |      |
|                         |                            |      |
|                         |                            |      |
|                         |                            |      |
|                         |                            |      |
|                         |                            |      |
|                         |                            |      |
| Compute Models          | On-Prem                    | FaaS |
|                         | IaaS                       | SaaS |
|                         | PaaS                       |      |
|                         |                            |      |
| Cloud Service Providers | Azure                      |      |
|                         | AWS                        |      |
|                         | AWS Elastic Beanstalk      |      |
|                         | AWS Lambda                 |      |
|                         | Microsoft                  |      |
|                         | Azure                      |      |
|                         | Microsoft Windows Azure    |      |
|                         | Azure Functions            |      |
|                         | Google                     |      |
|                         | Google Cloud / GCP         |      |
|                         | Google App Engine          |      |
|                         | Google Cloud Functions     |      |
|                         | IBM                        |      |
|                         | IBM Cloud                  |      |
|                         | IBM Cloud Code Engine      |      |
|                         | Oracle                     |      |
|                         | Heroku                     |      |
|                         | VMWare                     |      |
|                         |                            |      |
|                         |                            |      |

## 6

| Kubernetes                     |                                                                                                                                                                                                                                                                              |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Cluster</b>                 |                                                                                                                                                                                                                                                                              |
| Control Plane                  | cloud-controller-manager<br>kube-controller-manager<br>kube-apiserver<br>kube-scheduler<br>etcd                                                                                                                                                                              |
| Node(s)                        | kubelet<br>k-proxy<br>Container Runtime<br>Docker Engine<br>CRI-O<br>Containerd<br>Mirantis Container Runtime                                                                                                                                                                |
| Objects                        | Configuration: *.yaml<br>Pod<br>Deployment<br>Pod Template<br>StatefulSet<br>ReplicaController<br>Volume<br>PersistentVolume<br>PersistentVolumeClaim<br>Secret<br>Service<br>ClusterIP<br>NodePort<br>Load Balancer<br>Ingress                                              |
|                                | Label Selector System<br>Environment Variables<br>Role Based Access Control                                                                                                                                                                                                  |
| <b>Cluster Administration:</b> | kubectl<br>kubeadm<br>minikube                                                                                                                                                                                                                                               |
| <b>Controller(s)</b>           | Node Controller<br>Job Controller<br>Endpoints Controller<br>Service Account Controller<br>Token Controller                                                                                                                                                                  |
| <b>Cloud Integration</b>       | CI / CD Workflow<br>Local > GitHub > Test Suite > DockerHub > Cloud Service Provider<br>Travis CI<br>.travis.yml<br>Cloud Service Provider<br>Configuration<br>Integration<br>Account Verification<br>Environment Variables<br>Logs / Monitoring<br>Declarative / Imperative |

## Research Materials

Please find a summary of the primary resources used to conduct the research and study of the subject areas listed above:

### Primary Online Resources

|            |                       |                                                                                                                                               |
|------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Java SE    | Oracle Java Tutorials | <a href="https://docs.oracle.com/javase/tutorial/index.html">https://docs.oracle.com/javase/tutorial/index.html</a>                           |
|            | Oracle Java API       | <a href="https://docs.oracle.com/javase/8/docs/api/index.html">https://docs.oracle.com/javase/8/docs/api/index.html</a>                       |
| Kotlin     | Online Documentation  | <a href="https://kotlinlang.org/docs/home.html">https://kotlinlang.org/docs/home.html</a>                                                     |
| Android    | Online Documentation  | <a href="https://developer.android.com/">https://developer.android.com/</a>                                                                   |
| Spring     | Online Documentation  | <a href="https://docs.spring.io/spring-framework/docs/current/reference/">https://docs.spring.io/spring-framework/docs/current/reference/</a> |
| Kubernetes | Online Documentation  | <a href="https://kubernetes.io/docs/home/">https://kubernetes.io/docs/home/</a>                                                               |
| Docker     | Online Documentation  | <a href="https://docs.docker.com/">https://docs.docker.com/</a>                                                                               |

### Udemy Courses

Docker and Kubernetes: The Complete Guide  
 Java Spring Tutorial Masterclass – Spring Framework 5  
 Java Programming Masterclass  
 Design Patterns in Java  
 Concurrency, Multithreading and Parallel Computing in Java  
 Java Memory Management  
 Java Application Performance and Memory Management  
 Java Reflection  
 The Complete Oracle SQL Bootcamp  
 Dynamic Programming and Data Structures  
 Test Driven Development

### Coursera Courses

Kotlin for Java Developers by JetBrains

### Bibliography

|                             |         |                                      |                |
|-----------------------------|---------|--------------------------------------|----------------|
| Java The Complete Reference | 8th Ed. | Herbert Schildt                      | Oracle Press   |
| Java Cookbook               | 4th Ed. | Ian F Darwin                         | O'Reilly       |
| Android Development         | 3rd Ed. | Dawn and David Griffiths             | O'Reilly       |
| Spring in Action            | 6th Ed. | Craig Walls                          | Manning        |
| Cloud Native Java           | 1st Ed. | Josh Long and Kenny Bastani          | O'Reilly       |
| Pro Git                     | 2nd Ed. | S.Chacon B.Straub                    | Apress         |
| Design Patterns             | 1st Ed. | E.Gamma R.Helm R.Johnson J.Vlissides | Addison Wesley |
| Clean Architecture          | 1st Ed. | R.C.Martin                           | Prentice Hall  |
| Clean Craftsmanship         | 1st Ed. | R.C.Martin                           | Prentice Hall  |
| The Clean Coder             | 1st Ed. | R.C.Martin                           | Prentice Hall  |