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|  | **MON** | **TUE** | **WED** | **THU** | **FRI** | **ENVIRONMENT** |
| **Week 1 Java** | First Day Orientation  Introduction to Java  JDK, JRE, JVM  First Java Program: HelloWorld  Class vs Object Pillars of OOP Stack and Heap  Garbage Collection  Control Flow Statements  Packages and Imports  Constructors  Methods and Parameters  Variable Scopes Access Modifiers  Non-access modifiers  Introduction to Git  Week 1 Day 1 Hackerrank Activity | String API  StringBuilder, StringBuffer  Arrays, Var-args, for-each loops  Annotations Casting Wrapper Classes Object class Abstract Classes Interfaces  Intro to TDD and Unit Testing  JUnit Annotations Assert Methods | Project 0  Exception Handling or Declarations  Exception Hierarchy  Checked vs Unchecked Exceptions  Try-with-resources Multi-catch blocks  Custom Exceptions  Collection API Iterable Interface Lists  Sets Queues Maps  Iterator interface  HashSet and TreeSet  ArrayList and LinkedList  ArrayDeque and PriorityQueue  Comparable Interface  Comparator interface  Generics | Project 0 Thread Class  Runnable Interface  States of a Thread Multithreading Synchronization  Producer / Consumer problem  Lambdas  Functional Interfaces  Stream API Serialization  File I/O: FileInputStream/FileR eader/FileWriter  Read from console (Scanner) | Project 0  Creational: Singleton  Creational: Factory  Introduction to Maven  Project object model (POM)  Maven Lifecycles  Maven Repositories  Project Coordinates  Overview of Logging  Logging Levels  Setting Logging Threshold |  |

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|  | **MON** | **TUE** | **WED** | **THU** | **FRI** | **ENVIRONMENT** |
| **Week 2 SQL/RDBMS** | AWS Introduction AWS RDS  AWS EC2  SSH Into EC2 Instance  Security Groups AMI  EBS  Week 2 Day 1 Hackerrank Activity | Project 0 Unix  Commands  Environment Variables  File Permissions  Package Managers  Command-Line Text Editors  Overview Database vendors Data types Defining Schema | Project 0  DDL - Data Definition Language  DML - Data Manipulation Language  DQL - Data Query Language  DCL - Data Control Language  Constraints  Referential Integrity  Table relationships  / multiplicity Normalization | Project 0  TCL - Transaction Control Language  Atomicity Isolation Consistency Durability  Read phenomena  Setting up the Database Driver  Connection Interface  Interfaces of JDBC  Simple & Prepared Statements  Callable Statement  Accessing Stored Procedures  Properties file  Design Pattern: Data Access Object (DAO) | Project 0  Inner / Outer Joins  Left / right Joins Equi & Theta Joins Self-join  Cross-join  Set Operations What is a view,  advantages of views  Creating/modifying views  What is an index, advantages of indexes  Types of indexes Creating an index  Stored Procedures vs functions |  |

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| Project 0 |
| Java assessment |
| Individual interviews |
| Quality control audit |

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|  | **MON** | **TUE** | **WED** | **THU** | **FRI** | **ENVIRONMENT** |
| **Week 3**  **HTML/CSS/JavaScript & Servlet** | Overview of HTML  HTML Tags  HTML Document Structure & DOM  Elements and Attributes  Inline and Block Elements  Common Tags  Form Elements and Its Attributes  Input Elements and Input Types  Select and Multi- select  Submitting Forms HTML5 Validation Overview of CSS CSS Box Model  Inline, Internal, and External Stylesheets  CSS Properties Element Selectors  Class and Id Selectors  Responsive Web Design Overview  Intro to AWS S3  AWS S3 Bucket Configuration  Hosting Static Sites on S3  Week 3 Day 1 Hackerrank Activity | Project 0  Client and Server Architecture  What is a servlet?  Web Server and Servlet Container  Installation: Tomcat server  Life Cycle of a Servlet  Servlet API  Servlet Declarations and Mapping  Deployment descriptor (web.xml)  Form Processing  ServletConfig and ServletContext parameters  Hidden Form Fields  Request Dispatcher  Writing plain text to the response Object | Project 0  Introduction to REST  Exposing and Consuming RESTful API endpoints  Jackson Library  Exception and Error Handling  HttpSession API  Session Management in Servlets  URL Rewriting Cookies  Front Controller Design Pattern  MVC Design pattern | Project 1  JavaScript Introduction  Data types Variable Scopes Arrays  "this" keyword "strict" mode JSON  Type Coercion  Callback Functions  Closures  async/await keywords  OOP in JS | Project 1 DOM Structure  Selecting elements from the DOM  DOM  Manipulation  Traversing the DOM  Events & Listeners  Bubbling, capturing  let and const keywords  Template Literal Arrow functions Promises  AJAX Workłow with XmlHttpRequest Object  Working with JSON in AJAX  Fetch API  Week 3 Day 5 Hackerrank Activity |  |

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| Project 0 |
| SQL & Unix assessment |
| Interview & P0 check- in |
| Quality control audit |

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|  | **MON** | **TUE** | **WED** | **THU** | **FRI** | **ENVIRONMENT** |
| **Week 4 DevOps/Hibernate** | AWS Regions and Availability Zones  EC2 Autoscaling  Git łow & Branching strategiesb  Week 4 Day 1 Hackerrank Activity | Project 1 Containers vs VMs Containerization Installing Docker  Docker Architecture  Docker Daemon Docker images Docker Containers Dockerfile  Docker volumes  Docker best practices  Dockerfile keywords  Building an image  Creating a container  Managing Containers  Docker Command Cheatsheet  Docker Compose  DevOps Overview  DevOps and Agile  Continuous integration  Continuous deployment  Continuous delivery | Project 1 Jenkins  Jenkins job/project  Jenkins build Maven review  SonarCloud & SonarLint | Project 1  Object-relational mapping  Hibernate and  JPA  hibernate.cfg.xml  file  Hibernate architecture  Interfaces of hibernate  Annotations for model classes  Native SQL Object states HQL | Project 1 Criteria API Named queries Caching  ACID Properties  Service Locator Design Pattern  XML Overview |  |

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| Project 1 |
| Front-end & servlet assessment |
| Individual interviews |
| Quality control audit |

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|  | **MON** | **TUE** | **WED** | **THU** | **FRI** | **ENVIRONMENT** |
| **Week 5 Angular** | Single Page Application (SPA)  History of Angular  AngularJS vs Angular 4+  Week 5 Day 1 Hackerrank Activity | Project 1  Node as a JS runtime; npm as a package manager  Package.json file TypeScript Intro  Variable data types  Classes and Access Modifiers  Decorators Interfaces Webpack Angular CLI  Component lifecycle methods  @Component decorator  Structural directives  Attribute directives | Project 1  @NgModule decorator  Pipes  Custom Pipes 1-way data  binding  2-way data binding  Services and Dependency Injection | Project 1 HttpClient  Setting up routing Route guards  RxJS -  Observables  RxJS - Subjects Pub/Sub design  pattern  Event Emitters | Project 1  Testing in Angular with Jasmine & Karma  Angular review  Introduction to SDLC  Agile vs Waterfall  Agile/Scrum concepts  Story pointing Scrum ceremonies  Week 5 Day 5 Hackerrank Activity |  |
| **Week 6 Spring** | Overview and Use Cases  Intro to Spring  Spring IOC Container & Dependency Injection  XML vs Annotation-based configuration  Bean lifecycle  Injecting primitives (XML)  Scopes of a bean Annotations  Week 6 Day 1 Hackerrank Activity | Project 2  Overview of AOP and cross-cutting concerns  Advice  Pointcut and Join Points  Aspect-J Stereotypes Lombok | Project 2  MVC Architecture and Annotations  Form Input with Spring  @Controller - MVC Annotations  @RequestMapping - MVC Annotations  Path Variables and Request Params | Project 2 Spring Data Spring Boot  Spring Data Annotations  Validation @Transactional  Transaction Propagation Strategies | Project 2  Using Angular to make RESTful calls to a Spring controller  Spring Boot Actuator  Spring Boot DevTools  Dynamic Environment Configuration- Spring Boot profiles  Overview of Web Services  Using RestTemplate to consume web services |  |

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| Project 1 |
| DevOps & Hibernate assessment |
| Group interviews |
| Quality control audit |

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| Project 2 |
| Angular & SDLC assessment |
| Group interviews |
| Quality control audit |

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|  | **MON** | **TUE** | **WED** | **THU** | **FRI** | **ENVIRONMENT** |
| **Week 7 Microservices** | Overview of web services  Service oriented architecture (SOA)  Web Services online example  HTTP review- request, response, status codes, verbs  Assign Hackerrank Group Research Assignment | Project 2  Web Services best practices  History of web services- SOAP vs REST  REST concepts- resources, constraints  REST- content negotiation  Richardson Maturity Model  Idempotent and safe operations | Project 2  What are microservices  Advantages / disadvantages of a microservice architecture (MSA)  Characteristics of a MSA  MSA vs Monolith applications  Discovery service and Netłix Eureka Server  Consul - Discovery Service  API Gateway  Spring Cloud Gateway  Load balancing  Circuit breaker design pattern  Messaging Queues  Config Server | Project 2  Containerization & orchestration  Distributed tracing Monitoring tools  Hackerrank Research Assignment Group Discussion | Project 2 Review REST  Review Microservices architecture  Review Docker  Hackerrank Group Research Assignment Presentation |  |
| **Week 8**  **Project 3** | Project 3  Quality control audit Individual  Hackerrank Assessment | Project 3 | Project 3 | Project 3 | Project 3 |  |
| **Week 9 Project 3/Panel**  **interviews** | Project 3  Quality control audit- cumulative | Project 3 | Project 3 | Project 3 | Project 3 |  |
| **Week 10**  **Project 3 showcase** | Project 3 | Project 3 | Project 3 | Project 3 |  |  |

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| Project 2 |
| Spring assessment |
| Interview- group or sprint retrospective |
| Quality control audit |

Project 1

HTML, Servlet, Maven, Git, JavaScript,

Hibernate, EC2, S3

Project 3

Spring Boot, Spring Data, Web Services,

Trainer DevOps pipeline, AWS, Angular 4, Microservices

**PROJECT**

**TECHNOLOGIES**

Project 0

Java, SQL, JDBC, Scanner

Project 2

Angular 4, Hibernate, Maven, Git,

Associate DevOps pipeline, AWS, Spring Boot, Spring Data