Introduction to

Java 8



BY

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(Total 56 Hours)

 Section contain Theory Discussion  Section Contain Practical Lab

Section Contain Assignment

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| SECTION 1 : INTRODUCTION (65 min) | | |
| Introduction about Programming Language Paradigms - Why Java? | 15 min |  |
| Java Designing Goal | 10 min |  |
| Installing Java | 15 min |  |
| Difference between JDK,JRE and JVM | 15 min |  |
| Java’s Magic Bytecode. | 10 min |  |

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| SECTION 2 : JAVA SAMPLE PROGRAM (105 min) | | |
| Java Program Development | 10 min |  |
| Compilation & Execution | 10 min |  |
| Java Source File Structure | 15 min |  |
| Rectifying common errors | 15 min |  |
| Lexical Tokens | 5 min |  |
| Keywords | 5 min |  |
| Command Line Arguments | 15 min |  |
| \*\* Assignment | 30 min |  |

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| SECTION 3 : PROGRAMMING FUNDAMENTALS (70 min) | | |
| Data types | 10 min |  |
| Difference between Primitive & Non Primitive Datatypes | 10 min |  |
| Variable Declaration & Initialization | 10 min |  |
| Type Casting | 5 min |  |
| Operators and its types | 5 min |  |
| \*\* Assignment | 30 min |  |

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| SECTION 4 : CONTROL STRUCTURE AND LOOPING STATEMENTS ( 165 min) | | |
| IF conditions | 10 min |  |
| IF-ELSE conditions | 10 min |  |
| Nested IF conditions | 10 min |  |
| ELSE-IF Ladder conditions | 10 min |  |
| SWITCH-CASE statements | 10 min |  |
| The “break” and “continue” keywords | 10 min |  |
| “FOR” Loop | 10 min |  |
| Different forms of FOR Loop | 10 min |  |
| “WHILE” Loop | 10 min |  |

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| “DO-WHILE” Loop | 10 min |  |
| ENHANCED “FOR” Loop | 10 min |  |
| Nested Loops | 10 min |  |
| \*\* Assignment | 45 min |  |

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| SECTION 5 : OOPS INTRODUCTION AND BASICS (90 min) | | |
| What is OOPS? | 10 min |  |
| Necessity and Advantage of OOPS | 10 min |  |
| OOPS Designs with real-time examples | 10 min |  |
| What is mean by class and object? | 10 min |  |
| Relation between a Class and an Object | 10 min |  |
| How to create class and object | 10 min |  |
| User-defined / Custom Datatypes | 10 min |  |
| \*\* Assignment | 20 min |  |

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| SECTION 6 : OOPS BASICS (CLASSES & OBJECTS) (150 min) | | |
| Components of a Class | 10 min |  |
| Types of Variables and its uses | 10 min |  |
| Method Advantages, Categories and Types | 20 min |  |
| Constructor advantages and its types | 20 min |  |
| Ways to initialize the Object | 10 min |  |
| “this” keyword | 10 min |  |
| Static Block & Instance Block | 15 min |  |
| Nested classes | 10 min |  |
| \*\* Assignment | 45 min |  |

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| SECTION 7 : OOPS CONCEPTS – INHERITANCE (160 min) | | |
| Inheritance and its advantages | 10 min |  |
| The “extends” keyword | 10 min |  |
| Types of Inheritance | 20 min |  |
| Single Inheritance | 20 min |  |
| Multilevel Inheritance | 10 min |  |
| Multiple Inheritance | 10 min |  |
| Hierarchical Inheritance | 15 min |  |
| Difference between IS-A and HAS-A relationship | 10 min |  |

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| Use of “super” keyword and forms of “super” keyword | 10 min |  |
| \*\* Assignment | 45 min |  |

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| SECTION 8 : OOPS CONCEPTS – ABSTRACTION (170 min) | | |
| Abstraction and its advantages | 10 min |  |
| Abstract Class and Abstract Methods | 20 min |  |
| The “abstract” keyword | 20 min |  |
| Implementation of Abstract Methods | 20 min |  |
| Uses of Abstract Classes | 10 min |  |
| Interface and its advantages | 10 min |  |
| ‘implements’ keyword | 15 min |  |
| Achieve Multiple Inheritance with Interface | 10 min |  |
| Difference between Abstract Class and Interface | 10 min |  |
| \*\* Assignment | 45 min |  |

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| SECTION 9 : OOPS CONCEPTS – POLYMORPHISM (170 min) | | |
| Polymorphism and its advantages | 10 min |  |
| Types of Polymorphism | 20 min |  |
| Types of Binding | 20 min |  |
| Method Overloading and its uses | 20 min |  |
| Conditions of Overloading | 10 min |  |
| Method Overriding | 10 min |  |
| Scenario of Overriding | 15 min |  |
| Difference between Overloading and Overriding | 10 min |  |
| About Class Casting | 10 min |  |
| \*\* Assignment | 45 min |  |

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| SECTION 10 : OOPS CONCEPTS – ENCAPSULATION ALONG WITH PACKAGES (125 min) | | |
| What is package and its advantages | 10 min |  |
| Types of packages | 20 min |  |
| Static Import | 20 min |  |
| Access Modifiers | 20 min |  |
| Encapsulation | 10 min |  |
| \*\* Assignment | 45 min |  |

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| SECTION 11 : ARRAYS AND STRINGS (80 min) | | |
| What is Array and its advantages | 10 min |  |
| Types of Array | 20 min |  |
| String, String Buffer, String Builder | 20 min |  |
| \*\* Assignment | 30 min |  |

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| SECTION 12 : LOGICAL PROGRAMMING ON ARRAYS AND STRINGS (275 min) | | |
| Rotate the Array Elements Input – {1,2,3,4,5} Output – 5 1 2 3 4  45123 34512 23451 12345 | 30 min |  |
| Sort the Array using different algorithms. (Bubble Sort, Selection Sort, Insertion Sort, Quick sort, Merge Sort) | 120  min |  |
| Searching the value in Array (Linear Search & Binary Search) | 60 min |  |
| Find and print the duplicate elements in array | 20 min |  |
| \*\* Assignment | 45 min |  |

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| SECTION 13 : LOGICAL PROGRAMMING (75 min) | | |
| Display Prime Numbers, Armstrong numbers, Perfect Numbers,  Strong Numbers upto range or between the ranges | 10 min |  |
| Sum of Digits/ Reverse a number | 20 min |  |
| \*\* Assignment | 45 min |  |

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| SECTION 14 : EXCEPTION HANDLING (145 min) | | |
| What is Exception and its types | 10 min |  |
| How to handle exception? | 20 min |  |
| Multiple catch blocks | 20 min |  |
| Finally block | 20 min |  |
| Difference between throw and throws | 10 min |  |
| Custom Exception | 20 min |  |
| \*\* Assignment | 45 min |  |

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| SECTION 15 : JAVA UPDATED FEATURES AD OOPS MISC (165 min) | | |
| Varargs | 20 min |  |
| Autoboxing and Autounboxing EnumType | 20 min |  |
| Annotation | 10 min |  |

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| Object Class | 10 min |  |
| Object Cloning (Shallow Copy and Deep Copy) | 20 min |  |
| Wrapper Class | 20 min |  |
| Java Recursion | 20 min |  |
| \*\* Assignment | 45 min |  |

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| SECTION 16 : IO PACKAGE (105 min) | | |
| Stream and its types | 20 min |  |
| Read, Write and Copy Files Serialization | 30 min |  |
| Marker Interface | 10 min |  |
| “transient” keyword | 10 min |  |
| \*\* Assignment | 45 min |  |

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| SECTION 17 : DATABASE (90 min) | | |
| What is Database? | 10 min |  |
| What is MySQL? | 10 min |  |
| Operators and Clauses in MYSQL | 20 min |  |
| Functions and procedures in MYSQL | 20 min |  |
| \*\* Assignment | 30 min |  |

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| SECTION 18 : JDBC (100 min) | | |
| What is JDBC? | 10 min |  |
| Types of Drivers | 10 min |  |
| Loading the drivers | 10 min |  |
| Connection, Statement, PreparedStatement, CallableStatement,  ResultSet Interfaces | 40 min |  |
| \*\* Assignment | 30 min |  |

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| SECTION 19 : MULTITHREADING (150 min) | | |
| What is multithreading and advantages. What is Thread? | 10 min |  |
| Life Cycle of a Thread | 10 min |  |
| Thread Classes and Methods | 10 min |  |
| “Runnable” Interface | 10 min |  |
| Creating Thread | 20 min |  |

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| Working with multiple Threads | 20 min |  |
| Java Synchronization | 20 min |  |
| Interthread Communication | 10 min |  |
| Dead Lock | 10 min |  |
| \*\* Assignment | 30 min |  |

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| \*\* Assignment | 30 min |  |

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| SECTION 20 : UTIL PACKAGE (100 min) | | |
| Regular Expression | 20 min |  |
| String Tokenizer | 20 min |  |
| Scanner & Date Classes | 20 min |  |
| Java Collections Introduction | 20 min |  |
| \*\* Assignment | 20 min |  |

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| SECTION 21 : UTIL PACKAGE – COLLECTIONS FRAMEWORK (110 min) | | |
| The “Collection” Interface | 20 min |  |
| List, Set and Map Interfaces | 20 min |  |
| Cursors in java and its differences | 20 min |  |
| Difference between the implementation classes of List, Set and Map | 20 min |  |
| \*\* Assignment | 30 min |  |

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| SECTION 22 : GENERICS IN COLLECTIONS FRAMEWORK (100 min) | | |
| Generics in Java | 20 min |  |
| Types of Generics | 20 min |  |
| Uses and Limitations of Generics | 20 min |  |
| Custom objects with Generic collections Sorting in Collections | 20 min |  |
| \*\* Assignment | 20 min |  |

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| SECTION 23 : NETWORKING & SWINGS (190 min) | | |
| Basic terms in networking Socket Programming | 40 min |  |
| Introduction about Swings Components in Swings | 60 min |  |
| Events Handling | 60 min |  |
| \*\* Assignment | 30 min |  |

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| SECTION 24 : ECLIPSE / IntelliJ FEATURES AND LATEST JAVA VERSION FEATURES (120 min) | | |
| Default and static method in an interface | 30 min |  |
| Functional Interfaces and Lambda expressions Collection API  improvements | 30min |  |
| Concurrency API improvements | 15 min |  |
| Java IO improvements | 15 min |  |
| Debugging in Eclipse / IntelliJ | 15 min |  |
| \*\* Assignment | 15 min |  |

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| SECTION 25 : Introduction to code repository system (Git) (140 min) | | |
| Introduction to Git | 15 min |  |
| Creating repository | 15 min |  |
| Cloning repository | 10 min |  |
| Pull / Push content into repository | 20 min |  |
| Create/ Delete Branches | 20 min |  |
| Create Pull Requests | 20 min |  |
| Remove Conflicts | 20 min |  |
| Branch VS Tag | 20 min |  |