S.No.	Sub Topic	Торіс	Week No
	What is a Computer ?		
	Components of Computer(Primary Memory, Processor, Secondary Memory)		
	Introduction to Programming		
	Introduction to Java		
	Platform and Platform Dependency(Non- Potability)		
	How Java Made Portable(Platform Independent - WORA)		
1	Introduction to Object Orientation (Basics)	Fundaments of Programming in Java	Week 1
	Main method in Java		
	Statically typed vs Dynamically typed Programming Language		
	Variables in Java Detailed		
	Data Types in Java Detailed		
	Type Casting and Truncation		
	Identifiers and Naming Convention		
	Modu	le1 exam - 25 MCQs	
	Operators in Java Introduction		
	Incrementation and Decrementation		
	Assignment Operator		
	Relational Operator	Operators, loops and Logic building with pattern programming	
	Logical Operators		
	Conditional statement - (if - else)		
	Ternary Operator		
	Switch case		W 10
2	Loops introduction and for loop in java		Week 2
	while loop		
	do-while loop		
	Nested for-loop		
	System.out.print() vs println()		
	Scanner class in Java (console user input)		
	Pattern Programming(Loops, condtional and operator)		
	Complex Pattern Programming		
31		Module2 exam - 25 MCQs	
	Classes and Object Creation		Week 3
	JVM data areas		
	Intstance variable vs local variables		
	Methods with memory maps (JVM data areas)		
3	Method overloading	Java Objects and Methods	
	Main method overloading	·	

Method overloading with type promotion  Module3 exam - 25 MCGs  Why an array?  Oreating An Array Different ways to reate an array 2 Di Regular Array 2 Di Regular Array 4 2 Di Ragged Array Array In Java  I Enhanced For Loop Array Induction (Array in Java)  String Introduction Disadvantages of Array in Java  Module4 exam - 25 MCQs  Module4 exam - 25 MCQs  Module5 exam - 25 MCQs  Module6 exam - 25 MCQs  Module7 exam - 25 MCQs  Module8 exam - 25 MCQs  Strings in Java  Module8 exam - 25 MCQs  Module8 exam - 25		Var-args		
Method overloading with type promotion  Why an array?  Creating An Array  Different ways to create an array  2 Di Regular Array  Inapply to kingth()  Enhanced for Loop  Array Index Out/Olbounds Exception  Disadvantages of Array in Java  Module4 exam - 25 MCQs  Module4 exam - 25 MCQs  Module4 exam - 25 MCQs  Module5 exam - 25 MCQs  Module5 exam - 25 MCQs  Week 5  Types of String Immutable String and Memory Map  Ways to compare  Altraylandshib String and Memory Map  Ways to compare  Industry and the string class Introduction to Matuble String Final vs Immutability More on Mutable String Stringshifter vs Stringshalder  Module5 exam - 25 MCQs  Encapsulation  Module5 exam - 25 MCQs  Encapsulation, Constructor and static keyword in Java  Module5 exam - 25 MCQs  Encapsulation, Constructor and static keyword in Java  Week 5  Encapsulation, Constructor and static keyword in Java  Week 6  Encapsulation, Constructor and static keyword in Java  Week 6  Encapsulation, Constructor and static keyword in Java  Week 6  Encapsulation, Constructor and static keyword in Java  Week 6  Encapsulation, Constructor and static keyword in Java  Week 6  Encapsulation, Constructor and static keyword in Java  Week 6  Encapsulation, Constructor and static keyword in Java  Week 6  Encapsulation, Constructor and static keyword in Java  Week 7  Encapsulation, Constructor and static keyword in Java  Week 8  Encapsulation, Constructor and static keyword in Java  Week 8		<del>-</del>		
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Different ways to create an array  2D Regular Array  2D Jagged Array  Regular Array in Java  Regular A		Why an array?		Week 4
4 2D Regular Array		Creating An Array		
4 D. Jagged Array		Different ways to create an array		
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Static variables, static methods, static block static variables vs instance variables		Class loading and How java program actually executes(JVM)		
static variables vs instance variables		static and non static member of class		
		Static variables, static methods, static block		
static method vs non-static method		static variables vs instance variables		
		static method vs non-static method		
static block vs Java instialization block		static block vs Java instialization block		

		Module6 exam - 25 MCQs	
	Inheritance Introduction		
	More on Inheritance		
	Types of Inheritance		
	Types of methods (Inherited, Overidding, Specialized)		
	Package and Access modifiers in Java		
7	Rules to override method in Child class	Inheritance, Polymorphism and Abstraction	Week 7
	Constructor execution in case of Inheritance		
	Introduction to Polymorphism		
	More on Polymorphism		
	Abstraction and abstract keyword		
	final keyword in Java(final class, final variable, final method)		
		Module7 exam - 25 MCQs	
	Why Collection?		
	Collection Heirarchy		
	ArrayList		
	ArrayDeque		
	PriorityQueue		
	TreeSet		
8	HashSet	Collection and Map API in Java	Week 8
	LinkedHashSet		
	Iterator, List Iterator		
	Introduction to Map in Java		
	Map Heirarchy		
	HashMap		
	Other In-Built classes and Inbuilt methods under Map Heirarchy		
		Module8 exam - 25 MCQs	
	Why Collection?		
	Collection Heirarchy		
	ArrayList		
	ArrayDeque		
	PriorityQueue		
	TreeSet		
9	HashSet	Collection and Map API in Java	Week 9
	LinkedHashSet		
	Iterator, List Iterator		
	Introduction to Map in Java		
	Map Heirarchy		
	HashMap		
	Other In-Built classes and Inbuilt methods under Map Heirarchy		
		Why Collection ?	

	Need of Generics and Basics of Generics		
	More on Generics in Java		
	Collections class and it's inbuilt methods in Java		
10	Comparable vs Comparator	Generics and File-handling	Week 10
"	Input Stream		1100A 10
	Output Stream		
	File Operation in Java		
	The operation in suva	Module10 exam - 25 MCQs	
		Milestone - 01 Exam - 100 MCQs	
	Git Introduction		
	Types of Version Control System	_	
	Git Installation ( Git vs Git Hub)	_	
	Git Architechture	_	
	Git & GitHub lecture 2 Introduction	_	
	Basic git commands		
11	GitHub Account Creation	Git and GitHub	Week 11
	git config command		
	Git ecosystem (Stage and Snapshots)		
	Pushing files from local to remote repository(GitHub)		
	Clone vs Pull		
	Git branch		
	Time and Space Complexity		
	Recurrence Relation Solving		
	Introduction to 1D Array, Palindrome Problem		
12	Reverse in an array, Missing Number	Complexity Analysis and Array	Week 12
	Duplicate Elements Finding		
	Introduction to 2D Array, Rotation		
	Prefix Sum		
	Introduction to Recursion: Factorial and Fibonacci Series		
13	Power function, Power function using bits		Week 13
	Count of number of stairs	Recursion	
	Searching: Linear and Binary Search		
	Interview Problems: Lower Bound, Square Root		
14	Sorting: Bubble, Insertion, Selection	Sorting, Searching and Bit Manipulation	Week 14
	Number System: Decimal, Binary, Octa, Hexadecimal		
	Operators(Left Shift, Right Shift, AND, OR, XOR, NOT)		
	Subset Permutations and Combinations		
15	Interview Problem: N-Queens	Backtracking	Week 15
15	Interview Problem: Solving a Sudoko	Dacktracking	vveek 15
	Interview Problem: Rat in a Maze		
	Introduction to LL: Insertion and Deletion		

	Reverse a Linked List (Iterative and Recursion)		
16	Cycle Detection in a Linked List	Linked List	Week 16
	Middle of Linked List (Slow and Fast pointer technique)		
17	Introduction to HashMap, Collision Handling, Types of Hashmap		
	Two Sum, First unique character in a String		Week 17
	Stack Intro, Valid parenthesis, Area under the histogram	HashMap, Stack and Queue	
	Queue Intro, Sliding Window		
	Implementation of queue using stacks and vice-versa		
	Intro to D&C, MergeSort		
	QuickSort		
40	Selection Procedure		W 1 40
18	Count of number of inversions		Week 18
	Intro to Greedy Algorithms, Job Scheduling		
	Merge Intervals, Fractional Knapsack	Divide and Conquer, Greedy Approach	
	Intro to Tree, Binary Tree		
	Traversal Algorithms: Inorder, Preorder, Postorder		
19	Interview Problems - Height of Tree, Level Order of Tree	Tree	Week 19
	Interview Problems - Diameter of Tree, Symmetric Tree		
	Interview Problems - Max Path Sum, Least Common Ancestor in a Tree		
	Intro to BST, Check BST	Binary Search Tree	Week 20
20	Insertion and Search in BST		
20	Deletion in BST		
	Interview Problem - Kth Smallest Element in BST		
	Introduction Minheap and Maxheap	Priority Queue	Week 21
21	Heapsort algorithm		
	Kth-largest elements, Maximum Product of three numbers in an array		
	Introduction to Graphs, Adjacency List		
	Traversal of Graph: Depth First Search	Graph	
22	Breadth First Search		Week 22
	Cycle Detection in a graph		
	Topological Sort		
	Dijkstra's Algorithm	Graph  Dynamic Programming	
23	Minimum Spanning Tree: Kruskal		Week 23
	Prim's Algorithm		
24	Introduction to Dynamic Programming		
	Fibonacci Series		
	Longest common subsequence		Week 24
	Longest increasing subsequence		
	0-1 Knapsack		
	Staircase problem		
	Matrix Chain Multiplication		

25	Coin change	Dynamic Programming	Week 25
	Sum of Subset		
	Catalan Number - Unique BST		
		Milestone 3 DSA Exam	
	DRY principles		
	KISS principles		
	SOLID principles		Week 26
00	CUPID principles	Design Principles	
26	OOPS overview	Design Finiciples	
	The Singleton Pattern part 1		
	The Singleton Pattern part 2		
	The Singleton Pattern part 3		
	System Design Basics		
	Key Characteristics of Distributed Systems		
	Load Balancing		
	Client—Server Model		
	Network Protocols		
27	Storage	System Design part 1	Week 27
	Latency And Throughput	System Design part 1	
	Availability		
	Caching		
	Data Partitioning		
	Indexes, Replication , Sharding		
	Proxies, Redundancy		
	SQL vs. NoSQL		
	CAP Theorem		
	Web Applications		
	Web App architectures : Monolithic   SoA   Micro Services		
	Consistent Hashing		
28	Long Polling vs WebSockets vs Server Sent Events	System Design part 2	Week 28
	Bloom Filters		
	Quorum, Leader and Follower, Heartbeat, Checksum		
	Rate Limiting		
	Logging And Monitoring		
	Security And HTTPS		
	API Design	Milestone 4 Even	
	Basic Concepts of DBMS	Milestone 4 Exam	
	Exploring Relational DBMS		
	Introduction to SQL		
	DDL and DML Statements		
1	DDL and DIVIE Statements		

	Working with Queries (DQL)		
	CRUD operations		
29	Working with Constraints	Database	Week 29
	Joins and Set Operations		
	What is mongoDB?		
	How does mongoDB works		
	Create and Read operation in MongoDB		
	CRUD operations in mongoDB		
	Introduction to JDBC		
	Steps followed to write JDBC Code		
30	Basics of JDBC - 1	JDBC	Week 30
	Deep dive into JDBC - 2		
	Client Server Architecture		
	Different types of Server a. web server b. application server		
	Need of Servlet and Different ways of Creating a Servlet		
	First Servlet		
	Servlet life cycle		
	XML and Annotation support		
31	Difference b/w ServletConfig vs ServletContext object	Application Development with Servlets	Week 31
	HttpServletRequest, HttpServletResponse		
	RequestDispatching		
	Filters, Listeners		
	MVC ( Model-View-Controller)		
	Servlet Application with MVC Design Pattern		
	Limitation of JDBC		
	Need of ORM		
	Hibernate Features		
	Hibernate Architecture		
32	Steps to prepare First Hibernate Application	ORM(Hibernate)	Week 32
	Hibernate Persistence Object Lifecycle	(	
	Connection Pooling in Hibernate		
	Bulk Operations		
	Caching in hibernate		
	Need of spring framework		
	IOC container		
	BeanFactory Vs ApplicationContext Container		
	endency Injection a) Setter Injection b) Constructor Injection c) Field Injection		
	Need of spring boot		
33	Difference between spring & spring boot	Spring Framework part 1	Week 33
	Advantages with Micro Services		
	Building Spring Boot Application		
	Understanding the Spring Boot autoconfiguration		
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	JPA Repository Concepts		
	Spring JDBC		
	Spring Boot MVC		
	MVC flow		
	SPRING REST		
	SOAP vs REST		
	RESTful Services Introduction		
34	REST principles	Spring Framework part 2	Week 34
	JSON Introduction		
	HTTP Methods		
	a) GET b)POST c) PUT d)DELETE		
	REST API Development using Spring Boot		
	1 010		
		Projects	
		Guesser Game(Console Based)	
		Banking Application(Console Based)	
		Employee Database Management System (Console based) Using JDBC	
		Student DataBase Managment System using Servlet and JDBC	
		CRM tool using Spring MVC and Spring REST	
			T