CODING NINJAS

Career Camp Freshers

"You don't have to worry about being a number one, number two, or number three. Numbers don't have anything to do with placement. Numbers only have something to do with repetition."

~Ornette Coleman

About CAREER CAMP FRESHERS

Built to help you land #YourFirstTechJob

Career Camp is the place to be for anyone who wants to land their first tech job at a Product based company, regardless of current experience. It's a 9-month coding Bootcamp for final year students and recent graduates.

The course is designed by professional developers turned educators who have experience working at bigwigs like Facebook, Amazon, Google, etc., and are Stanford, IIT, IIIT alumni.

Doubt Support

We have developed a very scalable solution using which we are able to solve 4000+ doubts every single day with the help of 500+ doubts on the platform itself with an average rating of 4.8 out of 5.

Placement Cell

50,000+
Students taught so far

78%+
Percentage placement

2500+
Students placed in top MNCs

300+ Placement Partners | **7.8L** Average Salary
Number of placement partners and average salary of students

100+
Students recieved International job offers

Ankush Singla

Co-Founder & Instructor

Ankush holds a Bachelor's degree in Computer Science from India's most premier institute- IIT Delhi and a Master's degree in Computer Science from Stanford University.

He is a coding enthusiast and has worked with bigwigs like Amazon and Facebook in the past.

Live Mentor Support & Student Experience Team

Dedicated TAs and Student experience team to make sure that your doubts get resolved quickly and you don't miss your deadlines.

Be A Part Of The Learning Community

Slack groups to meet your batchmates. Learn from your peers about resources, doubts and more!

Get An Industry Recognised Certificate

Get awarded with an industry recognised certificate after you complete your programming course

Programme Overview

Course Overview

The purpose of this course is to learn Web Development with technologies like JavaScript, JQuery, Ajax, Node JS, React, etc. Additionally, it will teach you how to create servers, work with databases, and develop scalable, robust systems using System Design Techniques.

Features

9 Months Learning

12 Months Placement Period

Total 21 Months

WHY CC Freshers ?

- Pay when you land a job
- Become a full stack web Dev
- People who want to grab their first job in IT sector
- zero upfront fee
- Get placed in Product based company
- Historical Highest CTC = 21.5 LPA

Course Module

Introduction to Programming
Learn the basics of the most popular programming language (Java) and become an expert in the core fundamentals of programming.

Data Structures and Algorithms
Data structures and algorithms is all about organising the information and finding the most efficient approach to solve a problem. Learning these concepts will in turn help you to improve your problem-solving skills and solve any real-world problems using technology.

Front end Web Development with React
Learn the best practices of converting data to a graphical interface, through the use of HTML, CSS, and JavaScript. Build amazing user interfaces or UI components using React library.

Backend web development with Node.js
Learn the basics of adding server-side logic to any web application using Node.js

Interview Preparation - Aptitude
This module will enhance your Quantitative Aptitude, Logical Reasoning, Verbal Ability and Data Interpretation skills and conquer the aptitude round of the interviews.

Operating System
This module will help you prepare for the questions asked on Operating systems in software engineering interviews, with the unique perspective to view operating systems in three parts: Virtualization, Concurrency and Persistence. This module also includes, demonstrations to aid learning and to map theoretical concepts to Linux OS.

Database Management System (DBMS)
This DBMS module covers fundamental concepts such as Data, Database, DBMS, ER diagrams, Relational Models, ACID properties, SQL, Normalization. This module also introduces you to advanced topics like Transactions, Indexing, NoSQL databases and database optimization. Data is an important part of any software and there are many opportunities for people having the skills to work on data. The DBMS module makes you ready for job positions requiring database and SQL knowledge such as business analyst, data analyst, software engineer, SQL developer, data scientist for companies such as Oracle, Google, Amazon etc..

Interview Preparation - Aptitude
Learn how to create efficient large scale applications through our System Design course which covers core concepts of architectural patterns, required application characteristics, database optimization, networking, security for strong foundations. The module covers real-life use cases in detail, assignments for practical implementation of learned concepts, and gives a sneak peek of the interview process.

Course Outcome

- First Job in IT Domain
- Switch to IT sector-(People from different domain)
- Switch to product based organisation
- Become full stack developer
- Build live projects with industry mentors

Detailed Curriculum

Introduction to Programming

Topics	Sub-topics	Details
Basics of Programming	Flowcharts	Introduction to flowcharts, Decision making using flowcharts, Loops, Example problems
	Variables and Data types	First program, Variables and data types, Taking input, How data is stored in memory, Arithmetic Operators
	Conditional statements	Introduction to If else, Relational and logical operators, Nested conditionals
Loops and Functions	While loops	While loops, Flow of execution of statements in while loop, Example problems using while loop
	Patterns	Introduction to patterns, Basic Patterns, Square Patterns, Triangular Patterns, Character Patterns, Reverse Triangle, Inverted patterns, Isosceles triangles
	For loops	For loops, Break and Continue, increment - decrement operators
	Functions	Introduction to functions, Working of function calling, Variables and its scope, Pass by value
Arrays	Introduction to arrays	Introduction to arrays, How arrays are stored in memory, Passing arrays to functions
	Searching and Sorting	Understanding Binary Search, Selection sort, Bubble sort, Insertion sort, Merging two sorted arrays
Strings and 2D Arrays	Strings	Introduction to strings, storage of strings and their inbuilt functions
	2D Arrays	2D arrays, Storage of 2D arrays, Example problems using 2D Arrays
Problem Solving Techniques	Recursion	Introduction to recursion, Principle of mathematical induction, Fibonacci numbers, Recursion using arrays, Recursion using strings, Recursion using 2D arrays
	Time and space complexity	Order complexity analysis, Theoretical complexity analysis, Time complexity analysis of searching and recursive algorithms, Theoretical space complexity, Space complexity analysis of merge sort

Introduction to Data Structures

Topics	Sub-topics	Details
Object-oriented programming	Basics of OOP	Introduction to oops, Creating objects, Getters, and setters, Constructors and related concepts, Inbuilt constructor and destructor, Example classes
	Advance concepts OOP	Static members, Function overloading and related concepts, Abstraction, Encapsulation, Inheritance, Polymorphism, Virtual functions, Abstract classes, Exception handling
Linear Data Structures	Linked lists	Introduction to linked list, Inserting node in linked list, Deleting node from linked list, Midpoint of linked list, Merge two sorted linked lists, merge sort of a linked list, Reversing a linked list
	Stacks and Queues	Introduction to stacks, Stack using arrays, Dynamic Stack class,Stack using linked list, Inbuilt stack, Queue using arrays, Dynamic queue class, Queue using linked list, Inbuilt queue
Trees	Generic Trees	Introduction to Trees, Making a tree node class, Taking a tree as input and printing, Tree traversals, Destructor for tree node class
	Binary Trees	Introduction to Binary Trees, Taking a binary tree as input and printing, Binary Tree traversals, Diameter of binary tree
	Binary Search Trees	Introduction to Binary Search Trees, Searching a node in BST, BST class, Inserting and Deleting nodes in BST, Types of balanced BSTs
Advanced Data Structures	Priority Queues	Introduction to Priority Queues, Ways to implement priority queues, Introduction to heaps, Introduction to Complete Binary Trees and its implementation, Insert and Delete operations in heaps, Implementing priority queues, Heap sort, Inbuilt Priority Queue
	Hashmaps	Introduction to Hashmaps, Inbuilt Hashmap, Hash functions, Collision handling, Insert and Delete operation implementation in hashmap, Load factor, Rehashing
	Tries	Introduction to Tries, Making a Trie Node class, Insert, Search and Remove operation implementation in Tries, Types of Tries, Huffman Coding
	Graphs	Introduction to Graphs, Graph Terminology, Graph implementation, Graph Traversals (DFS and BFS), Weighted and Directed Graphs, Minimum Spanning Trees, Cycle Detection in Graphs, Kruskal's algorithm, Prim's Algorithm, Dijkstra's algorithm

Topics	Sub-topics	Details
Dynamic Programming	Introduction to Dynamic Programming	Introduction to Memoization, Introduction to Dynamic Programming, Fibonacci numbers using recursion, memoization and dynamic programming
	Applications of Dynamic	Longest Common Subsequence (LCS) using recursion, memoization and dynamic programming, Edit distance using recursion, memoization and dynamic programming, Knapsack problem using recursion, memoization and dynamic programming

Frontend Module

Topics	Sub-topics	Details
Getting started with Basics	History of Web	Understanding how and who built the web
	Client server architecture	General architecture used by websites
	What happens when you visit a	Learning what happens behind the scenes while opening a website
Introduction to HTML	HTML structure	How to create the structure of a web page
	Tags in HTML	Learning about various tags in HTML like <a>, etc
More on HTML	More tags	Practice creating HTML with more tags
	Block v/s Inline elements	Understand the difference between inline and block HTML elements
	Table	Learn to create tables in HTML

Topics	Sub-topics	Details
Forms	Form	How to create the structure of a web page
	Form fields	What is an HTML form
Intro to CSS	CSS Introduction	What is CSS and how to use it in HTML
	Blog page	Building and styling the blog project
Styling with CSS	CSS units	Learning about various CSS units used to style HTML elements
	CSS box model	Understanding the CSS box model
Starting with Resume project	Starting the project	Start building the Resume project by creating the HTML structure
Flex	Intro to Flex	Introducing SASS, setting up SASS for our project
	Flex properties	Explaining 1:1, 1:M and M:M DB relations
	Using flex in Resume	Utilising flex to style the Resume project
Responsive designs	Media queries	Learning storage in SQL databases
Completing Resume	Pseudo elements	What are pseudo elements and where to use them
	Finishing up	Finish building the Resume project
Animations and 3D space	Animation properties	Basics of CSS animation and how to animate HTML elements using animate.css

Topics	Sub-topics	Details
Bootstrap	Frontend frameworks	What are frontend frameworks and how to use one
	Grid system	Learning about grid system of bootstrap
	Bootstrap components	Using various other bootstrap elements like Navbar, Jumbotron etc
Major Project	Assignment	Build a music player project with your newly gained skill set
Starting with Javascript	Intro to JS	What is JS and history of JS
	Variables, operators, loops	Learning the basics of the language
JavaScript: Functions and Arrays	Scope	Understanding scope in JS
	Hoisting	What is hoisting and its application
	Functions expressions v/s Function declaration	Difference between function expression and declaration
	Arrays and its usage	What are arrays and using array functions like splice, slice etc.
Objects and Timing Events	Intro to Objects	What are objects, how to create them and using different notations to access object's data
	Object functions	Learn to iterate over objects, delete object properties, creating nested objects
Understanding DOM	DOM	Understanding DOM, what it is, how to access elements from the DOM
	Events	How to manipulate DOM events in JS
Calculator Project	Assignment	Creating a mini calculator with basic functionality

Topics	Sub-topics	Details
Mini Projects Using Javascript	let v/s var	Learning different ways to create variable
	Catch me if you can	Build a game using vanilla Javascript
Closures	Revision	Revising some old concepts like Scope, window object etc
	IIFE	What are immediately invoked function expressions
	Closures	What are closures and its application
	Arrow functions	Learning about arrow functions and bindings in arrow functions
Constructors and Prototypes	“this” keyword	How does the “this” keyword works in JS
	Prototypes	Discussing what are prototypes in JS, why do we use them and its application
	Class	Learning about using classes in JS and how to deal with class inheritance in JS
Project: Ping Pong Game	Assignment	Building the famous ping pong game with Javascript
Ashyncronous JavaScript	Promises, Callback	What are promises and callbacks in Javascript, Why to use
	Timed Events	What is setTimeout, Event loops in javascript
	Async Await	What are Async Await in Javascript, Why that is important
TODO list	SPA, MPA	Single page appplication and multiple page application
	API	How to use API in Javascript
	IIFE module design pattern	

Topics	Sub-topics	Details
jQuery	Intro to jQuery	What is jQuery and what is the need for it
	Event handling in jQuery	Handling various JS events with jQuery and exploring the library
Ajax	Intro to AJAX	What are async requests, what is API and JSON
	Ajax requests with jQuery	Making ajax requests with jQuery and handling errors
Promises	Intro to promises	What is a promise, how do we use promises and chaining promises
Git	Intro to Git	What is git and why it's helpful
	Branches	Exploring branches in Git. How to create branches.
	Git workflow	Understanding push, commits, pull requests and using git for teams and individual

Backend Module

Topics	Sub-topics	Details
Node.js : The Beginning	Intro to Node	Introduction to the course, hello world with nodejs
	Setting up	Setting up tools and the project
Node.js : Writing Our First Server	Intro to servers	What are servers and how one can use them
	Setting up node server	Beginning the project by setting up the very first node server
	nodemon	Introducing nodemon to monitor changes made to the server

Topics	Sub-topics	Details
My First Express App :: A List of contacts	MVC	MVC architecture for our server
	Express	What are frameworks, using express with node
	Ejs	What are template engines, setting up and working with Ejs
My First Express App : Continued	Creating the contact list	Building the contact list, sending data to server, parsing the data
	Middleware	Using query parameters in our app for deleting contact
	Query parameters	What is a middleware and how to use one
My First Express App :: Intro To Databases	Intro to Databases	What are databases, SQL and NoSQL databases
	MongoDB	What is MongoDB, how to use it and setting up MongoDB for the project
	DB operations	CRUD operations for MongoDB
Beginning The Major Project 1	Directory structure and setup	Setting up the MVC directory structure, router and ejs setup
	Controllers	Creating controllers and router for handling incoming requests to the server
Major Project - 1	Assignment	Build a Todo list app using Nodejs and MongoDB
Beginning the Major Project - 2	Partials, Layouts	Understanding and creating Partials and layouts in views
	Static files	Setting up static file access
	Mongoose	Linking MongoDB using Mongoose

Topics	Sub-topics	Details
Authentication Using Passport js	Intro to passportjs	What is passportjs, setting up passportjs for the project
	MongoStore setup	Setting up MongoStore for session cookies
Manual Authentication	User schema	Setting up user schema for out app
	Cookies	What are cookies and how to use them in the app
	User sign up and sign in	Build user sign in and sign up flow and learn how to authenticate users manually
SASS	Intro to SASS	Introducing SASS, setting up SASS for our project
Database Relations (Posts, Comments)	DB relations	Explaining 1:1, 1:M and M:M DB relations
	Relationship for Post and Comments	Understanding the relationship between Post and Comments, creating schemas for both
	SQL storage	Learning storage in SQL databases
Deleting and Updating Objects in Database + Distributing Views	Deleting Posts/Comments/Users	Understanding how deletion works with Posts and Comments
	User profile	Working on user profile and updating SCSS for other pages
Async Await + Error Handling	Async await	What is async await and converting our code to async await
	Flash messages	How to create flash messages, using Noty to show flash messages
Converting to AJAX	Using AJAX	Learn how to use AJAX for post creation, deleting post etc

Topics	Sub-topics	Details
File upload	Intro to file upload	Learning how to handle file uploads
	Multer	Using multer to handle profile picture upload in the project
Social Authentication (Mini Lecture)	Social auth with Google	What is social authentication and how does it actually works
	Using passport for Google auth	Setting up passport for google social auth
APIs (making APIs and JWT authentication)	Intro to APIs	What are APIs and why do we use them
	JWT	Understand what is JWT, how does authentication and authorization works, build some APIs for the same
Parallel Jobs + Mailer	Nodemailer	Intro to mailers, setting up Nodemailer for sending emails
	Sending mails	Learn how to setup and send emails for your project
	Delayed jobs	Understand what are delayed jobs and how they can be helpful using the Kue library
Friends + Likes	Polymorphic relation	Intro to a new DB relationship i.e. Polymorphic relations
	Making friends	Using Polymorphic relationship to create add a friend functionality
Chatting Entgine	Sockets	What are sockets and how to use them
	Socket.io	Setting up Socket.io and using it to send messages
Gulp :: Getting deployment ready	Introduction to production environments	Learn how to create a production environment for the project using environment variables
	Gulp	What is gulp, using gulp to automate certain tasks

Topics	Sub-topics	Details
Deployment	AWS	Learning how to deploy apps on AWS, SSH to set up the server, understand and setup Nginx
Beginning the Major Project - 2	Starting to build a new project	Setting up to build the major project assignment
Major Project	Assignment	Build the major project

React Module

Topics	Sub-topics	Details
Intro to React	SPAs v/s MPAs	Difference between Single page apps and Multi page apps
	React philosophy	What is React's philosophy?
	React v/s others	Why React stands out from other JS libraries and frameworks.
	All About React	Intro to React and Building basic components
Vue	All about Vue	Intro to React and building basic components

Topics	Sub-topics	Details
Hello World	Using React	Ways to start using React in a project
	Babel	Using babel and understanding how it works with React
	Conditional rendering	Rendering different components based on different conditions
Mini Project: Starting the project	Introduction to the project	Introduction to Cart and its working
	Adding CSS	Styling the cart using CSS
	Using state	Adding state to Cart
Mini Project: Managing state	More on React state	React state in depth
Mini Project: Finishing up	Rendering lists	How to render list of items
	Props	What are props and how do we work with them
	Delete, adding Navbar, total products count	Building more functionalities of cart
Firebase: Mini project extended I	Introduction to Firebase	Understanding what is firebase and how it actually works
	Component lifecycle	Learning about lifecycle of a React component
	Firebase setup	Setting up firebase and adding it to the project
Firebase: Mini project extended II	CRUD with Firebase	Learning how to create, read, update and delete data from firebase
	Querying data	Querying data from firebase

Topics	Sub-topics	Details
Mini Project		Assignment project, building a vintage iPod
Major Project: User profile	Settings page, editing a user, add user as a friend	Building various functionalities of the social media app
Intro to Redux	All about Redux	What is redux, why and when do we use it
	Setting up the project	Setting up the Movie search project
	Adding U	Start adding components to the project
Redux: Actions, Reducers, Store	Reducers	What are reducers and creating reducers for the app
	Actions	What are actions, dispatching actions, creating actions for the app
	Store	What is store, subscribing to the store and adding store to the project
Redux continued	Currying	Understanding the currying concept in Javascript
	Combining Reducers	How to combine reducers to make the app more efficient
	Middleware	Learning about middlewares and using some with Redux
	Thunk	Using thunk to make async calls to an API
Major Project: Search and Chat	Searching users	Adding functionality to search users
	Building the chat box	Creating the chat using sockets

Topics	Sub-topics	Details
React Hooks	Use Effect, use State and other	What are hooks, why do we use them and various React hooks out there
React and Redux	Context API	What is the context API and how to use it
	HOC	Learning about Higher order components in React
	connect() with Redux	Diving deep into how connect() works in Redux and using react and redux together
Major Project: Setup and Intro	Project setup	Setting up the social media project
	PropTypes	Using PropTypes for props validation
Major Project: Routing and Auth	React router	Adding react router to the project to handle different routes
	Auth in SPA	Understanding how auth works for SPAs
	Form handling	Ways to handle form in React
	User login	Building the user login functionality

Interview Preparation - Aptitude

Lecture	Topic Name	Description
NUMBERS	Introduction to Number System	Number System, Remainder theorem, Unit Digit
	Progressions	Arithmetic progression, Geometric progression
	HCF and LCM	Finding factors of a number, Shortcuts for finding prime number, Concept of HCF, Problem Solving on HCF, Concept of LCM, Problem Solving on LCM
AVERAGES AND MIXTURES	Averages	Introduction to Averages, Assumed average approach, Standard Situation in Averages, Concept of Weighted Averages, Standard Situations involving weighted average
	Alligations	Introduction to alligations, Standard problems involving using
ARITHMETIC AND WORD PROBLEMS	Percentages	Concept of percentages, Concept of percentage change, Percentage Change Graphic, PCG applied to Product change, PCG Applied to Product Constancy, Product Constancy Table, The fractional view to the product constancy table, PCG applied to successive percentage change
	Ratio, Proportion and Variation	Concept of Ratios, Multiplier logic, Concept of proportion Variation and its types
	Profit and loss	Basic concept of Profit and loss, Concept of Simple Interest, Concept of Compound Interest
	Time and Work	Introduction to Time and Work, Time and work (Man Days), Men, Women and Children

Lecture	Topic Name	Description
COUNTING	Probability	Basics of Probability, Problems on Coins, Problems Based on Dice, Problems Based on Cards, Problems Based on Balls from the Box, Word Based problems on Probability
	Permutation and Combination	Introduction to Permutation and Combination, The selection Formula, Distribution of Identical Objects, Formula for Arrangements, Circular arrangement
TIME, SPEED AND DISTANCE	Introduction to Time, Speed and Distance	Introduction to Time, Speed, Distance The proportionalities in equations. Solving problems on TSD
	Relative Speed	The concept of Relative Speed. Questions based on Relative Speed
	Application of TSD	Concept of Circular Motion, Train problems Boats and Stream problems, Races and Games
REASONING	Recognising Patterns	Recognising alphabetical patterns, Recognising numerical patterns, Coding Decoding Question Patterns
	Syllogisms	Introduction to Syllogisms, Problems on Syllogisms
	Blood relation and calendars	Solving problems on Blood Relations, Concept of Calendar, Problems on Calendar
ENGLISH	Reading Comprehension	Reading effectively reading comprehension, How to find main idea, Solving reading comprehension
	Sentence completion/Fill ups	Theory of Fill Ups/ sentence completion, Questions on sentence completion
	Vocab, Antonym and Synonyms	Introduction to English, Vocab, Antonym and Synonyms

Lecture	Topic Name	Description
DATA INTERPRETATION	Basic Concepts of Data interpretation	Introduction to Data interpretation, Problems on Data interpretation
	Charts	Reading Pie charts, Reading Bar Charts, Reading tables and X-Y Charts, Problems on Charts
MISCELLANEOUS TOPIC	Set theory	Introduction to Set Theory, Problems on Set theory
	Log	Introduction to logs, Problems on logs
	Mensuration	Cubes and Cuboids, Spheres and Cylinders, Cones, Prisms and Pyramids

Introduction to Operating System

Lecture	Description
Introduction to OS	Detailed Definition of OS
	Components of OS: User Space and Kernel Space
	Demonstration on functionalities of Kernel
	Types of Kernel
	Introduction to terminal in Linux OS
	System Calls
	Process and Process Control block

Process Management	Architecture of Process with Basics of Storage Devices
	Process States
	Operations on Processes
	Special types of Process: Orphan and Zombie Process
	Process Scheduling
	Process Scheduling Algorithms: FCFS, Shortest Job First, Priority Scheduling, Round Robin, Multilevel Queue and Multilevel Feedback Queue Scheduling
Memory Management	Memory Management in Early Systems
	Improvement and Challenge of Isolation and Protection
	Understanding Stack and Heap Memory
	Initial attempts on Virtualisation of Memory and Address Translation
	Free Space Management
	Memory Allocation Techniques: Fixed Partitioning
	Dynamic Partitioning, Segmentation, Paging, Paging with Translation Lookaside Buffer
	Virtual Memory and Page Faults
	Page Replacement Algorithms
	Thread Scheduling Issues
	Solution to Synchronisations Issues: Locks, Conditional Variables and Semaphores
Concurrency	Processes, Threads and Multithreading
	Thread Scheduling Issues
	Solution to Synchronisations Issues: Locks, Conditional Variables and Semaphores

	Concurrency Bug: Deadlock
	Deadlock Avoidance and Prevention
	Banker's Algorithm
Storage Management	Need for Secondary Memory
	HDD and SSD
	File System, Files and Directories
	Disk Space Allocation Methods: Contiguous, Linked and Indexed
	Disk Scheduling Algorithms: FCFS, SSTF, SCAN, C-SCAN, LOOK, C-LOOK
Case Study: Linux OS	Introduction to Linux OS
	Process Management, Memory Management and File System in Linux
	Linux Cgroups and Namespaces
	Linux Boot Process
	User Management
	Package and Repository Management
	Jobs and Crontab
	Troubleshooting in Linux
	Debuggability using Logs

Introduction to DBMS

Lecture	Description
Introduction to DBMS	What is Data, What is information, What is database, Before the arrival of databases , What is database management systems
Data Modeling	Introduction to Data Models, Types of Data Models, Database Architecture, Three-Schema Architecture, Data Independence and its types
Entity-Relationship Model	Introduction to ER Models, Components of ER Diagrams, Entity, Attributes , Relationship and their types, Creating an ER Diagram
Relational Model	Relational Model Concepts, Properties of a table, Database keys, Integrity rules and constraints, Relational Algebra
SQL	Introduction to SQL, SQL commands such as Data Definition Language (DDL), Data Query Language (DQL), Data Manipulation Language (DML), Data control language (DCL), Transaction Control Language (TCL),Creating Database and Tables, Fundamental Queries, Aggregate functions, Joins,Subqueries, Set Operations, Stored Procedures, Triggers
Normalization	Functional dependencies, Anomalies : insert, update, delete, Normalisation,Types of normal forms- INF, 2NF, 3NF, BCNF.
Transactions	What are Transactions?, ACID properties: Atomicity, Consistency, Isolation, Durability, State of transactions
Indexing	Indexing in DBMS, Indexing Methods, Primary index,Ordered index: Dense and Sparse index, Clustering index, Secondary index
Classification of Databases	Introduction to different types of databases, Relational database, Object-oriented database, Network database, Hierarchical database
NoSQL Databases	Introduction to NoSQL databases, Why are NoSQL Databases needed, Features of NoSQL databases, Types of NoSQL databases; Key-value Pair Based, Column-oriented Graph, Graphs based, Document-oriented
Database optimization	Concurrency Control, Partitioning, Clustering, Sharding

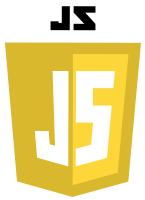
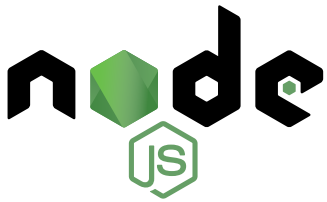
Introduction to System Design

Lecture	Description
Introduction to DBMS	What is Data, What is information, What is database, Before the arrival of databases , What is database management systems
Data Modeling	Introduction to Data Models, Types of Data Models, Database Architecture, Three-Schema Architecture, Data Independence and its types
Entity-Relationship Model	Introduction to ER Models, Components of ER Diagrams, Entity, Attributes , Relationship and their types, Creating an ER Diagram
Relational Model	Relational Model Concepts, Properties of a table, Database keys, Integrity rules and constraints, Relational Algebra
SQL	Introduction to SQL, SQL commands such as Data Definition Language (DDL), Data Query Language (DQL), Data Manipulation Language (DML), Data control language (DCL), Transaction Control Language (TCL),Creating Database and Tables, Fundamental Queries, Aggregate functions, Joins,Subqueries, Set Operations, Stored Procedures, Triggers
Normalization	Functional dependencies, Anomalies : insert, update, delete, Normalisation,Types of normal forms- INF, 2NF, 3NF, BCNF.
Transactions	What are Transactions?, ACID properties: Atomicity, Consistency, Isolation, Durability, State of transactions
Indexing	Indexing in DBMS, Indexing Methods, Primary index,Ordered index: Dense and Sparse index, Clustering index, Secondary index
Classification of Databases	Introduction to different types of databases, Relational database, Object-oriented database, Network database, Hierarchical database
NoSQL Databases	Introduction to NoSQL databases, Why are NoSQL Databases needed, Features of NoSQL databases, Types of NoSQL databases; Key-value Pair Based, Column-oriented Graph, Graphs based, Document-oriented
Database optimization	Concurrency Control, Partitioning, Clustering, Sharding

Lecture	Description
Introduction	Covers the introduction of System design, low level and high level designs, product cycle, and why system design is important.
Architectural patterns	Covers different architectural patterns such as centralized and distributed, when to choose which pattern, their advantages and disadvantages, how to scale an application ,types of scaling.
Application characteristics I	Covers concepts such as latency, throughput, redundancy, replication, availability and fault tolerance with industry relevant examples.
Application characteristics II	Covers concepts such as consistency, types of consistency, CAP theorem, logical time in distributed systems and Lamport algorithm with industry relevant examples.
Application characteristics III	Covers concepts such as load balancers, load balancing algorithms, caching, types of caching solution, cache eviction strategies with industry relevant examples.
Database	Covers databases, types of databases, polyglot, indexing, denormalization,
Database Optimization	Covers database optimization concepts like partitioning, types of partitioning, sharding, different partitioning criteria with industry relevant examples.
Communication	Covers topics such as synchronous and asynchronous communication, message based communication
Web Applications	Covers web applications, client server model, REST API, service oriented architecture (SOA), microservices, tier architecture

Lecture	Description
Servers and security	Covers web servers, communication protocols, push and pull model, long polling, web sockets, server sent events, proxies, authentication, authorization protocols
Real Life Use Cases	Covers step-by-step approach to design popular applications.
Distributed web crawler	Detailed step by step process and explanation on how to design Distributed web crawler
Global chat service : Messenger	Detailed step by step process and explanation on how to design a global chat service.
Video streaming service (Youtube)	Detailed step by step process and explanation on how to design a video streaming service.
File storage and sharing system(Dropbox)	Detailed step by step process and explanation on how to design a file storage and sharing system
Global ride sharing system(Uber)	Detailed step by step process and explanation on how to design a global ride sharing system
Practice projects	Covers practice projects for the learners with their solutions.
Mock interview sessions	Covers what to expect in a System design interview, important interview questions, how to ace them, questions to ask before you start working on a given system,pointers to remember while designing a system.

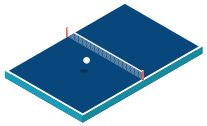
Tools and Techniques

Projects

Static Blog

Build the UI of a basic blog using HTML



Ping Pong Game

Build a vintage game, ping pong, using vanilla Javascript

Mini Contact List

Understand how the backend works and create a contact list by storing the data in a DB

Todo List App

Build a todo list app using Node.js and express.js

Shopping Cart

Build the basic functionality of the shopping cart as you see in Amazon and Flipkart

Movies App

Search any movie and store it as your favourite

Mini Calculator

Build a calculator web app with Javascript as the core and style it with CSS

Chatting Engine

Build a basic chat engine using sockets, which enables the users to chat with each other on the website

Social Media Website

Create a social media website with popular features like post, comment etc using Node.js, Mongo DB and more

Music Player

Build and style a music player like Spotify/Youtube Music using HTML and CSS

iPod

Build a clone of iPod nano 5th gen

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