



B.TECH

CAREER DEVELOPMENT CENTER (CDC)

ACADEMIC YEAR 2024-25

Your Gateway to Professional Growth

Navigate Your Future with CDC



IARE
INSTITUTE OF
AERONAUTICAL ENGINEERING

NAAC
ACCREDITATION

A++
GRADE

NBA
NATIONAL BOARD
OF ACCREDITATION



TOP 200
ENGINEERING RANK
151-200

TOP 100
INNOVATION RANK
51-100



VISION AND MISSION OF THE INSTITUTE

VISION

To bring forth students, professionally competent and socially progressive, capable of working across cultures meeting the global standards ethically.

MISSION

To provide students with an extensive and exceptional education that prepares them to excel in their profession, guided by dynamic intellectual community and be able to face the technically complex world with creative leadership qualities.

Further, be instrumental in emanating new knowledge through innovative research that emboldens entrepreneurship and economic development for the benefit of wide spread community.

VISION AND MISSION OF THE DEPARTMENT

VISION

To empower students to achieve their career aspirations and personal growth by providing comprehensive support and resources to help students explore, develop, and pursue meaningful careers aligned with their interests and goals.

MISSION

To empower students to achieve their career aspirations and personal growth by providing comprehensive support and resources to help students explore, develop, and pursue meaningful careers aligned with their interests and goals.

Process

CDC = (Skill Acquisition + Real -World Experience + Continuous Improvement)



Career Development Centre (CDC) Strategies

Focus on Problem-Solving Skills: Emphasize the development of problem-solving skills and encourage students to engage in challenging competitive coding.

Implement Skill Enhancement Programs: Design skill enhancement programs that cater to different levels of proficiency. These programs can focus on areas such as data structures and algorithms, database management systems, competitive coding, cloud computing, DevOps, and computer networks.

Professional Courses and Programs: Provide online professional courses and programs that focus on developing sought-after skills in high-demand fields. These courses can help students stay competitive in the job market and reach their career goals.

Provide Individualized Support: Offer tailored individual support to students through industry experts. This support can include mentorship, guidance, and coaching to fast-track deep learning and skill development.

Blend Learning Programs: Create blended learning programs that combine technical skills training with academic coursework. This approach allows students to earn industry credentials and college credits simultaneously, preparing them for in-demand job roles.

Promote Continuous Learning: Encourage students to engage in continuous learning by providing access to online courses, webinars, and resources. This helps students stay updated with emerging technologies and industry trends.

Collaborate with Industry Leaders: Partner with industry leaders and academia to provide students with opportunities to work with cutting-edge technologies. Collaborations can include internships, industry projects, and guest lectures to expose students to real-world applications and industry demands.

SkillUP Program

IARE offer forward-looking curriculums that build job-ready skills specific to students chosen technical curriculum. Skill-up help students to get started and chart their path to success in today's competitive work environment. This program aims to help students identify their upskilling options to begin their journey in today's leading technologies. The curriculum focuses on building strong foundational technical skills for career growth. Students will have access to specialized courses will enhance their skill sets and advance their careers. There is always mismatch between the skills students have and those that employers seek. The "skill gaps" is the driving force for high wages for in-demand tech jobs like data scientist, DevOps engineer and machine learning engineer.

SkillUP Program (2 Years)

Mode of Selection	:Coding hackathons
Duration	:2 Years
Type of Student	:Advanced Learners
Entry Level	:III Semester
Number of Training Hours	:800+ Hours
Target	:High package jobs (Above 15 Lakhs)
Student Strength	:200

This program is designed for 2 years starting from III semester. The entry level program starts in III semester and focuses on mastering data structures and algorithms and competitive coding with Python.

In IV semester students will be introduced to Database design and MySQL and a solid foundation of Core Java fundamentals by exploring concepts such as Java Generics, Collections, Lambdas Expression, Multithreading and File handling.

In V semester, students will learn web development with a focus on JSP and Servlets, essential components in building robust Java web applications. They will also harness the power of Hibernate and Spring framework, both built on the latest Java 17 LTS version, to master the art of seamless data persistence and efficient application development. This program gives a special emphasis on mastering Spring Boot REST, a vital component in contemporary web development. Students will explore RESTful APIs and gain a profound understanding of JavaScript basics, essential for creating dynamic and interactive web pages.

In VI semester, students will be familiarized with top-up courses such as Cloud application development, Programming puzzles, and DevOps. A student will gain knowledge of how to use the cloud in workplace and at home or want to set up a cloud computing network using Aneka cloud. A DevOps course helps the students to understand the entire software development process in a nutshell. Puzzles provide additional challenges by increasing student engagement and promote independent learning.

Students will also learn Quantitative aptitude and reasoning, Professional communication courses such as improving reading abilities, grammatical error detection and correction, gaining word power, interpersonal communication and digital and social media communication throughout this two year program. In addition to this, students will complete at least two industry / application oriented projects apart from their regular academic projects.

Semester Skills Covered No. of Hours / Semester

Semester	Skills Covered	No. of Hours / Semester
III Semester	<ul style="list-style-type: none">Data Structures and AlgorithmsRelational Database Management SystemsProfessional Communication	180 Hours
IV Semester	<ul style="list-style-type: none">Competitive CodingDatabase design and MySQL - ICore JavaProfessional CommunicationIndustry Oriented Project	180 Hours
V Semester	<ul style="list-style-type: none">Competitive CodingDatabase design and MySQL - IIJava Full StackQuantitative Aptitude and ReasoningCloud ComputingProgramming PuzzlesProfessional CommunicationIndustry Oriented Project - I	270 Hours
VI Semester	<ul style="list-style-type: none">Competitive CodingDatabase design and MySQL - IIIJava Full StackQuantitative Aptitude and ReasoningReact JS / DevOps / AWSProgramming PuzzlesProfessional CommunicationIndustry Oriented Project - II	270 Hours

SkillBridge Program

IARE offers skill-bridge program with an objective to bridge the gap between Industry expectations and Institutional inputs. The career development centre imparts training for knowledge building by developing skills to prepare students with necessary confidence and technical skills to help them in becoming excel in their respective fields. This program is designed for 1 year starting from V semester for active learners.

SkillBridge Program (1 Years)

Mode of Selection	:Coding hackathons
Duration	:1 Years
Type of Student	:Active Learners
Entry Level	:V Semester
Number of Training Hours	:500+
Target	:Good package jobs (Above > 5 lakhs and <15 Lakhs)
Student Strength	:750+

In V semester, students will focus on mastering Data Structures and Algorithms, Competitive Coding and Database Management Systems. In VI semester, students will be familiarized with top-up courses such as Java Full Stack Development, Cloud application development, React JS and DevOPs.

Students will also learn Quantitative aptitude and reasoning, Professional communication courses such as improving reading abilities, grammatical error detection and correction, gaining word power, interpersonal communication and digital and social media communication throughout this two year program. In addition to this, students will complete at least two industry / application oriented projects apart from their regular academic projects.

SkillBridge Skill Set

Semester	Skills Covered	No. of Hours / Semester
V Semester	<ul style="list-style-type: none">Competitive CodingDatabase design and MySQL - IJava Full StackQuantitative Aptitude and ReasoningCloud ComputingProgramming PuzzlesProfessional CommunicationIndustry Oriented Project - I	270 Hours
VI Semester	<ul style="list-style-type: none">Competitive CodingDatabase design and MySQL - IIIJava Full StackQuantitative Aptitude and ReasoningReact JS / DevOps / AWSProgramming PuzzlesProfessional CommunicationIndustry Oriented Project - II	270 Hours

Course Content

Competitive programming, also known as "CP" is a coding sport where individuals compete against each other to solve complex problems using algorithms, data structures, and efficient coding techniques. To excel in competitive programming, one must possess a solid understanding of various algorithms and data structures. It tests problem-solving skills, knowledge of algorithms, and ability to write efficient code.

Competitive programming combines two topics:

- ❖The design of algorithms and
- ❖The implementation of algorithms.

This course also focuses on various problem-solving techniques such as Bit Manipulation, Number Theory, Combinatorics, Greedy, Dynamic Programming, Geometry and Game Theory.

SkillBridge Program (1 Years)

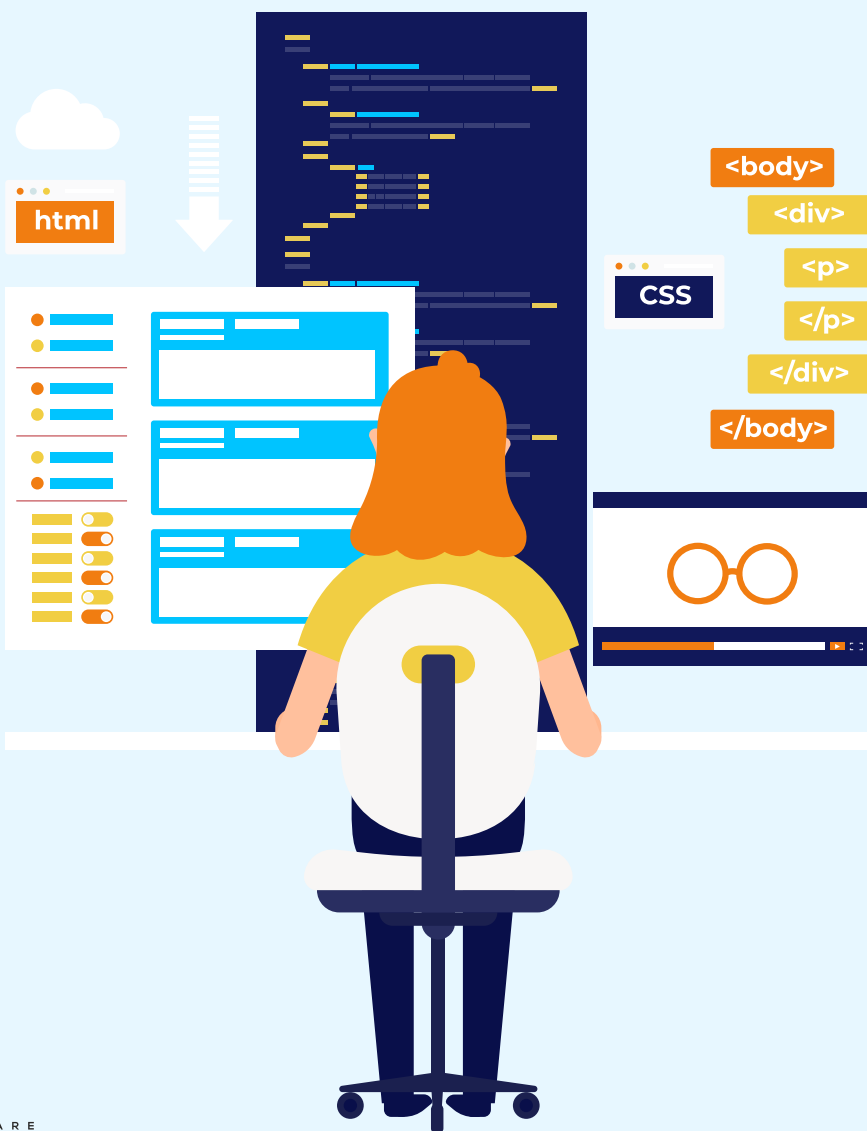
Name of the course	:Competitive Programming
Number of training hours	:135+ hours per semester
Type of student	:Advanced / Active Learners
Batch size	:85 / 90 students
Mode of training	:Offline
Type of Assessment	:Hack-a-thons / Code365 (Daily coding challenge) / Medha (Weekly skill test)



Benefits of Competitive Programming

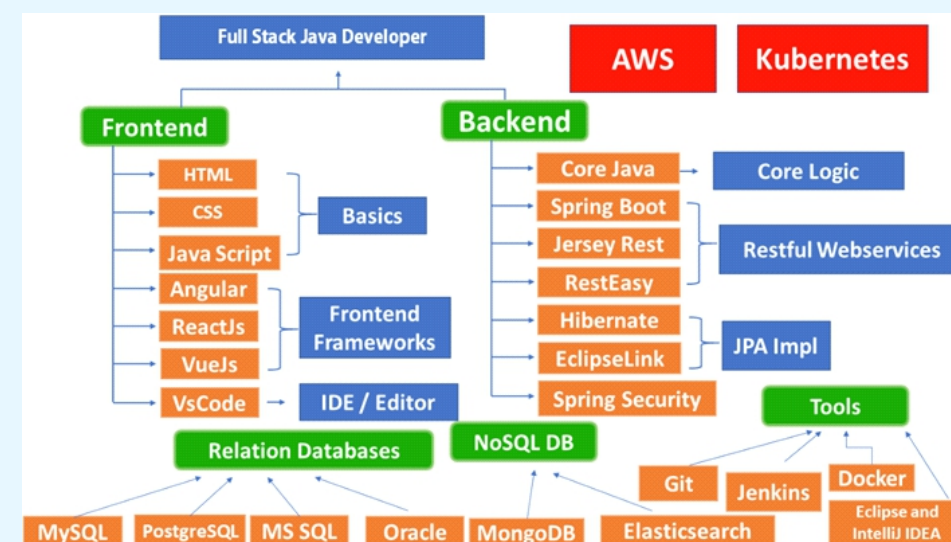
Competitive programming offers several benefits, such as:

- 1.Enhances Problem-Solving Abilities
- 2.Improves Coding Efficiency
- 3.Boosts Logical Thinking and Analytical Skills



Java Full Stack

Java Full Stack Development refers to the development of both the front-end (client-side) and back-end (server-side) parts of a web application using the Java programming language for server-side development, along with front-end technologies like HTML, CSS, JavaScript, and frameworks like Angular. A full stack Java developer is a web programmer who uses Java to write code in all three layers of a web-based application: the front-end, the back-end, and the database layer. They are responsible for designing, developing, and implementing complete software solutions that include both front-end and back-end components. Java full stack developers have a comprehensive understanding of Java programming and its application in building web applications. They are capable of coding for all three layers of a web-based application and are well-versed in front-end technologies like HTML and CSS. They also have expertise in database management and may work with technologies like SQL or NoSQL databases.



Learning Path for Java Full Stack Developer

Skills set for Java Full Stack

Front End Development

Web development technologies :HTML, CSS, JavaScript

Front end frameworks :Angular, React, Vue

Number of training hours :45+ hours

Back End Development

Programming Language :Core Java

Framework (s) :Spring / Spring Boot / Hibernate / Spring security / Webservices / Microservices

Knowledge of Databases :MySQL, PostgreSQL, MS-SQL Server, Oracle

No SQL databases :MongoDB, CouchDB, Elastic search

Tools for Deploying Web Applications :Apache Maven, Gradle, Git, Jenkins, Eclipse, IntelliJ IDEA, Docker, JIRA, SVN, Apache Ant, Java Decompiler

Number of training hours :45+ hours

Java Full Stack

Name of the course	:Java Full Stack
Number of training hours	:90+ hours per semester
Type of student	:Advanced / Active Learners
Batch size	:85 / 90 students
Mode of training	:Offline
Type of Assessment	:Hack-a-thons / Code365 (Daily coding challenge)

DevOps

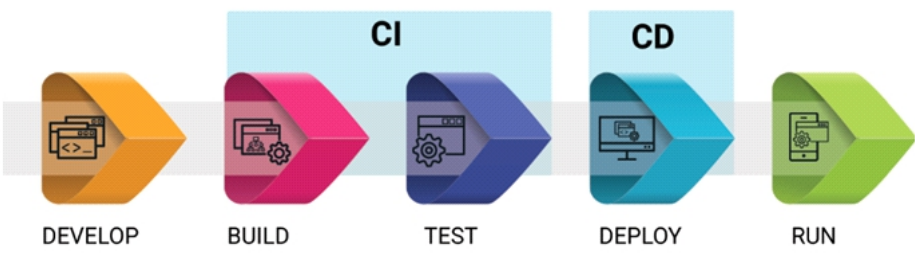
DevOps is defined as a combination of processes and tools created to facilitate organizations in delivering services and applications much faster than they can through conventional software development processes. It is a software development methodology that emphasizes collaboration, communication, and integration between development (Dev) and operations (Ops) teams. It aims to streamline the software development lifecycle, improve efficiency, and deliver high-quality software at a faster pace. The core idea behind DevOps is to break down the traditional silos between development and operations teams and foster a culture of collaboration and shared responsibility. By working together, developers and operations professionals can align their goals, processes, and tools to achieve faster and more reliable software delivery. DevOps practices involve the use of automation, continuous integration and continuous delivery (CI/CD), infrastructure as code, and monitoring. These practices help automate repetitive tasks, ensure consistent and reliable deployments, and provide real-time insights into the performance and health of applications.

DevOps

Name of the course	:DevOps
Number of training hours	:90+ hours per semester
Type of student	:Advanced / Active Learners
Batch size	:85 / 90 students
Mode of training	:Offline
Type of Assessment	:RiseSmart project (Individual 6 months project)

DevOps Methodologies and Process

The processes and methodologies of DevOps entirely focus on automation and agility. The sole aim of DevOps is to accelerate the process of app production. Moreover, the DevOps lifecycle is all about continuity and consistency. It drives the entire production process through continuous integration, development, feedback, monitoring, testing, delivery, and deployment.



The process of DevOps

Skill Set for DevOps

Version Control System	:Git and GitHub
Automation Server	:Jenkins
Automation Testing	:Selenium
Software Containerization	:Docker
Container Orchestration	:Kubernetes
Configuration Management and Deployment	:Puppet, Chef, Ansible
Number of training hours	:45+ hours

Cloud Application Development

A cloud developer designs, builds, deploys, and manages scalable applications residing on top of public cloud platforms like Amazon Web Services (AWS), Microsoft Azure, or Google Cloud Platform (GCP). They utilize the flexible, on-demand infrastructure, storage databases, analytics tools, and other cloud-hosted services to rapidly ship robust software with smaller teams. A cloud application, or cloud app, is a software program where cloud-based and local components work together. This model relies on remote servers for processing logic that is accessed through a web browser with a continual internet connection.

Cloud Application Development

Name of the course	:Cloud Application Development
Number of training hours	:45+ hours per semester
Type of student	:Advanced / Active Learners
Batch size	:85 / 90 students
Mode of training	:Offline
Type of Assessment	:AWS Certification



Popular forms of cloud deployment

Private Cloud: This serves as a safe haven for data, apps, and the web. It can be thought of as a private web system. One business uses private cloud services, which are not accessible to the general public.

Public Cloud: Only authorized devices can access the data stored in the public cloud resource. Generally speaking, public clouds offer the best flexibility and price.

Hybrid Cloud: Hybrid is regarded as both public and private for cloud app development. This is where you may share the data with third-party apps and on-device services, as well as with other variations for optimization and distribution.

Community Cloud: The deployment of a community cloud is comparable to that of a private cloud, with the exception that data exchange occurs between two or more organizations. A community cloud is useful when a nation's government has multiple internal departments that require the same resources and infrastructure.

Types of Cloud Applications

While speaking about cloud application development, it is necessary to discuss three main software delivery models:

Software-as-a-Service (SaaS)

Platform-as-a-Service (PaaS)

Infrastructure-as-a-Service (IaaS)

Skill Set Cloud Application Development

Cloud Application Development

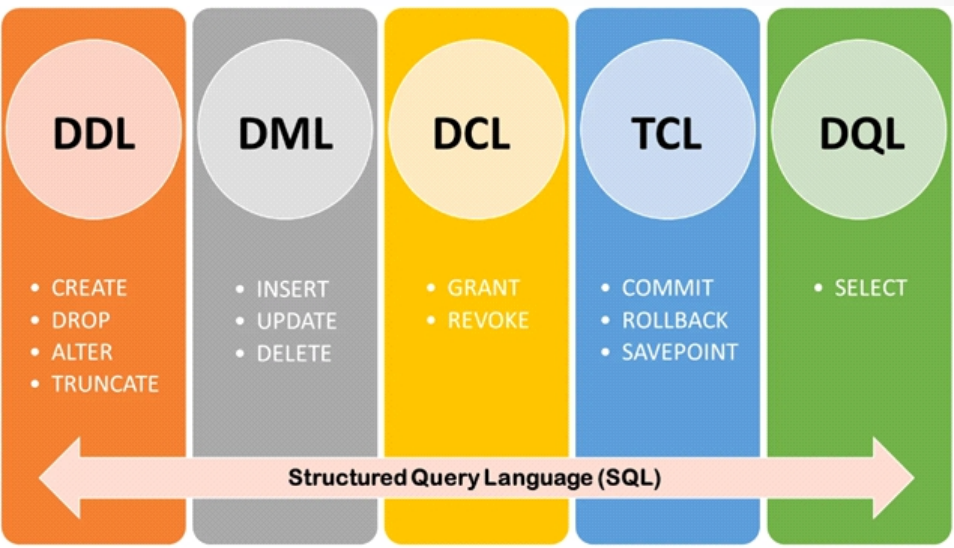
Compute	:Amazon EC2, AWS Lambda, AWS Elastic Beanstalk
Storage	:Amazon S3, Amazon EBS, Amazon Glacier
Database	:Amazon RDS, Amazon DynamoDB, Amazon Redshift
Networking	:Amazon VPC, AWS Direct Connect, Amazon Route 53
Billing	:AWS Cost Explorer, AWS Budgets, AWS Cost and Usage Report
Auto Scaling	:Auto Scaling Groups (ASG), Scaling Policies
Management Tools	:AWS CloudFormation, AWS CloudTrail, AWS Config
Security, Identity & Compliance	:AWS IAM, AWS Cognito, AWS Shield, AWS WAF
Migration & Transfer	:AWS Snowball, AWS Database Migration Service (DMS)
Number of training hours	:45+ hours

Database Design and MySQL

Understanding the principles of database design is crucial for creating efficient and well-structured databases. This includes topics such as entity-relationship modeling, normalization, data integrity, and indexing. SQL (Structured Query Language) is the language used to interact with databases. Learning the basics of SQL, including querying, filtering, sorting, and joining data, is essential for working with MySQL.

Database Design and MySQL

Name of the course	:Database Design and MySQL
Number of training hours	:45+ hours per semester
Type of student	:Active Learners
Batch size	:85 / 90 students
Mode of training	:Offline
Type of Assessment	:Hack-a-thons / Cod-a-thons / RiseSmart Project



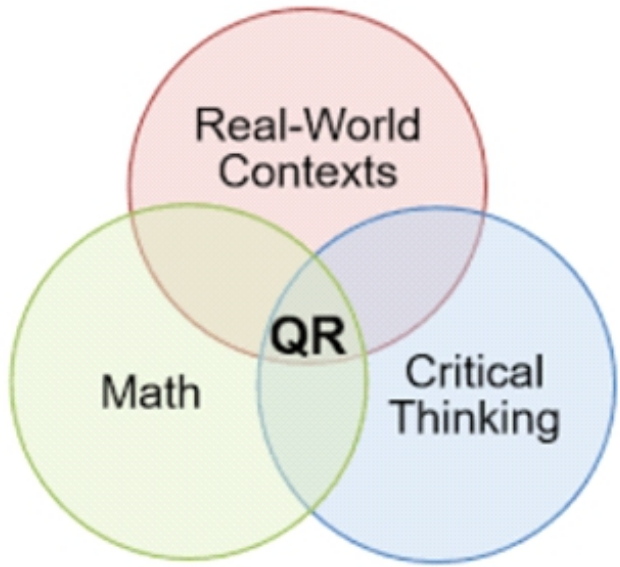
Skills set for Database Design and MySQL

Introduction to Databases	:Overview of databases, relational model, role of data models in database design
Database Design Principles	:E-R modelling, normalization, data integrity
Structured Query Language	:Querying, filtering, sorting, joining
Database Management Systems	:Install and configure MySQL, create and modify database objects – tables, views, indexes, manage user access
Data Manipulation	:Insert, update, delete data, aggregate and transform data using functions and operators
Database Administration	:Database security, backup, recovery strategies, performance optimization techniques
Practical Projects and Assignments	:Designing and implementing databases, writing complex SQL queries, and optimizing database performance

aptitude and reasoning are not just academic requirements but essential tools for success in engineering education and career advancement. Mastering these skills early on can lay a solid foundation for tackling challenges in both academic and professional settings.

Quantitative Aptitude and Reasoning

Name of the course	:Quantitative Aptitude and Reasoning
Number of training hours	:45+ hours per semester
Type of student	:Active Learners
Batch size	:85 / 90 students
Mode of training	:Offline
Type of Assessment	:Programming Puzzles



Quantitative Aptitude and Reasoning

Quantitative aptitude and reasoning skills are crucial for engineering students. Engineering students heavily relies on problem-solving skills, and quantitative aptitude forms the basis for analyzing and solving complex engineering problems. Reasoning skills help in logically breaking down problems, identifying patterns, and making sound decisions based on available data, which is essential in engineering design and analysis. In professional settings, engineers need to analyze budgets, feasibility studies, and project timelines, which require strong quantitative and reasoning abilities. Quantitative



Topics for Quantitative Aptitude

Number System	:Divisibility rules, factors, multiples, and properties of integers
Percentage	:Understanding percentages, calculating percentage increase or decrease, and solving problems related to percentage
Ratio and Proportion	:Ratios, proportions, and their applications in solving various types of problems
Average	:Calculating averages, understanding weighted averages, and solving problems related to average values
Time and Work	:Concepts related to work done, work efficiency, and solving problems involving time and work relationships
Time, Speed, and Distance	:Problems related to time, speed, distance, and their interrelationships
Profit and Loss	:Calculating profit, loss, cost price, selling price, and solving problems related to profit and loss.
Simple and Compound Interest	:Concepts of simple interest, compound interest, and solving problems related to interest calculations
Permutation and Combination	:Counting principles, permutations, combinations, and solving problems related to arranging objects or selecting subsets
Probability	:Basics of probability, calculating probabilities of events, and solving problems related to probability
Data Interpretation	:Interpreting data presented in various forms, such as tables, charts, graphs, and solving problems based on the given data

Algebra	:Solving equations, inequalities, and basic algebraic operations
Geometry	:Basic geometric concepts, such as lines, angles, triangles, circles, and solving problems related to geometric properties
Mensuration	:Calculating areas, volumes, and perimeters of various geometric shapes

Topics for Reasoning

Logical Reasoning	:Understanding and analysing patterns, relationships, and logical structures
Analytical Reasoning	:Solving puzzles and seating arrangement problems
Critical Thinking	:Evaluating arguments and evidence objectively to form reasoned judgments
Decision Making	:Effective decision-making processes, including weighing alternatives, predicting outcomes, and considering constraints

Programming Puzzles

Programming puzzles is a combination of puzzle-solving and programming. It involves using programming concepts and techniques to solve puzzles or create programs that solve puzzles. It is a enjoyable and engaging way to develop logical thinking, problem-solving skills, and programming abilities. There are various resources available for puzzle programming, including online platforms, books, and coding challenges.

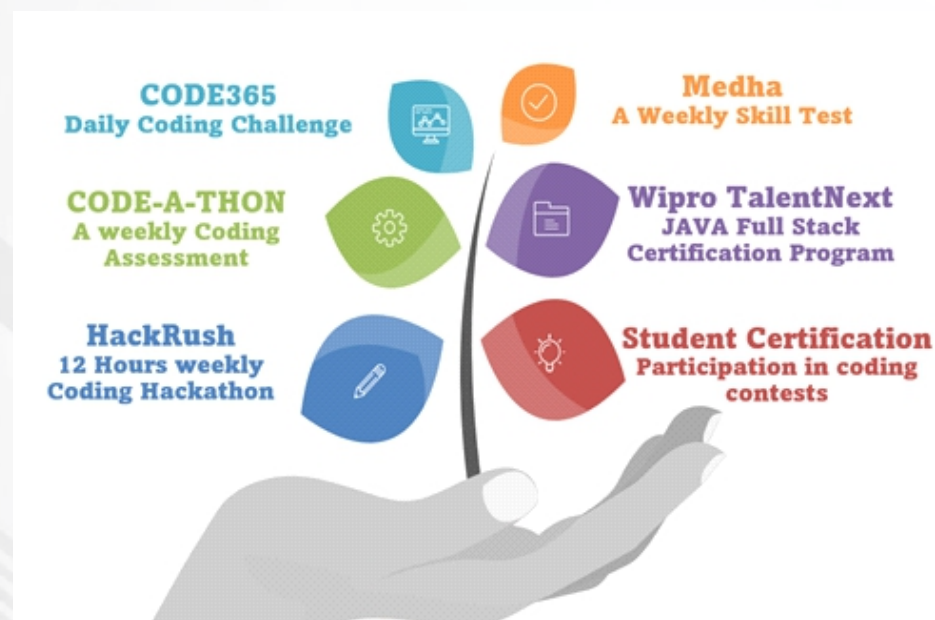
Skills set for Programming Puzzles

Topics for Quantitative Aptitude

Classification or categorization	:Classification puzzles involve identifying patterns or relationships among a group of items and categorizing them based on those patterns.
Blood relations with their relationship and professions	:Blood relation puzzles involve determining the family relationships between individuals based on given information.
Seating and placing arrangements	:Seating and placing arrangement puzzles require arranging individuals or objects in a specific order or pattern based on given conditions.
Comparison type test	:Comparison puzzles involve comparing different elements or objects based on specific attributes or characteristics.
Sequential order of things	:Sequential order puzzles involve arranging items or events in a specific sequence or order based on given conditions.
Selection based on certain given conditions	:Selection puzzles involve selecting or choosing items or individuals based on specific conditions or criteria.
Jumbled Problems	:Jumbled problems or puzzles involve unscrambling or rearranging letters, words, or phrases to form meaningful words or sentences.
Crypt Arithmetic	:Crypt arithmetic puzzles involve assigning digits to letters in a mathematical equation to solve for the correct values.
Input-Output	:Input-output puzzles involve analysing a series of inputs and outputs to determine the underlying pattern or rule.

Cube, cuboid and Dices	:Cube, cuboid, and dice puzzles involve analysing and solving problems related to the properties, dimensions, and arrangements of cubes, cuboids, and dice.
Miscellaneous puzzles	:Miscellaneous puzzles encompass a wide range of puzzle types that do not fit into specific categories.

Career Exploration @ CDC



Faculty Development Programs

Faculty development programs offered by career development center for programming courses typically aim to enhance faculty member abilities to effectively teach programming skills. Here's an outline of such programs conducted by CDC.

Faculty Development Program

One week faculty development program on "Harnessing Machine Learning Algorithms for Effective Business Modeling"

One week short term training program on "Mastering NLP: Bridging Theory and Practice For Real World Applications"

Two week faculty development program on "Object Oriented Programming with Java"

One week staff development program on "Programming Essentials"

30 Hour hands-on React-JS mastery workshop "Building Dynamic User Interfaces"

Two week faculty development program on "Essentials of Python Programming Language"

Three week faculty development program on "Graph Theory For Effective Problem Solving"

Three week faculty development program on "Data Structures and Algorithms"

Frost Hacks - MLH Hackathon – 36 hours international coding hackathon

HackRush 1.0 - A 12 hour coding hackathon

HackRush 2.0 - A 12 hour coding hackathon

HackRush 3.0 - A 12 hour coding hackathon

HackRush 4.0 - A 12 hour coding hackathon

Cod-a-thons – Daily coding assessment

Code365 – Daily coding challenge

Hack-a-thons / Cod-a-thons

Lexicon 1.0 - 24 hours coding hackathon

Lexicon 2.0 - 24 hours coding hackathon

Lexicon 3.0 - 24 hours coding hackathon

CodeQuest 1.0 - 12 hours coding hackathon

CodeQuest 2.0 - 12 hours coding hackathon

CodeQuest 3.0 - 12 hours coding hackathon

CodeQuest 4.0 - 12 hours coding hackathon

CodeQuest 5.0 - 12 hours coding hackathon



FACULTY INFORMATION



Dr. B Padmaja

Associate Professor & Dean

Ph.D (2021), JNTU, Hyderabad, TS.

M.Tech (2010), JNTU, Hyderabad, TS.

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Mr. E Krishna Rao Patro



Dr Ch. V. Rama Padmaja



Mr. INV Suryanarayana



Mr. A Srikanth



Mr. M Sambaraj



Mr. Srinivas Govada



Dr Sudeepthi Dondapati



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