

U.G. Department of Computer Applications

2023-24

Program Educational Objectives:

PEO1	To develop skilled manpower in the various areas of information technology like Data Base Management, Software Development, Computer-Languages, Software Engineering and Web Based Applications etc.
PEO2	To prepare our graduate to start the career as an Application Developer , Network Administrator , Software Tester, Software Engineer, Junior Programmer, Web Developer.
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PO6	Analytical Reasoning -Ability to formulate, to model, to design solutions, procedure and to use software tools to solve real world problems and evaluate.
PO7	Scientific Reasoning -Ability to operate, manages, deploy, configure computer network, hardware, software operation of an organization.
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Program Specific Outcomes:

PSO-01	Disciplinary Knowledge - Explore technical knowledge in diverse areas of Computer Science and experience an environment conducive in cultivating skills for successful career, entrepreneurship and higher studies.
PSO-02	Life Long Learning -Expertise to face the challenges of changing trends and career opportunities as per local and global industry needs.



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Course Outcomes

23UBC101 – Programming in C

CO Number	CO Statement	Knowledge Level
CO1	Tell the basic terminology used in computer programming	K1
CO2	Understand and debug programs in C language.	K2
CO3	Inference programming concepts such as Arrays, Functions and Structures	K3
CO4	Analyze the dynamics of memory by the use of pointers and Structures.	K4
CO5	Design different data structures and create/ update basic data files.	K5

23UBC102 – Data Structures

CO Number	CO Statement	Knowledge Level
CO1	Remembering the concepts to use linear and non-linear data structures Like stacks, queues, linked list etc.	K1
CO2	Understand and analyze to handle operations like searching, insertion, deletion, traversing mechanism etc. on various data structures	K2
CO3	Enhance the knowledge to solve problems like sorting, searching, Insertion and deletion of data Operations.	K3
CO4	Analyze the concepts of trees, graphs and its applications.	K4
CO5	Evaluate to learn a number of algorithm design techniques and to Analyze the efficiency and the accuracy of algorithms.	K5

23UBC1A1- Mathematics:I – Computer Oriented Numerical and Statistical Methods

CO Number	CO Statement	Knowledge Level
CO1	Recall numerical methods to find out the solution of algebraic equations using different methods like Bisection method, Newton Raphson method under different conditions and numerical solution of system of Algebraic equations.	K1
CO2	Understand the properties of Correlation, Regression and compute Karl-Pearson's coefficient of correlation.	K2
CO3	Apply numerical differentiation and Integration whenever and wherever routine methods are not applicable and understand the importance of Interpolation and its application to solve problems for equal intervals and Unequal intervals.	K3
CO4	Analyze the system of linear equations by applying different methodologies.	K4
CO5	Compute and interpret the result so Regression and Correlation Analysis.	K5

23UBC1A2 – Discrete Mathematics- I

CO Number	CO Statement	Knowledge Level
CO1	Ability to apply mathematical logic to solve Problems.	K1
CO2	Understand sets, relations, functions and discrete structures	K2
CO3	Able to use logical notations to define and reason about fundamental mathematical concepts such as sets relations and functions	K3
CO4	Able to formulate problems and solve recurrence relations	K4
CO5	Able to model and solve real world problems using graphs and trees	K5

23UBC103 – Programming in C Lab

CO Number	CO Statement	Knowledge Level
CO1	Remember the structure and significance of the C Programming Language.	K1
CO2	Acquire the knowledge about C Programming for various programming technologies.	K2
CO3	Role of constants, variables, identifiers, operators, type conversion and Other building blocks of C Language.	K3
CO4	Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.	K4
CO5	Role of Functions involving the idea of modularity.	K5

23UBC204 – Object Oriented Programming with C++

CO Number	CO Statement	Knowledge Level
CO1	Gain the basic knowledge on Object Oriented concepts.	K1
CO2	Ability to demonstrate applications using Object Oriented Programming Concepts	K2
CO3	Develop the differences between traditional imperative design and object-oriented Design	K3
CO4	Examine class structures as fundamental, modular building blocks	K4
CO5	Explain the role of inheritance, polymorphism, dynamic binding and Generic structures in building reusable code.	K5

23UBC205 – Digital Computer Fundamentals

CO Number	CO Statement	Knowledge Level
CO1	Remember how to represent numbers in computers and use problem solving techniques such as flowcharts.	K1
CO2	Acquire knowledge about Boolean algebra and analyze IC digital logic Families.	K2
CO3	Compare various combinational logic circuits.	K3

CO4	Analyze various sequential circuits such as flip-flops, counters and registers.	K4
CO5	Evaluate various components in designing the digital logic circuits.	K5

23UBC2A1 – Mathematics:II – Mathematical Foundations of Computer Applications

CO Number	CO Statement	Knowledge Level
CO1	Ability to define mathematical logic to solve problems.	K1
CO2	Understand sets, relations, functions and discrete structures.	K2
CO3	Able to use logical notations to discover and reason about fundamental mathematical concepts such as sets relations and functions.	K3
CO4	Able to examine problems and solve matrix.	K4
CO5	Able to evaluate and solve real world problems using graphs and probability.	K5

23UBC2A2 – Discrete Mathematics- II

CO Number	CO Statement	Knowledge Level
CO1	Ability to define mathematical logic to solve problems.	K1
CO2	Understand sets, relations, functions and discrete structures.	K2
CO3	Able to use logical notations to discover and reason about fundamental mathematical concepts such as sets relations and functions.	K3
CO4	Able to examine problems and solve matrix.	K4
CO5	Able to evaluate and solve real world problems using graphs and probability.	K5

23UBC206 – Programming in C++ Lab

CO Number	CO Statement	Knowledge Level
CO1	Remember the structure and significance of the C++ Programming Language.	K1
CO2	Acquire the knowledge about C++ Programming for various programming technologies.	K2
CO3	Demonstrate the ability to analyze, use and create functions, classes, to overload operators.	K3
CO4	Demonstrate the ability to understand and use inheritance and Pointers when creating or using classes and create templates.	K4
CO5	Demonstrate the ability to understand and use Exception handling and file handling mechanism.	K5

23UBC2S1 – Data Science

CO Number	CO Statement	Knowledge Level
CO1	Remember the structure and significance of the Data science programming Language.	K1
CO2	Acquire the knowledge about Data science Programming for various programming technologies.	K2
CO3	Demonstrate the ability to analyze, use and operators.	K3
CO4	Demonstrate the ability to understand and use Numpy arrays and Pandas data frames	K4
CO5	Demonstrate the ability to understand and use Correlation and scatter plots.	K5


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Course Outcomes

22UBC307 - Core V: Relational Database management System and Oracle

CO Number	CO Statement	Knowledge Level
CO1	Remember the basic concepts of Database and Database Management System software	K1
CO2	Understand the basic concepts of relational data model, entity-relationship model, relational database design, relational algebra and SQL.	K2
CO3	Solve Database problems using Oracle SQL and PL/SQL. This will include the use of Procedures, Functions and Triggers.	K3
CO4	Examine entity relationship and convert entity relationship diagrams into RDBMS and formulate SQL queries on the data.	K4
CO5	Explain the usage of normalization technique and functional dependency in database design.	K5

22UBC308 - Core VI: Operating System & Linux

CO Number	CO Statement	Knowledge Level
CO1	Remember the concept of computer operating systems and its features.	K1
CO2	Understand types and history of operating systems and able to explain modern operating systems and its evolution over the time period.	K2
CO3	Describe how operating systems like Linux and windows will meet the future and real-life needs with respect to efficiency, storage, speed and Security.	K3
CO4	Analyze various operating system functions including memory Management, process management and dead lock prevention strategies.	K4
CO5	Evaluate security, multiprocessing features provided by the Unix operating system using Unix commands, Vi editor and Shell programming.	K5

22UBC3A3 - Allied III: Accountancy For Decision Making

CO Number	CO Statement	Knowledge Level
CO1	Provide the knowledge of accounting theory based on conceptual Framework of accounting.	K1
CO2	Enable students to understand the concept of accounting.	K2
CO3	Impart knowledge accounting in decision making.	K3
CO4	Analyze and interpret accounting related transactions in accordance with Accounting theory.	K4
CO5	Summarize ratio analysis and fund flow statement	K5

22UBC309 - Core Lab - III: Relational Database Management System and Oracle

CO Number	CO Statement	Knowledge Level
CO1	Remember Structured Query Language (SQL) queries using DDL, DML, DCL and TCL commands.	K1
CO2	Understand various queries execution such as relational constraints, joins, set operations, aggregate functions, trigger and views.	K2
CO3	Apply Normalization concepts in a database.	K3
CO4	Analyze the techniques used to design and create Relational Database.	K4
CO5	Evaluate options to make informed decisions that meet data storage, processing and retrieval needs.	K5

22UBC310 - Core Lab- IV: Programming in Linux

CO Number	CO Statement	Knowledge Level
CO1	Apply the various commands in terminal to handle UNIX system files.	K1
CO2	Analyze Linux commands using file and system security	K2
CO3	Discuss shell code in VI editors to solve various problems.	K3
CO4	Analyze and Create file systems and directories	K4

CO5	Distinguish various filter and Pipes commands	K5
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22UBC3N1 - NME - I :Web Designing Lab

CO Number	CO Statement	Knowledge Level
CO1	Recollect the concepts of website Development	K1
CO2	Demonstrate knowledge and skills utilizing various HTML tags for Designing a static webpage.	K2
CO3	Analyze the HTML tags, CSS and JavaScript.	K3
CO4	Recognize and apply the elements of Creating Style Sheet (CSS).	K4
CO5	Develop and incorporate dynamic capabilities in Web pages using JavaScript.	K5

22UBC3N2- NME - I :Desktop Publishing Lab

CO Number	CO Statement	Knowledge Level
CO1	Remember the basic technical and handling tools.	K1
CO2	Understands the various concepts of Photoshop.	K2
CO3	Apply various effects that is suitable to access various formats in this platform for editing.	K3
CO4	Analyze the concepts of different modes in Photoshop.	K4
CO5	Emphasis is placed on desktop concepts desktop applications, learning and working in the desktop environment.	K5

22UBC411- Core VIII: Visual Programming

CO Number	CO Statement	Knowledge Level
CO1	To understand the concepts of the .NET framework as a whole and the technologies that constitutes the framework.	K1
CO2	Knowledge on ADO.NET with ASP.NET for creating web based data centric applications also understand web services.	K2
CO3	Understand the ASP.NET architecture, web server controls ,rich web controls and validation controls, Analyze security management in ASP.NET.	K3
CO4	Use ADO.NET in a web application to read, insert and update data in a database.	K4

22UBC412 - Core IX: Java Programming

CO Number	CO Statement	Knowledge Level
CO1	Remember the structure and significance of the Java Programming Language.	K1
CO2	Acquire the knowledge about Java Programming Language for various programming technologies.	K2
CO3	Apply the concept of Inheritance and various Java Components.	K3
CO4	Analyze the usage of event handling on AWT and Swing components	K4
CO5	Evaluate the Internet Programming using Java Applets.	K5

22UBC4A4 - Allied IV: Mathematics III-Computer Based Optimization Techniques

CO Number	CO Statement	Knowledge Level
CO1	Recollect the modeling and computational tools as well as analytic skills to evaluate the problems.	K1
CO2	Understand and explain the various mathematical formulations.	K2
CO3	Apply Working with Non Linear programming Problems.	K3
CO4	Analyze Linear Programming problem and similar such problems into appropriate forms and problem solving.	K4
CO5	Estimate the problem situation for better decisions.	K5

22UBC413 - Core Lab V: Visual Programming

CO Number	CO Statement	Knowledge Level
CO1	Recollect the ASP.Net applications using standard .net controls	K1
CO2	Understand the decision making statements and user interfacing controls	K2
CO3	Implement and deploy database connection management using ADO.NET	K3
CO4	Analyze simple data binding applications using ADO.Net Connectivity	K4
CO5	Evaluate web-based applications by using various web controls in ASP.NET.	K5

22UBC414 - Core Lab VI: Java Programming

CO Number	CO Statement	Knowledge Level
CO1	Recall the concepts of Object-Oriented Programming.	K1
CO2	Understands the concepts of Multithreading and Method Overriding.	K2
CO3	Apply the concept of Applets and Servlets.	K3

CO4	Analyze the concepts of JMenu, JTabbed Pane and JTree.	K4
CO5	Evaluate the usage of Generic Servlet and HTTP Servlet.	K5

22UBC4S1- SEC II: Naan Mudhalvan: Cloud Computing

CO Number	CO Statement	Knowledge Level
CO1	Recall the concepts of Object-Oriented Programming.	K1
CO2	Understands the concepts of Multithreading and Method Overriding.	K2
CO3	Apply the concept of Applets and Servlets.	K3
CO4	Analyze the concepts of JMenu, JTabbed Pane and JTree.	K4
CO5	Evaluate the usage of Generic Servlet and HTTP Servlet.	K5

22UBC4S1 - SEC II: Naan Mudhalvan: DevOps Foundation

CO Number	CO Statement	Knowledge Level
CO1	Recollect the Concepts of Cloud computing	K1
CO2	Understand the Cloud computing fundamentals.	K2
CO3	Apply the fundamental concepts in datacenters to understand the trade offs in power, efficiency and cost.	K3
CO4	Identify resource management fundamentals, i.e. resource abstraction, sharing and sandboxing and outline their role in managing infrastructure in cloud computing.	K4
CO5	Analyze various cloud programming models and apply them to solve problems on the cloud.	K5

22UBC4N1 - NME - II : Photo Effects Lab

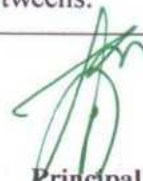
CO Number	CO Statement	Knowledge Level
CO1	Recollect the Concepts of DevOps Foundation	K1
CO2	Understand the DevOps Foundation fundamentals.	K2
CO3	Apply the fundamental concepts in datacenters to understand the tradeoffs in power, efficiency and cost.	K3
CO4	Identify resource management fundamentals	K4
CO5	Analyze various cloud programming models and apply them to solve problems on the DevOps	K5

22UBC4N2 - NME - II : Animation Lab

CO Number	CO Statement	Knowledge Level
CO1	Recollect the basic elements and principles of photo editing software to Achieve a great photo effect by applying effects.	K1
CO2	Understand the important aspects of Adobe Photoshop Elements.	K2
CO3	Construct simple documents utilizing selections, layers and blending modes.	K3
CO4	Analyze color management and correction techniques in Adobe Photoshop.	K4
CO5	Evaluate simple shapes using animation editing software and design Simple animation by applying shape tweens and motion tweens.	K5


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21UBC519 - Core - XI : Java Programming

CO Number	CO Statement	Knowledge Level
CO1	Remember the structure and significance of the Java Programming Language.	K1
CO2	Acquire the knowledge about Java Programming Language for various programming technologies.	K2
CO3	Analyze the usage of Inheritance and various Java Components.	K3
CO4	Apply the concept of event handling on AWT and Swing components	K4
CO5	Evaluate the Internet Programming using Java Applets.	K5

21UBC520 - Core - XII :Skill Enhanced Course Software Testing

CO Number	CO Statement	Knowledge Level
CO1	Recollect the fundamental concepts and types in software testing.	K1
CO2	Understand the process of applying tests to software and the basic components of a test case.	K2
CO3	Analyze the automation techniques and use modern testing tools to support software testing projects.	K3
CO4	Develop a test plan by learning its process and components.	K4
CO5	Evaluate the test code and automate test execution.	K5

21UBC5E1 - Core Elective - I : Networks

CO Number	CO Statement	KnowledgeLevel
CO1	Remember computer network basics, network architecture, TCP/IP and OSI reference models.	K1
CO2	Interpret knowledge about essential protocols and their operations.	K2
CO3	Analyze aspects of network security.	K3
CO4	Familiarize the different types of protocols.	K4
CO5	Evaluate detection and correction of errors in transmission.	K5

21UBC5E2 - Core Elective - I : Grid Computing

CO Number	CO Statement	Knowledge Level
CO1	Remember the role of data warehousing and data mining to the decision-support level of organizations	K1
CO2	Understand to differentiate the situations for applying different data mining techniques	K2
CO3	Enhance knowledge to implement different models used for OLAP and data pre-processing	K3
CO4	Able to justify the applicability of grid computing for a specific application.	K4
CO5	Create data mining solutions for different applications.	K5

21UBC5E3 - Core Elective - I : Data Science

CO Number	CO Statement	KnowledgeLevel
CO1	Recollect the fundamentals of Python and R-Programming.	K1
CO2	Understand the basic concepts of Data Wrangling and the process of dataflow.	K2
CO3	Analyze the basic concepts in Natural Language Processing and Neural Networks.	K3
CO4	Learn where to apply Machine Learning and Deep Learning.	K4

CO5	Evaluate ML Algorithms and gain knowledge on Outliers.	K5
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21UBC521- Core Lab - IX: Java Programming

CO Number	CO Statement	KnowledgeLevel
CO1	Understand the concepts of Object-Oriented Programming.	K3
CO2	Visualize and Recognize the concept of Applets and Servlets	K4
CO3	Recognize and apply the elements of interactive user interfaces using the Java Swing class and appropriate layout managers.	K5

21UBC522 - Core Lab - X : Software Testing

CO Number	Co Statement	Knowledge Level
CO1	Understands the Automation testing approach and to write test suites for software	K3
CO2	Generate test cases from software requirements using various test processes for continuous quality improvement	K4
CO3	Develop analyzing techniques through automation testing tool	K5

21UBC5S1 - Skill Based Elective – I: Mobile Phone Services

CO Number	Co Statement	Knowledge Level
CO1	Understand the application and software compatibility with the MobilePhone technologies	K1
CO2	Acquire knowledge about tools and equipment of mobile phone parts	K2
CO3	Analyze Repair and Diagnose Problem of all kinds of faults in MobilePhone in Hardware as well Software	K3
CO4	Identify appropriate tools and manuals for repairing the specific issues	K4
CO5	Explain about Fault finding, troubleshooting and repairing of various faults	K5

21UBC5S2 - Skill Based Elective – I:Internet of Things

CO Number	CO Statement	Knowledge Level
CO1	Learn the concept and significance of IOT and its services.	K1
CO2	Understand the different IOT Technologies like Micro-controller, Wireless communication like Blue Tooth, GPRS, Wi-Fi and Storage and embedded systems	K2
CO3	Deploy and test different protocols and prototypes in IOT.	K3
CO4	Analyze various architecture, operation, and business benefits of an IOT solution.	K4
CO5	Experiment IOT systems and test its connection to the cloud computing, big data and machine learning disciplines.	K5

21UBC624- Core - XIII :Python Programming

CO Number	CO Statement	Knowledge Level
CO1	Remember the fundamental concept of python programming.	K1
CO2	Understand the control flow, Operators and looping statements	K2
CO3	Analyze and develop programs using Functions & modular programming.	K3
CO4	Applying the Errors handling Mechanisms while working with Exception	K4
CO5	Evaluate object oriented features and organize files.	K5

21UBC625 - Core - XIV : Mobile Application Development

CO Number	CO Statement	Knowledge Level
CO1	Remember the history of Android development and what is required to build Android apps.	K1
CO2	Understanding Android application architecture, including the roles of the task stack, activities, and services.	K2
CO3	Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces.	K3

CO4	Analyze the implementation of messaging and location-based services.	K4
CO5	Evaluate developed app and publish in market.	K5

21UBC6E1 - Core Elective - II : Storage Management

CO Number	CO Statement	Knowledge Level
CO1	Remembering the storage architectures, storage subsystems and variety of storage system environments.	K1
CO2	Understanding different RAID levels and their suitability on different Application environments .	K2
CO3	Analyzing the characteristics and components of Storage Area Networks (SAN).	K3
CO4	Evaluate the components of SAN, Fibre Channel (FC) protocols and topologies, file sharing operations and protocols on Network Attached Storage (NAS).	K4
CO5	Review the different backup, recovery topologies to create their role in providing disaster recovery, types of storage virtualization and file level virtualization .	K5

21UBC6E2 - Core Elective - II : Current Trends And Technologies

CO Number	CO Statement	Knowledge Level
CO1	Explore the research and latest trends in technology	K1
CO2	Get the idea to apply an Objectives and Guidance of Cyber security.	K2
CO3	Analyze the terminology used by SAP ABAP, knowledge of big data and its technologies in Big Data Analytics.	K3
CO4	To keep in mind of Cyber Security Policy and Security Evolution.	K4
CO5	Implement the Data and Knowledge Management and use of Devices in IOT Technology.	K5

21UBC6E3 - Core Elective - II : Information Security

CO Number	CO Statement	Knowledge Level
CO1	Facilitate students to understand the significance of Information Security.	K1
CO2	Help students to gain knowledge about public key encryption, Authentication and hash functions.	K2
CO3	Identify the issues in Network Security and Intrusion Detection and Defensive Programming.	K3
CO4	Analyze the basic understanding of cryptography, how it has evolved, and some key encryption techniques used today.	K4
CO5	Evaluate the security features and Cyber security law in real life situations.	K5

21UBC6E4 - Core Elective – III: Data Mining And Warehousing

CO Number	CO Statement	Knowledge Level
CO1	Recall the concept of data mining, warehousing and knowledge discovery process.	K1
CO2	Understand data pre-processing techniques like cleaning, integration and data transformation strategies.	K2
CO3	Describe the knowledge discovery process and its algorithms including k-nearest neighbour, decision trees, association rules and neural networks.	K3
CO4	Analyze the data modeling, design and implementation of warehousing solutions for emerging internet and cloud environments.	K4
CO5	Evaluate KDD environment by visualizing the reports using various analysis and query tools.	K5

21UBC6E5 - Core Elective – III: Cloud Computing

CO Number	CO Statement	Knowledge Level
CO1	Understand the core concepts of the cloud computing paradigm: how and why this paradigm shift came about, the characteristics, advantages and challenges brought about by the various models and services in cloud computing.	K1
CO2	Demonstrate the fundamental concepts of cloud storage and their use in storage systems such as Amazon S3 (Simple Storage Service) and Microsoft Azure.	K2

CO3	Apply fundamental concepts in cloud infrastructures to understand the tradeoffs in power, efficiency and cost.	K3
CO4	Analyze the performance of Cloud Computing.	K4
CO5	Explain the core issues of Cloud Computing such as security, privacy, and interoperability.	K5

21UBC6E6 - Core Elective – III: Nano Computing

CO Number	Co Statement	Knowledge Level
CO1	Understand the concepts of Nano computing	K1
CO2	Discuss Nano computing challenges and imperfections	K2
CO3	Apply reliability evaluation strategies	K3
CO4	Analyze nano scale quantum computing	K4
CO5	Explain the concept of Molecular Computing and Optimal Computing	K5

21UBC626 - Core Lab - XI : Python Programming

CO Number	CO Statement	Knowledge Level
CO1	Describe the Python language syntax including control statements, loops and functions	K3
CO2	Interpret the concepts of Object-oriented programming as used in Python using encapsulation, polymorphism and inheritance	K4
CO3	Identify the external modules for creating and writing data to excel files and inspect the file operations to navigate the file systems.	K5

21UBC627 - Core Lab - XII : Mobile Application Development

CO Number	CO Statement	KnowledgeLevel
CO1	Build a native application using GUI components and Mobile application development framework.	K3.
CO2	Learn how to develop and deploy an application to the app market.	K4

CO3	Develop useful mobile applications for the current scenario.	K5
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21UBC6S3 - Skill Enhancement Course (SEC) IV: Naan Mudhalvan : Interview Readiness

CO Number	CO Statement	Knowledge Level
CO1	Recollect the communication and interpersonal skills.	K1
CO2	Understand the abilities and competencies.	K2
CO3	Apply the concept of strengthening the skills.	K3
CO4	Analyze the Technical and Case Interviews.	K4
CO5	Evaluate the interview challenges and utilize them for future purpose.	K5

**21UBC6S4 - Skill Enhancement Course (SEC) IV:
Naan Mudhalvan : A 360° Interview Preparation Course**

CO Number	CO Statement	Knowledge Level
CO1	Recollect the types of interviews and companies.	K1
CO2	Understand the personal capabilities.	K2
CO3	Apply the concept of tackling situations.	K3
CO4	Analyze the Technical and Case Interviews.	K4
CO5	Evaluate the confidence and bouncing back.	K5

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