

The background features a stylized illustration of a person with dark hair, wearing a light pink shirt, sitting and reading a blue book. Above the person's head is a blue graduation cap. To the right of the person, there are several books stacked vertically, with yellow and blue tabs visible. The overall color palette is soft and pastel, including shades of blue, pink, yellow, and light green.

MEENAKSHI SUNDARARAJAN CAREER DEVELOPMENT CENTRE

SELF LEARNING MATERIAL

INDEX

1. C PROGRAMMING.....	1
Learning Material	
Self-Assessment	
Timeline	
Student Tracking	
2. PYTHON PROGRAMMING.....	4
Learning Material	
Self-Assessment	
Timeline	
Student Tracking	
3. JAVA PROGRAMMING.....	9
Learning Material	
Self-Assessment	
Timeline	
Student Tracking	
4. JAVA SCRIPT PROGRAMMING.....	15
Learning Material	
Self-Assessment	
Timeline	
Student Tracking	
5. HTML & CSS PROGRAMMING.....	21
Learning Material	
Self-Assessment	
Timeline	
Student Tracking	
6. SQL PROGRAMMING.....	26
Learning Material	
Self-Assessment	
Timeline	
Student Tracking	
7. DATA STRUCTURE & ALGORITHM.....	31
Learning Material	
Self-Assessment	
Timeline	
Student Tracking	
8. Computer Network PROGRAMMING.....	35
Learning Material	
Self-Assessment	
Timeline	
Student Tracking	



C - PROGRAMMING : Self-Learning Guide for Placement Training

🎯 Objective:

To develop a strong foundation in C programming in order to enhance problem-solving skills, understand core programming concepts such as memory management, pointers, and data structures, and to confidently tackle technical interviews, coding tests, and aptitude rounds during campus placements.

PART 1: LEARNING JOURNEY MAP

C		
Video Learning	NPTEL	https://onlinecourses.nptel.ac.in/noc22_cs40/preview
	Animated Video learning	https://www.nesoacademy.org/pl/02-c-programming
Tutorial Learning (Text format)		https://www.w3schools.com/c/ https://www.tutorialspoint.com/cprogramming/index.htm https://www.geeksforgeeks.org/c/c-programming-language/

PART 2: PROGRAMMING PRACTICE LINK

Online Code Editors	URL
Geeks for Geeks	https://www.geeksforgeeks.org/c/c-programming-examples/
W3schools	https://www.w3schools.com/c/c_exercises.php
<ul style="list-style-type: none"> Set up Integrated Development Environments (IDEs) like VS Code, Turbo C Install necessary tools and libraries 	

PART 3: SELF-ASSESSMENT

- Practice -Assessment (Portal) – C course is open on iLearn portal with more than 150 questions.
- <https://www.geeksforgeeks.org/c/c-exercises/>
- <https://www.codechef.com/practice/c>
- https://www.w3schools.com/c/c_exercises.php
- <https://programiz.pro/course/practice-c-programming>



PART 4: ASSESSMENT & CERTIFICATION

1. Placement Specific Testing by CDC.
2. **HackerRank Challenges** - <https://www.hackerrank.com/domains/c>
3. **HackerRank Certification** - HackerRank Certification Test and showcase your knowledge as a HackerRank verified developer.

*4 Star and Above

4. **Leetcode Challenge** - <https://leetcode.com/>
5. **Leetcode Ranking** – Leetcode ranking globally with various stage or badges format for own study plan.

* Minimum Rating between 1400-1800

6. Any other online platform of student centric challenges.
Eg: InterviewBit, HackerEarth, etc.

HACKER RANK		
Star Level	What It Indicates	Campus Readiness
★ (1 Star)	Basic familiarity with platform or language	Not Ready
★ ★ (2 Stars)	Beginner level, some problem-solving skills	Needs Improvement
★ ★ ★ (3 Stars)	Comfortable with syntax, solving easy/medium	Entry-level Ready
★ ★ ★ ★ (4 Stars)	Strong logic, medium-hard problems	Placement-Ready
★ ★ ★ ★ ★ or ★ ★ ★ ★ ★ ★	Consistent top performance	High Performer

LEETCODE			
Level	Problem Solving	Rating	Readiness
Beginner	<100 problems	<1400	Needs basic practice
Intermediate	100–200 problems	1400–1600	Campus Ready (Tier 2–3)
Advanced	200+ problems	1600–1800	Tier 1 Campus + Internships
Competitive	300+ problems	1800+	Top Tech Placement Ready

PART 5 –EVIDENCE SUBMISSION

1. Certification / Ranking Screenshot / badges from any online platform
 - * Screenshot of STAR RATING in their DASHBOARD
 - * RANKING Screenshot in their DASHBOARD

has to be submitted to MS-CDC for ICP upgradation.



Effective Learning Strategies

1. Create a Study Schedule
 - Dedicate specific times daily for learning.
2. Set Clear Goals
 - Define what you want to achieve.
 - Break down tasks into manageable chunks
3. Stay Organized
 - Keep track of your progress and deadlines.
 - Use tools like calendars, to-do lists, and reminders.
4. Active Learning
 - Engage with the material through hands-on exercises.
 - Practice coding and solving problems regularly.

Monitoring & Self-Assessment Framework

Area	Self-check Questions	Tools
Knowledge	Can I write C code without looking up syntax?	Quick Quizzes
Application	Can I solve real-world problems using C ?	Coding assignments, mini-projects
Speed	Can I solve coding problems within 20–30 mins?	Timed problems on HackerRank/LeetCode
Confidence	Do I feel ready for a technical interview?	Practise on portal, Mock interviews.
Gaps	What topics do I consistently avoid or get wrong?	Maintain a "Weak Areas" log

TIMELINE

1. Learning + Practice takes 25 hours
2. All Parts (PART1, PART2, PART3) to be completed before.....

STUDENT TRACKING

1. Google Sheet will be provided by MS-CDC for tracking student performance on Daily basis / Weekly basis / Fortnight basis
2. Placement Coordinators of the respective batches has to keep record of the tracking and submit details whenever required by MS-CDC
3. <https://drive.google.com/drive/folders/1TijxWsKuqnpUuMtizoxnJcTkh0uxSLJU?usp=sharing> - 4th Year (2022-2026), 3rd Year (2023-2027), 2nd Year (2024-2028)



PYTHON PROGRAMMING : Self-Learning Guide for Placement Training

🎯 Objective:

To equip yourselves with essential programming skills in Python to solve real-world problems, develop logical thinking, and prepare effectively for coding assessments, technical interviews, and project development in campus placements.

PART 1: LEARNING JOURNEY MAP

PYTHON		
Video Learning	NPTEL	https://onlinecourses.nptel.ac.in/noc24_cs57/preview https://onlinecourses.nptel.ac.in/noc22_cs32/preview
	You Tube	Official Websites: https://www.youtube.com/user/GoogleDevelopers https://www.youtube.com/@IBM
	Animated Video learning	https://www.nesoacademy.org/pl/04-python-programming
Tutorial Learning (Text format)		https://www.w3schools.com/python/ https://www.geeksforgeeks.org/python/python-programming-language-tutorial/ https://www.tutorialspoint.com/python/index.htm
	By Google	https://developers.google.com/edu/python

PART 2: PROGRAMMING PRACTICE LINK

Online Code Editors	URL
By Google	https://techdevguide.withgoogle.com/paths/foundational/?programming_languages=python
Geeks for Geeks	https://www.geeksforgeeks.org/blogs/geeksforgeeks-practice-best-online-coding-platform/
W3schools	https://www.w3schools.com/python/python_exercises.asp
<ul style="list-style-type: none"> Set up Integrated Development Environments (IDEs) like VS Code, IntelliJ IDEA, Spring Tool Suite, or Eclipse. Install necessary tools and libraries 	



PART 3: SELF-ASSESSMENT

1. Practice -Assessment (Portal) – Python course is open on iLearn portal with more than 150 questions.
2. <https://www.geeksforgeeks.org/python/python-exercises-practice-questions-and-solutions/>
3. <https://programiz.pro/course/practice-python-basics>
4. https://www.w3schools.com/python/python_exercises.asp
5. <https://www.codechef.com/practice/python>

PART 4: ASSESSMENT & CERTIFICATION

1. Placement Specific Testing by CDC.
2. **HackerRank Challenges** - <https://www.hackerrank.com/domains/python>
3. **HackerRank Certification** - HackerRank Certification Test and showcase your knowledge as a HackerRank verified developer.

*4 Star and Above

4. **Leetcode Challenge** - <https://leetcode.com/>
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Eg: InterviewBit, HackerEarth, etc.

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Star Level	What It Indicates	Campus Readiness
★ (1 Star)	Basic familiarity with platform or language	Not Ready
★ ★ (2 Stars)	Beginner level, some problem-solving skills	Needs Improvement
★ ★ ★ (3 Stars)	Comfortable with syntax, solving easy/medium	Entry-level Ready
★ ★ ★ ★ (4 Stars)	Strong logic, medium-hard problems	Placement-Ready
★ ★ ★ ★ ★ or ★ ★ ★ ★ ★ ★	Consistent top performance	High Performer

LEETCODE			
Level	Problem Solving	Rating	Readiness
Beginner	<100 problems	<1400	Needs basic practice
Intermediate	100–200 problems	1400–1600	Campus Ready (Tier 2–3)



Advanced	200+ problems	1600–1800	Tier 1 Campus + Internships
Competitive	300+ problems	1800+	Top Tech Placement Ready

PART 5 –EVIDENCE SUBMISSION

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4. Active Learning
 - Engage with the material through hands-on exercises.
 - Practice coding and solving problems regularly.

Monitoring & Self-Assessment Framework

Area	Self-check Questions	Tools
Knowledge	Can I write Python code without looking up syntax?	Quick Quizzes
Application	Can I solve real-world problems using Python?	Coding assignments, mini-projects
Speed	Can I solve coding problems within 20–30 mins?	Timed problems on HackerRank/LeetCode
Confidence	Do I feel ready for a technical interview?	Practise on portal, Mock interviews.
Gaps	What topics do I consistently avoid or get wrong?	Maintain a "Weak Areas" log



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Java Programming: Self-Learning Guide for Placement Training

🎯 Objective:

To empower students to independently master Java programming concepts essential for placement success—covering core Java, object-oriented programming (OOP), data structures, and coding interview readiness.

PART 1: LEARNING JOURNEY MAP

JAVA		
Video Learning	NPTEL	https://onlinecourses.nptel.ac.in/noc22_cs47/preview
	You Tube	Official Websites: https://www.youtube.com/java https://www.youtube.com/c/MicrosoftDeveloper https://www.youtube.com/user/GoogleDevelopers
	Animated Video learning	https://nesoacademy.org/pl/03-java-programming
Tutorial Learning (Text format)		https://www.w3schools.com/java/ https://www.geeksforgeeks.org/java/introduction-to-java/ https://www.tutorialspoint.com/java/index.htm

Core Java		
Topics	Sub-Topics	Learning Reference Links
Introduction to Java	Overview of Java Platform and Editions, Installation and Setup of Java Development Environment (JDK 21), Introduction to Java Development Kit (JDK), Java Runtime Environment (JRE), and JVM, Writing, Compiling, and Running Java Programs	https://www.geeksforgeeks.org/introduction-to-java/
Basic Syntax	Structure of a Java Program, Writing and Running a Simple Java Program, Comments in Java	https://www.geeksforgeeks.org/java-basic-syntax/?ref=lbp



Data Types and Variables	Primitive Data Types, Reference Data Types, Variable Declaration and Initialization, Type Casting	https://www.geeksforgeeks.org/data-types-in- java/?ref=lbp
		https://www.geeksforgeeks.org/variables-in- java/?ref=lbp
Operators and Expressions	Arithmetic Operators, Relational Operators, Logical Operators, Assignment Operators, Operator Precedence	https://www.geeksforgeeks.org/operators-in- java/?ref=lbp
		https://www.programiz.com/java-programming/expressions-statements-blocks
Control Flow Statements	Conditional Statements (if, else if, else, switch), Looping Statements (for, while, do- while), Break and Continue Statements	https://www.geeksforgeeks.org/decision-making- javaif-else-switch-break-continue-jump/
		https://www.geeksforgeeks.org/loops-in- java/?ref=lbp
Methods	Defining and Calling Methods, Method Parameters and Return Types, Recursion	https://www.geeksforgeeks.org/methods-in-java/
Arrays and Strings	One-Dimensional and Multi-Dimensional Arrays, String Class and String Methods, StringBuilder and StringBuffer	https://www.w3schools.com/java/java_arrays.asp
		https://www.w3schools.com/java/java_strings.asp
Object-Oriented Programming in Java	Classes and Objects, Encapsulation, Inheritance, Polymorphism, Abstraction and Interfaces	https://www.geeksforgeeks.org/object-oriented-programming-oops-concept-in-java/
Exception Handling	Introduction to Exceptions, Handling Exceptions, Custom Exceptions	https://www.geeksforgeeks.org/exceptions-in-java/
Java Collections Framework	Introduction to Collections, List Interface and Implementations, Set Interface and Implementations, Map Interface and Implementations, Queue Interface and Implementations, Stream API	https://www.geeksforgeeks.org/collections-in-java-2/
Functional Programming in Java	Lambda Expressions, Functional Interfaces, Method References, Optional Class, Streams and Parallel Streams	https://www.geeksforgeeks.org/functional-programming-in-java-with-examples/
Java I/O and File Handling	Java I/O Streams, File Handling with java.nio.file Package, Serialization and Deserialization	https://www.geeksforgeeks.org/file-handling-in-java/



Multithreading and Concurrency	Introduction to Multithreading, Thread Lifecycle and Thread Control, Synchronization, Concurrency Utilities (java.util.concurrent package)	https://www.geeksforgeeks.org/multithreading-in-java/
		https://www.geeksforgeeks.org/java-util-concurrent-package/
Application Debugging Using IntelliJ IDEA	What is Debugging?, Importance of Debugging, Overview of Debugging Tools, Setting Up IntelliJ IDEA, Debugging Environment Overview, Setting Breakpoints, Running the Debugger, Inspecting Variables and Expressions, Using Watches, Exception Breakpoints, Thread Debugging, Memory and Performance Profiling	https://www.jetbrains.com/help/idea/debugging-your-first-java-application.html
Introduction to Reactive Programming	Reactive Programming Fundamentals, Reactive Streams and Backpressure, Project Reactor Basics, Concurrency in Reactive Programming	https://www.baeldung.com/cs/reactive-programming
Working with Java Modules	Introduction to Modular Programming, Creating and Using Modules, Modularity in Java 17	https://www.geeksforgeeks.org/java-modules/
Java Networking	Basics of Networking in Java, TCP and UDP Communication, HTTP Client	https://www.geeksforgeeks.org/java-networking/
Reverse Engineering Concepts	Introduction to Reverse Engineering, Decompilation in Java, Java Bytecode Analysis, Reflection and Introspection in Java, Debugging and Code Analysis Techniques, Code Obfuscation and Deobfuscation, Working with Legacy Code and APIs, Software Security through Reverse Engineering	https://www.geeksforgeeks.org/software-engineering-reverse-engineering/
Language-Specific Features - v17, v21	v17 - Sealed Classes and Interfaces, Pattern Matching for instanceof, Text Blocks, Records, Switch Expression Enhancements, Hidden Classes; v21 - String Templates, Sequenced	https://mydeveloperplanet.com/2023/11/01/whats-new-between-java-17-and-java-21/



	Collections, Pattern Matching for switch and Record Patterns, Virtual Threads	
Introduction to Java Database Connectivity (JDBC)	JDBC Overview, Executing SQL Queries, Handling Transactions in JDBC	https://www.geeksforgeeks.org/introduction-to-jdbc/

PART 2: PROGRAMMING PRACTICE LINK

Online Code Editors	URL
Core Java	https://www.tutorialspoint.com/compile_java_online.php
	https://www.onlinegdb.com/online_java_compiler
	https://www.jdoodle.com/online-java-compiler-ide/
	https://www.w3schools.com/java/java_compiler.asp
<ul style="list-style-type: none"> Set up Integrated Development Environments (IDEs) like VS Code, IntelliJ IDEA, Spring Tool Suite, or Eclipse. Install necessary tools and libraries 	

PART 3: SELF-ASSESSMENT

- https://www.w3schools.com/java/java_quiz.asp
- Practice -Assessment (Portal) – JAVA programming course is open on iLearn portal with more than 150 questions.

PART 4: ASSESSMENT & CERTIFICATION

- Placement Specific Testing by CDC.
- HackerRank Challenges** - <https://www.hackerrank.com/domains/java>
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*4 Star and Above

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★ ★ ★ ★ (4 Stars)	Strong logic, medium-hard problems	Placement-Ready
★ ★ ★ ★ ★ or ★ ★ ★ ★ ★ ★	Consistent top performance	High Performer

LEETCODE			
Level	Problem Solving	Rating	Readiness
Beginner	<100 problems	<1400	Needs basic practice
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 - Use tools like calendars, to-do lists, and reminders.
4. Active Learning
 - Engage with the material through hands-on exercises.
 - Practice coding and solving problems regularly.



Monitoring & Self-Assessment Framework

Area	Self-check Questions	Tools
Knowledge	Can I write Java code without looking up syntax?	Quick Quizzes
Application	Can I solve real-world problems using Java?	Coding assignments, mini-projects
Speed	Can I solve coding problems within 20–30 mins?	Timed problems on HackerRank/LeetCode
Confidence	Do I feel ready for a technical interview?	Practise on portal, Mock interviews.
Gaps	What topics do I consistently avoid or get wrong?	Maintain a "Weak Areas" log

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Java Script Programming: Self-Learning Guide for Placement Training

🎯 Objective:

To gain a strong foundational and practical understanding of JavaScript in order to solve real-world programming problems, build dynamic web applications, and demonstrate front-end development skills during technical interviews and coding assessments for campus placement and job opportunities.

PART 1: LEARNING JOURNEY MAP

JAVA Script		
Video Learning	NPTEL	https://onlinecourses.swayam2.ac.in/nou24_cs09/preview
	You Tube	Official Websites: https://www.youtube.com/c/MicrosoftDeveloper https://www.youtube.com/user/GoogleDevelopers
Tutorial Learning (Text format)		https://www.w3schools.com/js/ https://www.geeksforgeeks.org/javascript/javascript-tutorial/ https://www.geeksforgeeks.org/javascript/javascript-tutorial/

JavaScript		
Topics	Sub-Topics	Learning Reference Links
Introduction to JavaScript	What is JavaScript?, Setting Up JavaScript Development Environment	https://www.geeksforgeeks.org/introduction-to-javascript/?ref=lbp
JavaScript Basics	Syntax and Statements, Data Types, Operators	https://www.geeksforgeeks.org/javascript-basic-syntax/?ref=lbp
		https://www.geeksforgeeks.org/variables-datatypes-javascript/?ref=lbp
		https://www.geeksforgeeks.org/javascript-operators/?ref=lbp
Control Flow	Conditional Statements, Loops, Error Handling	https://www.geeksforgeeks.org/control-statements-in-javascript/



Functions and Scope	Function Basics, Scope and Closures, Higher-Order Functions	https://www.w3schools.com/js/js_functions.asp
		https://www.geeksforgeeks.org/difference-between-scope-and-closures-in-javascript/
		https://www.geeksforgeeks.org/javascript-higher-order-functions/
Objects and the Document Object Model (DOM)	Objects in JavaScript, JavaScript Prototypes, The DOM, Event Handling	https://www.geeksforgeeks.org/dom-document-object-model/
		https://www.w3schools.com/js/js_events.asp
Arrays and Array Methods	Array Basics, Array Methods	https://w3schools.com/js/js_arrays.asp
		https://www.w3schools.com/js/js_array_methods.asp

JavaScript Build Tools (Babel, Webpack)

Topics	Sub-Topics	Learning Reference Links
Babel	Introduction to Babel: What is Babel?, Why use Babel?; Core Concepts: Transpiling, Polyfills; Setup and Configuration: Installing Babel, Configuring .babelrc and babel.config.js; Plugins and Presets: Using Plugins, Commonly Used Presets (e.g., @babel/preset-env); Integration with Build Tools: Using Babel with Webpack; Performance Optimization: Caching, Minification;	https://www.geeksforgeeks.org/what-is-babel/
		https://babeljs.io/docs/configuration
		https://www.robinwieruch.de/webpack-babel-setup-tutorial/
Webpack	Introduction to Webpack: What is Webpack?, Why use Webpack?; Core Concepts: Entry and Output; Setup and Configuration: Installing Webpack, Configuring webpack.config.js, Modules and Dependencies; Loaders: What are Loaders?, Common Loaders (e.g., babel-loader, css-loader); Plugins: What are Plugins?, Common Plugins (e.g., HtmlWebpackPlugin, CleanWebpackPlugin); Performance Optimization: Caching, Minification, Bundle Analysis; Integration with Other Tools: Using Webpack with Babel, Webpack with TypeScript;	https://www.freecodecamp.org/news/an-intro-to-webpack-what-it-is-and-how-to-use-it-8304ecdc3c60/
		https://webpack.js.org/guides/typescript/



PART 2: PROGRAMMING PRACTICE LINK

Online Code Editors	URL
Java Script	https://www.w3schools.com/tryit/tryit.asp?filename=tryhtml_hello
	https://onecompiler.com/html
	https://jsfiddle.net/
<ul style="list-style-type: none"> Set up Integrated Development Environments (IDEs) like VS Code, IntelliJ IDEA, Apache Tomcat for Local Host Install necessary tools and libraries 	

PART 3: SELF-ASSESSMENT

- https://www.w3schools.com/Js/js_quiz.asp
- https://www.tutorialspoint.com/babeljs/quiz_on_babeljs_working_babel_with_webpack.htm

PART 4: ASSESSMENT & CERTIFICATION

- Placement Specific Testing by CDC.
- HackerRank Challenges** - <https://www.hackerrank.com/contests/javascript-challenges/challenges>
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★ ★ ★ ★ ★ or ★ ★ ★ ★ ★ ★	Consistent top performance	High Performer
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LEETCODE			
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4. Active Learning
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Monitoring & Self-Assessment Framework

Area	Self-check Questions	Tools
Knowledge	Can I write Java Script code without looking up syntax?	Quick Quizzes
Application	Can I solve real-world problems using Java Script?	Coding assignments, mini-projects



Area	Self-check Questions	Tools
Speed	Can I solve coding problems within 20–30 mins?	Timed problems on HackerRank/LeetCode
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3. <https://drive.google.com/drive/folders/1TijxWsKuqnpUuMtizoxnJcTkh0uxSLJU?usp=sharing> - 4th Year (2022-2026), 3rd Year (2023-2027), 2nd Year (2024-2028)



HTML & CSS : Self-Learning Guide for Placement Training

🎯 Objective:

To build a strong foundation in HTML and CSS in order to design and structure responsive, user-friendly web pages, demonstrate front-end development skills in technical interviews and coding rounds, and create portfolio projects that showcase web development capabilities during placement opportunities.

PART 1: LEARNING JOURNEY MAP

HTML & CSS		
Video Learning	NPTEL	https://onlinecourses.swayam2.ac.in/aic20_sp11/preview
	You Tube	Official Websites: https://www.youtube.com/user/GoogleDevelopers
Tutorial Learning (Text format)		https://www.w3schools.com/html/ https://www.geeksforgeeks.org/html/html-tutorial/ https://www.tutorialspoint.com/html/index.htm
	By Google	https://web.dev/learn/
	By Mozilla	https://developer.mozilla.org/en-US/docs/MDN/Tutorials

HTML 5		
Topics	Sub-Topics	Learning Reference Links
Introduction	Need and Benefits of HTML, Setup, Browser, BOM and DOM, DOCTYPE, Character Encoding, <script> , <link>, HTML5 Document, Comments	https://www.w3schools.com/html/html_intro.asp
Getting Started	Visual Studio Code features, Google Chrome Developer tools, Inspect document	https://learn.microsoft.com/en-us/microsoft-edge/visual-studio-code/microsoft-edge-devtools-extension/open-devtools-and-embedded-browser
Elements & Attributes	Formatting Tags, List, Table, Form & Input Tags, Images, Styles, placeholder, inline and block elements, id vs class attributes	https://www.w3schools.com/tags/
		https://www.geeksforgeeks.org/html-forms/
		https://www.geeksforgeeks.org/difference-between-id-and-class-attributes-in-html/
		https://www.w3schools.com/html/html_blocks.asp



Navigation	Navigation tags, hyper link, reference to intermediate section	https://www.w3schools.com/tag/s/tag_nav.asp https://www.htmldog.com/guides/html/intermediate/sectioning/
Events	onblur, onchange, onclick, form related events, load events, key events, mouse events, ondblclick, onbeforeunload, oncanplay	https://www.w3schools.com/jsref/dom_obj_event.asp
Web Forms 2.0	<input> element in HTML5, <output>, placeholder attribute, autofocus, required	https://www.tutorialspoint.com/html5/html5_web_forms2.htm
Web Storage	Session storage, local storage and Delete web storage	https://www.w3schools.com/html/html5_webstorage.asp
Web SQL Database	openDatabase, transaction, transaction	https://www.geeksforgeeks.org/what-is-web-sql/
Geo location	Geolocation Methods, Location Properties, Handling Errors, Position Options	https://www.geeksforgeeks.org/html-geolocation/

CSS3		
Topics	Sub-Topics	Learning Reference Links
Introduction	Need and Benefits of CSS, Setup, CSS Syntax, CSS Comments, Including CSS in HTML Documents(Inline styles, Embedded styles, External style sheets)	https://www.w3schools.com/html/html_css.asp
		https://www.w3schools.com/css/css_howto.asp
		https://www.geeksforgeeks.org/types-of-css-cascading-style-sheet/
Selectors	CSS3 Selectors - Universal Selector, Element Type Selector, Id Selectors, Class Selectors, Grouping Selectors	https://www.geeksforgeeks.org/css-selectors/
Styling		https://www.w3schools.com/css/css_colors.asp
		https://www.w3schools.com/css/css_background.asp
		https://www.w3schools.com/css/css_font.asp
		https://www.w3schools.com/css/css_link.asp
		https://www.w3schools.com/css/css_list.asp
		https://www.w3schools.com/css/css_table.asp
		https://www.w3schools.com/css/css_boxmodel.asp
		https://www.geeksforgeeks.org/what-is-the-difference-between-visibilityhidden-and-displaynone/
		https://www.w3schools.com/css/css3_mediaqueries.asp
		https://www.w3schools.com/css/css_rwd_intro.asp

PART 2: PROGRAMMING PRACTICE LINK

Online Code Editors	URL
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By Google	https://techdevguide.withgoogle.com/paths/foundational/?programming_languages=python
Geeks for Geeks	https://ide.geeksforgeeks.org/online-html-editor
W3schools	https://www.w3schools.com/html/html_editor.asp
HTML5, CSS3, JavaScript	https://www.w3schools.com/tryit/tryit.asp?filename=tryhtml_hello https://onecompiler.com/html https://jsfiddle.net/
<ul style="list-style-type: none"> Set up Integrated Development Environments (IDEs) like VS Code, Apache Tomcat for Local Host Install necessary tools and libraries 	

PART 3: SELF-ASSESSMENT

- https://www.w3schools.com/html/html_exercises.asp
- https://www.w3schools.com/html/html_quiz.asp
- https://www.w3schools.com/css/css_exercises.asp
- https://www.w3schools.com/css/css_quiz.asp
- <https://www.geeksforgeeks.org/html/html-exercises/>
- <https://www.codechef.com/practice/html>

PART 4: ASSESSMENT & CERTIFICATION

- Placement Specific Testing by CDC.
- HackerRank Challenges** - <https://www.hackerrank.com/challenges>
- HackerRank Certification** - HackerRank Certification Test and showcase your knowledge as a HackerRank verified developer.
*4 Star and Above
- Leetcode Challenge** - <https://leetcode.com/>
- Leetcode Ranking** - Leetcode ranking globally with various stage or badges format for own study plan.
* Minimum Rating between 1400-1800
- Any other online platform of student centric challenges.
Eg: InterviewBit, HackerEarth, etc.

HACKER RANK		
Star Level	What It Indicates	Campus Readiness
★ (1 Star)	Basic familiarity with platform or language	Not Ready
★ ★ (2 Stars)	Beginner level, some problem-solving skills	Needs Improvement
★ ★ ★ (3 Stars)	Comfortable with syntax, solving easy/medium	Entry-level Ready
★ ★ ★ ★ (4 Stars)	Strong logic, medium-hard problems	Placement-Ready



★ ★ ★ ★ ★ or ★ ★ ★ ★ ★ ★	Consistent top performance	High Performer
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LEETCODE			
Level	Problem Solving	Rating	Readiness
Beginner	<100 problems	<1400	Needs basic practice
Intermediate	100–200 problems	1400–1600	Campus Ready (Tier 2–3)
Advanced	200+ problems	1600–1800	Tier 1 Campus + Internships
Competitive	300+ problems	1800+	Top Tech Placement Ready

PART 5 –EVIDENCE SUBMISSION

1. Certification / Ranking Screenshot / badges from any online platform.
 - * Screenshot of STAR RATING in their DASHBOARD
 - * RANKING Screenshot in their DASHBOARD

has to be submitted to MS-CDC for ICP upgradation.

Effective Learning Strategies

1. Create a Study Schedule
 - Dedicate specific times daily for learning.
2. Set Clear Goals
 - Define what you want to achieve.
 - Break down tasks into manageable chunks
3. Stay Organized
 - Keep track of your progress and deadlines.
 - Use tools like calendars, to-do lists, and reminders.
4. Active Learning
 - Engage with the material through hands-on exercises.
 - Practice coding and solving problems regularly.

Monitoring & Self-Assessment Framework

Area	Self-check Questions	Tools
Knowledge	Can I write Python code without looking up syntax?	Quick Quizzes
Application	Can I solve real-world problems using Python?	Coding assignments, mini-projects



Area	Self-check Questions	Tools
Speed	Can I solve coding problems within 20–30 mins?	Timed problems on HackerRank/LeetCode
Confidence	Do I feel ready for a technical interview?	Practise on portal, Mock interviews.
Gaps	What topics do I consistently avoid or get wrong?	Maintain a "Weak Areas" log

TIMELINE

1. Learning + Practice takes 25 hours
2. All Parts (PART1, PART2, PART3) to be completed before.....

STUDENT TRACKING

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SQL: Self-Learning Guide for Placement Training

🎯 Objective:

To build a strong foundation in Structured Query Language (SQL) for efficiently handling, querying, and analyzing data from relational databases—enabling students to perform well in technical interviews, coding assessments, and real-world job roles involving backend development, data analysis, and database management.

PART 1: LEARNING JOURNEY MAP

SQL – DBMS		
Video Learning	NPTEL	https://onlinecourses.nptel.ac.in/noc25_cs40/preview
	You Tube	Official Websites: https://www.youtube.com/oracle
	Animated Video learning	https://www.nesoacademy.org/cs/14-database-management-systems-dbms/04-structured-query-language-sql/01-introduction-to-structured-query-language-sql
Tutorial Learning (Text format)		https://www.w3schools.com/sql/ https://www.geeksforgeeks.org/sql/sql-tutorial/ https://www.tutorialspoint.com/sql/index.htm

ANSI SQL for MySQL		
Topics	Sub-Topics	Learning Reference Links
Introduction to ANSI SQL and MySQL	Overview of ANSI SQL, Introduction to MySQL, Importance of Standard SQL	https://www.dwbi.org/pages/30/introduction-to-ansi-sql
		https://www.w3schools.com/mysql/mysql_intro.asp
Data Retrieval with SELECT Statement	Basic SELECT syntax, Retrieving specific columns, Filtering data with WHERE clause, Sorting results with ORDER BY	https://www.geeksforgeeks.org/mysql-select-statement/
Filtering and Sorting Data	Using logical operators in WHERE clause, Combining conditions with AND, OR, Sorting data using multiple columns	https://www.sqlshack.com/learn-mysql-sorting-and-filtering-data-in-a-table/



Aggregate Functions and Grouping	Introduction to aggregate functions (SUM, AVG, COUNT, etc.), GROUP BY clause for grouping results, HAVING clause for filtering grouped data	https://www.geeksforgeeks.org/mysql-aggregate-function/
		https://www.w3schools.com/mysql/mysql_groupby.asp
Joins and Subqueries	INNER JOIN, LEFT JOIN, RIGHT JOIN, Self-joins and cross joins, Subqueries in SELECT, WHERE, and FROM clauses, Correlated Subqueries	https://www.geeksforgeeks.org/mysql-join-1/
		https://www.geeksforgeeks.org/mysql-subquery/
Data Modification with INSERT, UPDATE, DELETE	Inserting data into tables, Updating existing records, Deleting records from tables	https://www.geeksforgeeks.org/sql-ddl-dql-dml-dcl-tcl-commands/
Creating and Modifying Tables	Creating tables with CREATE TABLE, Modifying table structure with ALTER TABLE, Deleting tables with DROP TABLE	https://www.geeksforgeeks.org/sql-create-table/?ref=lbp
		https://www.geeksforgeeks.org/sql-alter-add-drop-modify/?ref=lbp
Indexes and Constraints	Creating indexes for better query performance, Defining primary and foreign key constraints, Ensuring data integrity with UNIQUE and CHECK constraints	https://www.w3schools.com/mysql/mysql_constraints.asp
		https://www.w3schools.com/mysql/mysql_create_index.asp

PART 2: PROGRAMMING PRACTICE LINK

Online Code Editors	URL
SQL	https://www.mycompiler.io/new/sql
	https://www.jdoodle.com/execute-sql-online/
	https://www.tutorialspoint.com/execute_sql_online.php
<ul style="list-style-type: none"> Set up Integrated Development Environments (IDEs) like VS Code, IntelliJ IDEA, Spring Tool Suite, or Eclipse. Install necessary tools and libraries 	



PART 3: SELF-ASSESSMENT

1. https://www.w3schools.com/mysql/mysql_quiz.asp
2. Practice -Assessment (Portal) – SQL course is open on iLearn portal with more than 150 questions.

PART 4: ASSESSMENT & CERTIFICATION

1. Placement Specific Testing by CDC.
2. **HackerRank Challenges** - <https://www.hackerrank.com/domains/sql>
3. **HackerRank Certification** - HackerRank Certification Test and showcase your knowledge as a HackerRank verified developer.

*4 Star and Above

4. **Leetcode Challenge** - <https://leetcode.com/>
5. **Leetcode Ranking** – Leetcode ranking globally with various stage or badges format for own study plan.

* Minimum Rating between 1400-1800

6. Any other online platform of student centric challenges.
Eg: InterviewBit, HackerEarth, etc.

HACKER RANK		
Star Level	What It Indicates	Campus Readiness
★ (1 Star)	Basic familiarity with platform or language	Not Ready
★ ★ (2 Stars)	Beginner level, some problem-solving skills	Needs Improvement
★ ★ ★ (3 Stars)	Comfortable with syntax, solving easy/medium	Entry-level Ready
★ ★ ★ ★ (4 Stars)	Strong logic, medium-hard problems	Placement-Ready
★ ★ ★ ★ ★ or ★ ★ ★ ★ ★ ★	Consistent top performance	High Performer

LEETCODE			
Level	Problem Solving	Rating	Readiness
Beginner	<100 problems	<1400	Needs basic practice
Intermediate	100–200 problems	1400–1600	Campus Ready (Tier 2–3)
Advanced	200+ problems	1600–1800	Tier 1 Campus + Internships
Competitive	300+ problems	1800+	Top Tech Placement Ready

**PART 5 –EVIDENCE SUBMISSION**

1. Certification / Ranking Screenshot / badges from any online platform
 - * Screenshot of STAR RATING in their DASHBOARD
 - * RANKING Screenshot in their DASHBOARD

has to be submitted to MS-CDC for ICP upgradation.

Effective Learning Strategies

1. Create a Study Schedule
 - Dedicate specific times daily for learning.
2. Set Clear Goals
 - Define what you want to achieve.
 - Break down tasks into manageable chunks
3. Stay Organized
 - Keep track of your progress and deadlines.
 - Use tools like calendars, to-do lists, and reminders.
4. Active Learning
 - Engage with the material through hands-on exercises.
 - Practice coding and solving problems regularly.

Monitoring & Self-Assessment Framework

Area	Self-check Questions	Tools
Knowledge	Can I write SQL code without looking up syntax?	Quick Quizzes
Application	Can I solve real-world problems using SQL?	Coding assignments, mini-projects
Speed	Can I solve coding problems within 20–30 mins?	Timed problems on HackerRank/LeetCode
Confidence	Do I feel ready for a technical interview?	Practise on portal, Mock interviews.
Gaps	What topics do I consistently avoid or get wrong?	Maintain a "Weak Areas" log

TIMELINE

1. Learning + Practice takes 25 hours
2. All Parts (PART1, PART2, PART3) to be completed before...



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Meenakshi Sundararajan Career Development Centre

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DATA STRUCTURE & ALGORITHMS: Self-Learning Guide for Placement Training

🎯 Objective:

To develop a strong foundation in Data Structures and Algorithms through consistent self-learning, with the goal of enhancing problem-solving skills, improving coding efficiency, and preparing for technical interviews and competitive programming challenges.

PART 1: LEARNING JOURNEY MAP

DSA		
Video Learning	NPTEL	https://nptel.ac.in/courses/106102064
	You Tube	Official Websites: https://www.youtube.com/c/MicrosoftDeveloper https://www.youtube.com/user/GoogleDevelopers https://www.youtube.com/@IBM
	Animated Video learning	https://www.nesoacademy.org/cs/01-data-structures
Tutorial Learning (Text format)		https://www.w3schools.com/dsa/ https://www.geeksforgeeks.org/dsa/dsa-tutorial-learn-data-structures-and-algorithms/ https://www.tutorialspoint.com/data_structures_algorithms/index.htm

PART 2: PROGRAMMING PRACTICE LINK

Online Code Editors	URL
By Google	https://techdevguide.withgoogle.com/paths/data-structures-and-algorithms/
Geeks for Geeks	https://www.geeksforgeeks.org/blogs/geeksforgeeks-practice-best-online-coding-platform/
W3schools	https://www.w3schools.com/dsa/dsa_exercises.php
<ul style="list-style-type: none"> Set up Integrated Development Environments (IDEs) like VS Code, IntelliJ IDEA, Spring Tool Suite, or Eclipse. Install necessary tools and libraries 	



PART 3: SELF-ASSESSMENT

1. Practice -Assessment (Portal) – DSA course is open on iLearn portal with more than 150 questions.

PART 4: ASSESSMENT & CERTIFICATION

1. Placement Specific Testing by CDC.
2. **HackerRank Challenges** - <https://www.hackerrank.com/domains/data-structures>
3. **HackerRank Certification** - HackerRank Certification Test and showcase your knowledge as a HackerRank verified developer.

*4 Star and Above

4. **Leetcode Challenge** - <https://leetcode.com/>
5. **Leetcode Ranking** – Leetcode ranking globally with various stage or badges format for own study plan.

* Minimum Rating between 1400-1800

6. Any other online platform of student centric challenges.
Eg: InterviewBit, HackerEarth, etc.

HACKER RANK		
Star Level	What It Indicates	Campus Readiness
★ (1 Star)	Basic familiarity with platform or language	Not Ready
★ ★ (2 Stars)	Beginner level, some problem-solving skills	Needs Improvement
★ ★ ★ (3 Stars)	Comfortable with syntax, solving easy/medium	Entry-level Ready
★ ★ ★ ★ (4 Stars)	Strong logic, medium-hard problems	Placement-Ready
★ ★ ★ ★ ★ or ★ ★ ★ ★ ★ ★	Consistent top performance	High Performer

LEETCODE			
Level	Problem Solving	Rating	Readiness
Beginner	<100 problems	<1400	Needs basic practice
Intermediate	100–200 problems	1400–1600	Campus Ready (Tier 2–3)
Advanced	200+ problems	1600–1800	Tier 1 Campus + Internships
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 - Break down tasks into manageable chunks
3. Stay Organized
 - Keep track of your progress and deadlines.
 - Use tools like calendars, to-do lists, and reminders.
4. Active Learning
 - Engage with the material through hands-on exercises.
 - Practice coding and solving problems regularly.

Monitoring & Self-Assessment Framework

Area	Self-check Questions	Tools
Knowledge	Can I write DSA code without looking up syntax?	Quick Quizzes
Application	Can I solve real-world problems using DSA?	Coding assignments, mini-projects
Speed	Can I solve coding problems within 20–30 mins?	Timed problems on HackerRank/LeetCode
Confidence	Do I feel ready for a technical interview?	Practise on portal, Mock interviews.
Gaps	What topics do I consistently avoid or get wrong?	Maintain a "Weak Areas" log

TIMELINE

1. Learning + Practice takes 25 hours
2. All Parts (PART1, PART2, PART3) to be completed before.....



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Computer Network : Self-Learning Guide for Placement Training

🎯 Objective:

To gain a strong foundational understanding of Computer Networks, including key concepts such as OSI and TCP/IP models, IP addressing, routing, switching, network protocols, and cybersecurity basics, with the goal of confidently answering technical interview questions, performing well in coding and MCQ-based assessments, and excelling in placement rounds for roles in software development, system administration, and network engineering.

PART 1: LEARNING JOURNEY MAP

Computer Network		
Video Learning	NPTEL	https://onlinecourses.swayam2.ac.in/cec21_cs04/preview https://onlinecourses.nptel.ac.in/noc22_cs19/preview
	Animated Video learning	https://www.nesoacademy.org/ec/03-computer-networks
Tutorial Learning (Text format)		https://www.geeksforgeeks.org/computer-networks/computer-network-tutorials/ https://www.tutorialspoint.com/data_communication_computer_network/index.htm

PART 2: PROGRAMMING PRACTICE LINK

Online Code Editors	URL
	Use either C code editor or Python code editor
Network Simulators	Cisco Packet Tracer / Wireshark
Online Labs & Emulators	Cisco Skills for All Labs / Mininet
<ul style="list-style-type: none"> Set up Integrated Development Environments (IDEs) like VS Code, Turbo C Install necessary tools and libraries 	

PART 3: SELF-ASSESSMENT

- <https://www.interviewbit.com/computer-network-mcq/>
- <https://www.geeksforgeeks.org/quizzes/50-computer-networks-mcqs-with-answers/>



3. <https://www.codechef.com/skill-test/computer-networking>
4. <https://www.indiabix.com/computer-science/networking/>

PART 4: ASSESSMENT & CERTIFICATION

1. Placement Specific Testing by CDC.
2. **HackerRank Challenges** - <https://www.hackerrank.com/contests/code-war-endeavour-kiet-round-1/challenges/computer-network-nodes>
3. **HackerRank Certification** - HackerRank Certification Test and showcase your knowledge as a HackerRank verified developer.

*4 Star and Above

4. **Leetcode Challenge** - <https://leetcode.com/>
5. **Leetcode Ranking** - Leetcode ranking globally with various stage or badges format for own study plan.

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★ ★ ★ ★ ★ or ★ ★ ★ ★ ★ ★	Consistent top performance	High Performer

LEETCODE			
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 - Keep track of your progress and deadlines.
 - Use tools like calendars, to-do lists, and reminders.
4. Active Learning
 - Engage with the material through hands-on exercises.
 - Practice coding and solving problems regularly.

Monitoring & Self-Assessment Framework

Area	Self-check Questions	Tools
Knowledge	Can I write C code without looking up syntax?	Quick Quizzes
Application	Can I solve real-world problems using C ?	Coding assignments, mini-projects
Speed	Can I solve coding problems within 20–30 mins?	Timed problems on HackerRank/LeetCode
Confidence	Do I feel ready for a technical interview?	Practise on portal, Mock interviews.
Gaps	What topics do I consistently avoid or get wrong?	Maintain a "Weak Areas" log

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