Directorate of Entrepreneurship & Innovation (DEI)

Founders Club

SRM INSTITUTE OF SCIENCE & TECHNOLOGY
(Deemed to be University u/s 3 of UGC Act, 1956)

PROJECT/IDEA TITLE

Team Members:

- Vansh
- Raghav
- Mohit

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PROBLEM STATEMENT

- **What Problem Are You Solving?**

When we looked at how students learn Data Structures and Algorithms (DSA), we saw a major problem—**traditional learning platforms follow a rigid, one-size-fits-all approach that doesn't cater to individual needs**. This creates **inefficiencies, frustration, and skill gaps**, making it harder for students to succeed.

Core Problems:

1.Lack of Personalized Learning

1. Existing platforms **don't adapt to individual skill levels**, forcing beginners to struggle while advanced learners waste time on easy topics.
2. Without **personalized roadmaps**, students often feel lost and **don't know what to focus on next**.

2.High Dropout Rates & Frustration

1. Many learners **quit midway** because they get stuck on difficult topics without structured guidance.
2. Rigid course structures **don't allow students to learn at their own pace**, leading to demotivation.

3.Scattered Learning Resources

1. Students **jump between books, coding platforms, YouTube tutorials, and online courses**, making learning **disorganized and inefficient**.
2. No single platform **combines structured theory, coding practice, and real-world problem-solving** into one seamless experience.

4.Limited Career Guidance

1. Some students realize DSA isn't their strength but **don't know what other career paths to explore**.
2. Existing platforms focus only on DSA and **don't provide insights into alternative tech fields** like Web Development, AI/ML, or Cybersecurity.

Gaps in Current Solutions:

•**Platforms like Coursera, Udemy, and Coding Bootcamps** provide static courses but **lack AI-driven personalization** that adapts to the learner's skill level.

•**LeetCode, CodeChef, and CodeForces** focus on competitive coding but **don't provide structured learning paths for beginners** or those looking for career guidance.

•**YouTube tutorials and free resources** are great but **lack interactivity, real-time feedback, and structured progression**.

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PROBLEM STATEMENT

Why Is This Problem Important?

- **Impact if Left Unresolved**:

•Struggling students will continue to feel lost and frustrated, leading to high dropout rates.

•The tech industry will face a growing skill gap due to ineffective learning methods.

•Many students will miss potential career opportunities simply because they didn't receive proper guidance.

- **How This Platform Solves the Problem & Its Broader Impact:**
- ✅ **Personalized & Adaptive Learning** – AI-driven assessments and customized roadmaps ensure every student learns at their own pace.
- ✅ **Higher Retention & Engagement** – Interactive notes, test series, and live sessions keep students motivated and reduce dropout rates.
- ✅ **Bridging the Tech Skill Gap** – By helping students master DSA efficiently, we contribute to a job-ready tech workforce.
- ✅ **Career Awareness & Alternative Paths** – For those who may not find DSA suitable, the platform suggests other relevant tech careers, ensuring no student is left behind.

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PROBLEM STATEMENT

- **Who Is Affected by This Problem?**

When we looked at the current state of DSA learning, we realized that many different groups are impacted by the lack of personalized, structured, and career-focused learning solutions.

1.Students & Aspiring Developers

1. Many students struggle with generic learning platforms that don't adapt to their skill level.
2. Without proper guidance, they often feel overwhelmed and lose motivation, leading to slow progress or even dropping out.

2.College Graduates & Job Seekers

1. Technical interviews demand strong DSA skills, but not all students get the right preparation.
2. Many struggle to bridge the gap between what they learn in courses and what companies expect in coding tests.

3.Self-Taught Programmers

1. Those trying to learn on their own often jump between multiple resources, leading to an unstructured approach.
2. Without personalized feedback, they don't know where they stand or how to improve.

4.Tech Recruiters & Companies

1. Employers struggle to find industry-ready candidates who are proficient in DSA and problem-solving.
2. Many companies have to invest additional time and resources in training new hires due to gaps in their learning.

5.Educational Institutions

1. Many universities and coding bootcamps lack AI-driven insights to track student progress effectively.
2. Traditional education methods fail to provide adaptive learning, making it hard for students to succeed in competitive coding environments.

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PROPOSED SOLUTION

We are building the Personalized DSA Learning Platform, an AI-driven web and mobile application that customizes learning paths based on each student's coding proficiency. Our goal is to make DSA education adaptive, structured, and career-oriented, ensuring that every learner progresses at their own pace with maximum efficiency.

- **Key Features of Our Solution:**

1.AI-Powered Skill Assessment

1. We assess each student's coding proficiency through interactive coding tests.
2. Our machine learning models analyze strengths and weaknesses to create a personalized learning roadmap**.**

2.Tailored Learning Paths

1. We provide a structured DSA roadmap based on the user’s skill level (Beginner, Intermediate, Advanced).
2. Our step-by-step learning approach includes e-books, structured notes, and test series for comprehensive understanding.
3. We make learning engaging and interactive with gamification, progress tracking, and achievements.

3.Live Practice & Problem-Solving Sessions

1. We reinforce learning through live coding sessions where students can interact and ask questions.
2. Our platform offers hands-on problem-solving with real-world coding challenges, ensuring practical application of concepts.

4.Career Guidance & Alternative Paths

1. We understand that DSA isn’t the right fit for everyone, so we provide alternative career recommendations in fields like Web Development, AI/ML, and Cybersecurity.
2. Based on the student's skills and interests, we offer personalized course suggestions to guide them toward a suitable career.

5.One-Stop Learning Hub

1. We consolidate multiple learning resources—ebooks, coding platforms, and video tutorials—into a structured format for easy access.
2. Our AI-driven feedback system continuously evaluates performance, providing insights to help students improve efficiently.

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PROPOSED SOLUTION

- **Key Features & Benefits**

1. AI-Powered Skill Assessment

•We analyze a student's strengths and weaknesses using interactive coding tests and AI-based evaluation.
•Our system generates a personalized learning roadmap for efficient skill development.
Benefit: Personalized & Adaptive Learning – Every student gets a custom experience that fits their skill level.

2. **Tailored Learning Paths**

•We provide structured DSA roadmaps for Beginner, Intermediate, and Advanced learners.
•Learning is broken down into step-by-step modules with e-books, structured notes, and test series.
•Gamified progress tracking keeps students motivated with achievements and rewards.
Benefit: Faster & More Effective Learning – Structured roadmaps help students grasp concepts more efficiently.

3. **Live Practice & Real-World Problem Solving**

•We offer live coding sessions to reinforce concepts through hands-on practice.
•Our platform includes real-world coding challenges to build strong problem-solving skills.
Benefit: Reduces Dropout Rates – Interactive learning and guided problem-solving prevent frustration.

4. **Career Guidance & Alternative Paths**

•If DSA isn't the right fit, we suggest alternative tech careers in Web Development, AI/ML, Cybersecurity, and more.
•Students receive personalized course recommendations based on their strengths and interests.
Benefit: Better Career Alignment – Students explore career options that match their skills and aspirations.

5. **One-Stop Learning Hub**

•We consolidate ebooks, coding platforms, and video tutorials into a structured and easily accessible format.
•Our AI-driven feedback system continuously evaluates progress and helps students improve.
Benefit: Bridges the Industry Skill Gap – Our AI-driven approach produces job-ready candidates for the tech industry.

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INNOVATION

- **How Is Our Idea Innovative?**

We are building a Personalized DSA Learning Platform that transforms how students learn Data Structures and Algorithms. Unlike traditional platforms, which offer generic, one-size-fits-all courses, we use AI to create a unique learning experience tailored to each student's skill level, learning pace, and career goals.

- **What Makes Our Platform Unique?**

•AI-Driven Personalization

- We assess every student's coding abilities through interactive tests and use AI-powered insights to build a customized learning roadmap that evolves as they progress.
- This ensures that each student learns at the right pace, without feeling overwhelmed or stuck.

•Career-Oriented Learning

- We go beyond just teaching DSA. If a student struggles with DSA or finds it isn't their strength, our system recommends alternative career paths in fields like Web Development, AI/ML, and Cybersecurity, along with relevant courses to help them transition smoothly.
- This feature ensures that students don't waste time on something that doesn't align with their strengths and instead, discover the best career opportunities for them.

•One-Stop, Structured Learning Hub

- Instead of relying on scattered resources like YouTube, LeetCode, or multiple books, we provide a structured learning experience in one place, combining ebooks, coding challenges, interactive notes, test series, and live sessions.
- Students don't have to jump between platforms—they can focus entirely on learning efficiently.

•Live Problem-Solving & Gamification

- Learning isn't just about watching videos. We provide live coding sessions, interactive problem-solving exercises, and real-world coding challenges to reinforce concepts.
- Gamification elements like progress tracking, achievements, and challenges keep students engaged and motivated.

- **Why This Innovation Matters?**

From our perspective as creators, we see the challenges students face—lack of guidance, scattered resources, and rigid learning structures—and we are solving this by making learning adaptive, engaging, and career-driven.

From a student's perspective, our platform eliminates frustration, helps them track their progress, and ensures they are not just learning but actually preparing for a future in tech.

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CONCLUSION

When we set out to build this platform, we saw a major problem in technical education—learning DSA is often frustrating, unstructured, and not tailored to individual needs. Many students struggle with one-size-fits-all courses, leading to slow progress, lack of motivation, and missed career opportunities.

We knew there had to be a better way. That's why we created the Personalized DSA Learning Platform—an AI-driven solution that adapts to each student's learning pace, provides structured guidance, and even helps those who may not find DSA the right fit explore other career paths.

Key Takeaways:

- We use AI-powered skill assessment to help students identify their strengths and weaknesses, creating a customized learning roadmap that suits them best.
- Our tailored learning paths ensure that every student learns at their own pace without feeling overwhelmed.
- Through live coding sessions, real-world problem-solving, and gamification, we keep students engaged and motivated.
- We don't just stop at DSA—we guide students toward alternative tech careers like Web Development, AI/ML, and Cybersecurity if that's a better fit for them.
- By bringing together structured content, interactive challenges, and career support in one place, we make learning DSA not just effective but also enjoyable.