



Jury Examination Presentation

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Course: Full Stack Development

Semester: V
B.Tech IT SMAD

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Introduction

DSA Learning is an interactive **web-based platform** built using **React + Vite**.

It helps students understand **Data Structures & Algorithms** through structured content, visually appealing course cards, and easy navigation.

- The platform includes:
- Home Page
- About Page
- Courses Page
- Contact Page
- Cart System
- Login & Registration

This project demonstrates concepts of **React components**, **React Router**, **Hooks**, **State Management**, and **Front-end development**.

Problem Statement

Many students find Data Structures & Algorithms difficult because traditional learning is **text-heavy and non-interactive**.

There is a need for a **clean, structured, easy-to-use web interface** that helps students:

- Browse DSA topics
- View course summaries
- Add & manage courses in a cart
- Access information without confusion

DSA Learning solves this by offering a **simple, attractive, and functional website** for learning DSA.

Scope

- **The scope of the platform includes:**
 - Displaying DSA-related courses
 - Adding courses to the cart (localStorage)
 - User Registration & Login (localStorage)
 - Basic navigation using React Router
 - Responsive UI using Bootstrap
- **It does not include:**
 - Backend database
 - Payment gateway
 - Live coding IDE
 - Real-time user authentication

Objectives

- To design a React-based single-page website for DSA learning
- To implement modular components (Navbar, Footer, Course Cards)
- To apply React Router for seamless navigation
- To use JSX, Hooks (useState, useEffect), and LocalStorage
- To create a responsive & aesthetic UI using Bootstrap
- To provide functional Login & Registration without backend

Technology Stack



A Leap Towards World Class Education

Frontend

- **React.js** (for UI components)
- **Vite** (for fast bundling & dev server)
- **JavaScript (ES6+)**
- **JSX** (for HTML + JS mixing)
- **Bootstrap 5** (for styling)
- **CSS3** (custom styling)
- **React Router DOM** (for routing)

Tools

- **VS Code**
- **Node.js**
- **npm**
- **Google Chrome / Edge**

Data Storage

- Browser **localStorage** for:
 - User details
 - Cart items

Database Design

User → React UI → React Components →
LocalStorage → Rendered Pages

Pages include:

- Home
- About
- Courses
- Contact
- Login
- Register
- Cart

Components include:

- Navbar
- Footer
- Course Card Component



Implementation – Front-End

DSA Learning Home Courses About Contact

Cart Login Register

Welcome to DSA Learning

Learn Data Structures & Algorithms through interactive and visual examples.

Featured Courses



Mastering Arrays & Strings

₹499

Add to Cart



Recursion & Backtracking

₹599

Add to Cart



Dynamic Programming Deep Dive

₹699

Add to Cart

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DSA Learning Home Courses About Contact

Cart 3 Login Register

Your Cart

Recursion & Backtracking

₹599

Remove

Arrays & Strings Fundamentals

₹499

Remove

Trees & Binary Search Trees

₹599

Remove

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DSA Learning Home Courses About Contact

Cart Login Register

Explore Our Courses



Arrays & Strings Fundamentals

₹499

Add to Cart



Recursion & Backtracking

₹599

Add to Cart



ALGORITHM SERIES
Searching and Sorting Algorithms

Sorting Algorithms & Searching

₹549

Add to Cart

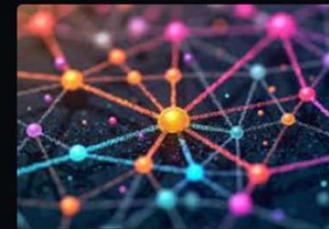


Dynamic Programming

Dynamic Programming

₹699

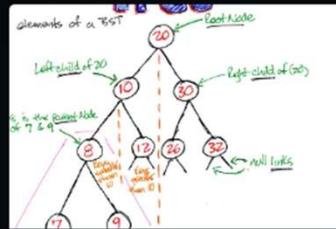
Add to Cart



Graph Algorithms

₹749

Add to Cart



Trees & Binary Search Trees

₹599

Add to Cart

Implementation – Back-End

- **Add to Cart Logic:**

```
const addToCart = (course) => {
  const items = JSON.parse(localStorage.getItem("cartItems")) || [];
  items.push(course);
  localStorage.setItem("cartItems", JSON.stringify(items));
  window.dispatchEvent(new Event("cartUpdated"));
};
```

- **Login Validation:**

```
if (storedUser && storedUser.email === email && storedUser.password === password) {
  navigate("/");
} else {
  setError("Invalid email or password");
}
```

- **Register Logic:**

```
if (storedUser && storedUser.email === email && storedUser.password === password) {
  navigate("/");
} else {
  setError("Invalid email or password");
}
```

Future Plans

- Add backend using Node/Express or Firebase
- Add user dashboards
- Add real payment gateway for courses
- Add admin panel to manage courses
- Add DSA visualizers (graphs, trees, recursion animation)
- Add quizzes for each topic
- Add dark/light mode

Conclusion

The DSA Learning web app successfully achieves its objective of providing a clean, modular, and interactive front-end platform using React.

The project demonstrates:

- Practical use of React Hooks
- Component-based architecture
- Routing & state management
- LocalStorage handling
- Responsive UI creation