3-Month Internship Program

(12 Weeks): Full-Stack Development Training

Week 1: Introduction to Web Development

- Topics:
    - Overview of web development: Front-end, back-end, and full-stack.
    - Setting up the development environment (HTML, CSS, JavaScript).
    - Basics of Git and version control.
- Assignment:
    - Create a simple static webpage with HTML and CSS.

Week 2: Advanced HTML and CSS

- Topics:
    - Semantic HTML and accessibility standards.
    - CSS positioning, Flexbox, and Grid layout.
    - Introduction to responsive design with media queries.
- Assignment:
    - Build a responsive website layout using Flexbox or Grid.

Week 3: Introduction to JavaScript

- Topics:
    - JavaScript basics: Variables, operators, and data types.
    - DOM manipulation and event handling.
    - Introduction to ES6+ features (let, const, arrow functions, etc.).
- Assignment:
    - Create a to-do list application with dynamic DOM manipulation.

Week 4: Front-End Frameworks (React.js)

- **Topics:**
  - Introduction to React.js: Components, props, and state.
  - Working with React hooks (useState, useEffect).
  - Building reusable components.
- **Assignment:**
  - Develop a single-page application (SPA) using React.js.

Week 5: Introduction to Back-End Development

- **Topics:**
  - Overview of back-end technologies: Node.js and Express.js.
  - Setting up a basic server with Express.js.
  - Handling routes and middleware in Express.js.
- **Assignment:**
  - Build a simple RESTful API with Node.js and Express.js.

Week 6: Working with Databases

- **Topics:**
  - Introduction to relational databases (MySQL/PostgreSQL).
  - CRUD operations with SQL.
  - Connecting back-end to the database.
- **Assignment:**
  - Develop a basic API with database integration for storing user data.

Week 7: Authentication and Authorization

- **Topics:**
  - Implementing user authentication with JWT.
  - Secure password handling using bcrypt.
  - Role-based access control in web applications.
- **Assignment:**
  - Build a login and registration system with secure authentication.

Week 8: Advanced JavaScript and APIs

- **Topics:**
  - Consuming REST APIs with fetch and Axios.
  - Introduction to asynchronous programming (Promises and async/await).
  - Error handling and debugging techniques.
- **Assignment:**
  - Fetch and display data from a public API in a front-end application.

Week 9: Deployment and Hosting

- **Topics:**
  - Deploying applications using platforms like Heroku, Vercel, or Netlify.
  - Managing environment variables and production builds.
  - Introduction to CI/CD pipelines.
- **Assignment:**
  - Deploy a full-stack application to a cloud platform.

Week 10: Real-Time Applications (Socket.io)

- **Topics:**
  - Introduction to WebSockets and real-time communication.
  - Setting up a real-time server with Socket.io.
- **Assignment:**
  - Build a real-time chat application with Node.js and Socket.io.

Week 11: Testing and Debugging

- **Topics:**
  - Writing unit and integration tests (Jest, Mocha).
  - Debugging front-end and back-end applications.
  - Handling errors gracefully in full-stack projects.
- **Assignment:**
  - Write and test APIs with proper error handling.

Week 12: Final Project

- **Topics:**
  - **Bringing all concepts together in a real-world project.**
  - **Guidance and mentorship for project planning and implementation.**
- **Assignment:**
  - **Develop a comprehensive full-stack application (e.g., e-commerce platform, task management system) and prepare a final presentation.**