Excellence Educational Academy
Alipore, Kolkata
*[Where **TALENT** is the keyword]*
Sister Concern is

e-DIGITAL LEARNING

AN INSTITUTE FOR MULTIDISCIPLINE TECHNICAL COACHING CLASSES & GUIDANCE

[Founded and Directed by a Renowned Academicians & Corporate Professionals]

Ref. No. : EEA/TTD-RN/IT/2024   **Date : 10/11/2024**

IT Professional Corporate Training Curriculum for IT/Non-IT Participants

Name of the Corporate Training :
Mobile App Development Using React Native

Course Duration: 120 Hours
Course Code: TTD-RN
Target Audience: Students, corporate trainees, or professionals interested in developing mobile applications using React Native.
Prerequisites: Basic understanding of JavaScript, HTML, and CSS.

Course Outline

Module 1: Introduction to React Native and Mobile App Development

- **Topics Covered:**
    - Overview of mobile app development
    - Introduction to React Native and its benefits
    - Setting up the development environment (Expo and React Native CLI)
    - Creating and running a simple "Hello World" app
- **Milestone 1 Project:**
    - Create a simple "Hello World" mobile application using React Native.

Module 2: Understanding React Basics for Mobile Development

- **Topics Covered:**
    - Introduction to React components and JSX

- ○ Using props and state in components
- ○ Styling components with Flexbox in React Native
- ○ Handling user input and basic event handling
- **Milestone 2 Project:**
  - ○ Build a static profile screen with custom styling and basic interaction.

Module 3: Navigation in React Native

- **Topics Covered:**
  - ○ Setting up React Navigation
  - ○ Stack, tab, and drawer navigation
  - ○ Passing data between screens
  - ○ Customizing navigation headers
- **Milestone 3 Project:**
  - ○ Create a multi-screen app with navigation, such as a simple product catalog with details.

Module 4: Working with Lists and Scroll Views

- **Topics Covered:**
  - ○ Using FlatList and SectionList for dynamic lists
  - ○ Optimizing list performance
  - ○ ScrollView for layout management
  - ○ Infinite scrolling and pagination basics
- **Milestone 4 Project:**
  - ○ Develop a contact list or gallery app with scrolling and pagination.

Module 5: Handling Forms and User Input

- **Topics Covered:**
  - ○ Building forms with TextInput components
  - ○ Managing form data with controlled inputs
  - ○ Form validation techniques
  - ○ Using libraries for form management (Formik, Yup)
- **Milestone 5 Project:**
  - ○ Create a user registration form with validation and feedback.

Module 6: Managing State with Redux

- **Topics Covered:**
  - ○ Introduction to Redux for state management
  - ○ Setting up Redux in a React Native app
  - ○ Actions, reducers, and the store
  - ○ Using redux-thunk for asynchronous actions
- **Milestone 6 Project:**
  - ○ Develop a to-do list app with Redux for state management.

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Module 7: Networking and API Integration

- **Topics Covered:**
  - Fetching data from REST APIs
  - Using Axios and Fetch for API calls
  - Displaying fetched data in components
  - Error handling and loading states
- **Milestone 7 Project:**
  - Build a news app that fetches data from a public API and displays it in a list.

Module 8: Animations in React Native

- **Topics Covered:**
  - Introduction to animations in React Native
  - Using Animated API for simple animations
  - Gestures and transitions
  - Animation libraries (Reanimated, Lottie)
- **Milestone 8 Project:**
  - Create an onboarding screen with animations for transitions between pages.

Module 9: Accessing Device Features

- **Topics Covered:**
  - Using native device features (camera, location, notifications)
  - Permissions and platform-specific code
  - Integrating third-party libraries for device features
- **Milestone 9 Project:**
  - Build a photo capture app with access to the camera and gallery.

Module 10: Firebase Integration

- **Topics Covered:**
  - Introduction to Firebase and its features
  - Setting up Firebase authentication
  - Firebase database (Firestore) for storing data
  - Push notifications with Firebase Cloud Messaging (FCM)
- **Milestone 10 Project:**
  - Develop a chat application with Firebase authentication and real-time messaging.

Module 11: Debugging and Performance Optimization

- **Topics Covered:**
  - Debugging techniques (React Native Debugger, Chrome DevTools)
  - Profiling and optimizing app performance
  - Handling memory leaks and performance bottlenecks
  - Error monitoring and crash reporting

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- **Milestone 11 Project:**
  - Refactor a previous project for optimal performance, focusing on debugging techniques.

Module 12: Testing and Quality Assurance

- **Topics Covered:**
  - Unit testing with Jest
  - Integration testing for components
  - Using React Native Testing Library
  - Test-driven development (TDD) principles
- **Milestone 12 Project:**
  - Write unit and integration tests for the chat application.

Module 13: Preparing for App Store Deployment

- **Topics Covered:**
  - Building release versions for Android and iOS
  - App Store and Google Play Store requirements
  - Creating app icons, splash screens, and branding
  - Managing app versions and updates
- **Milestone 13 Project:**
  - Prepare the chat app for deployment on both iOS and Android platforms.

Module 14: Final Project Development and Presentation

- **Topics Covered:**
  - Building a comprehensive mobile application
  - Presenting and demonstrating the app
  - Final review of best practices
- **Final Project:**
  - Develop a fully functional mobile application that incorporates navigation, forms, animations, API integration, and Firebase, such as a social media app or e-commerce application.

Assessment and Evaluation

- Milestone Projects: 60% of final grade
- Final Project: 30% of final grade
- Participation and Attendance: 10% of final grade

Resources

- Recommended Books:
  - "Learning React Native" by Bonnie Eisenman
  - "React Native Cookbook" by Jonathan Lebensold

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- Online Platforms:
    - React Native Documentation
    - Expo Documentation

Course Delivery

- Method: Blended learning (theory and practical)
- Format: Lectures, hands-on coding sessions, and project work

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