

React Native Mobile Application Development

Duration: 2 Days / 16 Hours

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Day 1 — React Native Setup, UI, Navigation & Forms

Module 1: React Native Setup & Project Structure

- React Native project structure
- Android and iOS project configuration
- Metro bundler and development workflow
- Platform-specific code
- Basic application architecture
 - Screens
 - Reusable components
 - API/service layer
 - Local data layer
- Debugging workflow

Hands-on Lab 1:

Set up and configure a React Native TypeScript application. Build the initial structure of an **Employee Directory** application.

Module 2: React Native UI & Mobile Layouts

- Core React Native components
 - View
 - Text
 - Image
 - Pressable
 - TextInput
 - ScrollView
 - FlatList
 - SafeAreaView

- Styling with StyleSheet
 - Flexbox layouts
 - Responsive mobile layouts
 - Platform-specific UI behavior
 - Reusable components
 - FlatList rendering and basic performance considerations
 - Keyboard-aware UI
 - Basic accessibility considerations

Hands-on Lab 2:

Build the **Employee Directory** interface with:

- Employee list
- Employee cards
- Employee details
- Search/filter UI
- Responsive layout
- Reusable components
- FlatList-based rendering

Module 3: Navigation

- React Navigation setup
- Stack navigation
- Tab navigation
- Nested navigation
- Navigation parameters
- Passing data between screens
- Conditional navigation

Hands-on Lab 3:

Implement navigation for:

- Employee List
- Employee Details
- Add Employee

- Profile/Settings
- Stack and tab navigation
- Route parameters

Module 4: Forms & Mobile Input

- TextInput configuration
- Controlled inputs
- Form state management
- Form validation
- Error messages
- Keyboard handling
- Pressable interactions
- Platform-specific input behavior

Hands-on Lab 4:

Create an **Add/Edit Employee** form with:

- Multiple input fields
- Validation
- Error messages
- Keyboard handling
- Submit and cancel actions
- Navigation after submission

Day 1 Mini Project

Integrate the day's work into one application:

Employee Directory Mobile Application

- React Native project structure
- Reusable UI components
- Responsive mobile UI
- Employee listing
- Employee details
- Navigation

- Add/Edit Employee form

Day 2 — State, APIs, Storage, Testing & Deployment

Module 5: State Management

- useState and useEffect in React Native
- Local and global state
- Context API
- Loading, empty and error states
- State-driven UI
- Data flow between screens
- Redux Toolkit overview

Hands-on Lab 5:

Implement state management for:

- Employee data
- Loading state
- Selected employee
- Add/update employee
- State-driven screen updates

Module 6: REST API Integration

- REST API integration
- GET, POST, PUT and DELETE
- JSON data handling
- TypeScript models for API responses
- fetch or Axios
- API service layer
- Request and response handling
- Loading, empty and error states
- Network failure handling
- Authentication/token overview

Hands-on Lab 6:

Connect the Employee Directory to a REST API:

- Fetch employee data
- Display remote employees
- Add/update employee
- Handle loading and empty states
- Handle API errors
- Separate API logic into a service layer

Module 7: Local Storage

- AsyncStorage
- Persisting user preferences
- Local data management
- Basic offline behavior
- Secure storage overview for sensitive data

Hands-on Lab 7:

Add local persistence to the application:

- Save user preferences
- Retrieve settings when the application starts
- Demonstrate basic offline behavior

Module 8: Device Location & Permissions

- Accessing native device capabilities
- GPS/location integration
- Android/iOS permissions
- Runtime permission handling
- Platform-specific behavior
- Native/community library usage

Hands-on Lab 8:

Add location functionality:

- Request location permission
- Access device location

- Display latitude and longitude
- Handle permission denial
- Handle platform differences

Module 9: Debugging & Basic Testing

- React Native debugging workflow
- Logs and debugging tools
- Breakpoints and stack traces
- Common React Native errors
- Component testing overview
- Jest
- React Native Testing Library
- Mocking API/data

Hands-on Lab 9:

Create basic tests for the Employee Directory:

- Test a component
- Test a user interaction
- Mock API/data
- Validate expected UI behavior

Module 10: Build & Deployment

- Development and release builds
- JavaScript bundling
- Android APK/AAB
- Android signing overview
- Android release build
- iOS certificates and provisioning overview
- TestFlight overview
- App Store deployment overview