React-Native Application–Bringing Modern Technologies to Mobile

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Abstract- *In the world of mobile application development, we are trying for shorter development cycles and better performances .With mainly two operating systems ios and android dominating the mobile market, business creating mobile applications often face a dilemma whether to choose the applications that provide a better user experience or applications that are faster to develop and run on more mobile devices. At the crossroads of user experience and ease of development is the hybrid or react-native mobile app. It is an application built with technology that many developers already know and wrapped in a container that allows it to run natively on a device.*

I. INTRODUCTION

Hybrid application frameworks have come a long way to bridge the gap between the performance of a native applications and the ease of development of a web app. On the leading edge of this technology is Facebook's React Native user interface design framework. Here are some features of JavaScript library which we use for hybrid applications.

- It's got ios and android platforms covered.
- Reusable components allow hybrid apps to render natively.
- It's one of the top mobile JavaScript frameworks among developers—and growing.
- React native is all about the user interface.
- Native application development is much more efficient than any other.
- It offers third-party plug-in compatibility, less memory usage, and a liquid UI experience.

REACT NATIVE ARCHITECTURE
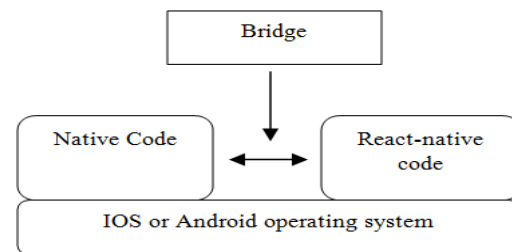
Fig. 1 React–Native Architecture

The above diagram simplifies that what is happening from the first point of our consideration. It is showing the architecture from high level to low level. In that we have both the native and React-native Code running in order to run a React Native application. The React Native application is loading our JavaScript into the JavaScript core or runtime environment .This means that the phone must run something called the JavaScript core, which is basically a runtime environment. This runtime environment is nothing but some code that runs on top of the operating system that will allow JavaScript to execute. It does this by downloading some native code that can run JavaScript and then loading some JavaScript into it.

React-native does two things mainly:

1. It will run a local node web server which publishes a payload file that contains all of our React-Native code. This is nothing but the JavaScript logic. This payload is called the index.platform.bundle.
2. Then it will build a pure native application project (for IOS or Android) and deploy this to the phone. This project is configured in such a way that it has JavaScript runtime environment and it downloads the payload file which we got in previous step.

II. OVERVIEW OF SAMPLE MOBILE APP

2.1 Mobile point of sale system

The Mobile Point Of Sale(mPOS) system is used by the firms for billing. It enables the cashier to select allitems that the customer bought and provides the total bill amount. It provides various payment options to customers. The mPOS also provides options to remove an item, update quantity, etc. It enables the admin to configure the mPOS for a particular store, add users of mPOS, etc. It provides option to view list of transactions. Different pricing categories can be applied to different types of customers.
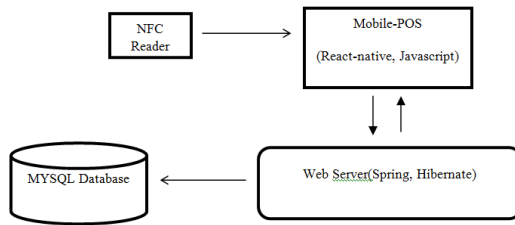
2.2 System Architecture

Fig. 2 System Architecture

2.3 Implementation of System Architecture

The user interface is a javascript xml page. It combines the component logic (JavaScript) and markup (DOM or Native UI) into a single file. React-native helps in developing reusable UI components. One component can be rendered in another component. The state and props of the react component enables communication between them. React component lifecycle methods helps us in rendering the state of component accurately. The react navigator helps us in providing navigation to various components. JSX notation is used in react components is type-safe.

The data like items, users, and store details required for specific mPOS are stored in Realm android database. We alsoUse device event emitters to communicate between the respective components.

The backend consists of database and the server that processes the payment requests, handling transactions, etc. The MYSQL database stores the data required for multiple points of sale systems related to specific firm. All the requests are made to web server through API calls. The response shall be JSON objects containing data. The Hibernate framework (Object-Relational Mapping) maps objects to database tables. The NFC(Near Field Communication) card is one of the payment options provided to customers. The details of the NFC card can be accessed by connecting to TCP server.

The react-native application uses 'React.createElement' to construct the simple user interface

for your application, which React acts as bridge between native equivalent and the user interface. While the JavaScript code is perfectly readable in its present form.

III. CONCLUSION

The React-native, JavaScript helps in developing user-friendly, robust and efficient mobile apps. Such mobile apps do not occupy more storage like conventional mobile apps. Also the UI can be customized based on the need of the user. The mobile apps built using react-native are the need of the hour in bringing modern technologies to mobile.

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