Cross Platform Mobile Application Development

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Abstract- Now a days mobiles are replacing the use of laptops & desktops on large scales. The mobile operating system companies provide more resources for the creation of applications as per the users requirement. But due the use of various operating system, it becomes problem for developer to develop the application for each operating system individually. So this has been solved by the cross platform mobile application development tool which provide more scope in less time.

Keywords- Single source code, "Build Once, Run Many", Platform Independent.

I. INTRODUCTION

The mobile applications are used more than the calls. People uses the applications as per their need. There are various mobile operating system like Android, IOS, Blackberry, Windows, etc. Each operating system has its own specialization. The applications defer from one operating system to the other. So the customer needs to use more than one mobile operating system to fulfill their requirements.

This problem was solved by the cross platform tool using Phonegap Framework. This framework helps developers to implement the application which would support more than one operating system. It uses various languages such as HTML5, Java Script, CSS3 etc.

In this paper we will be dealing with the cross platform development tool for “CAR Mobile Application” which will provides user with information of the car with all its specification. It will also help the user to find the nearest showrooms & more details.

II MAIN OBJECTIVE

We are mainly targeting to create a native app which will be installing on the mobile devices of different operating systems.

1) Android
2) Blackberry
3) I-Phone &
4) Windows etc.

The main focus is to have single source code for all the mobile operating systems. In an era where application developers today aim to maximize target reach Cross platform mobile application shows us the path by truly providing a "Develop One Times, Deploy Anywhere Anytime" solution.

II MOBILE PLATFORMS AND APP DEVELOPMENT LANGUAGES

- iPhone
  - Objective-C / C / HTML5
- Android
  - Java / C / C++ / HTML5
- Symbian
  - C / C++ / Java / HTML5
- Windows Phone
  - C#/C++ / Silverlight/ HTML5

As you can see one needs put lot of efforts and money to build the native app which build in native language supported by respective Mobile OS.

Ultimately the efforts (Money, Time etc.) put in to develop application will be more.

E.g : X man-hrs required to build the app for IPhone. And we are targeting 3 mobile platforms
which also include Android & Windows. SO
total efforts roughly would be 3*X man-hrs.
Again we would required skilled software
developers in respective Mobile OS platforms.
So we proposing to use HTML5 & jQuery
Mobile with collaboration of PhoneGap which
will help to have single source code and we can
create native app targeting to different Mobile
Platforms.

I.III NATIVE APPLICATION

- **App for Android OS**
  This module will target Android
  Operating System. We would be
  creating installable for all the Android
  Operating Systems which will be
  installed on any Android device from
different mobile technology companies
like High Tech Computer Corporation,
SAMSUNG, LG etc.

- **App for Windows OS**
  This module will target Windows
  Operating System. We would be creating
  installable for all the Windows Operating
  Systems which will be installed on any
  Windows device from different mobile
  technology companies like High Tech
  Computer Corporation, Nokia etc.

- **App for Blackberry OS**
  This module will target Blackberry
  Operating System. We would be creating
  installable for all the Blackberry Operating
  Systems which will be installed on any
  Blackberry device from different Mobile
  Technology Companies like Blackberry etc.

- **App for iPhone OS**
  This module will target iPhone
  Operating System. We would be creating
  installable for all the IOS which will be
  installed on any IOS device from different
  Mobile Technology Companies like APPLE
  etc.

I.IV SPLASH SCREEN

The user has to wait for 3 sec. for getting the
starting page of the Application. The delay is
being provided for displaying the LOGO for
CAR.

I.V LICENSE AGREEMENT

Developer license is required in order to
authenticate the user. This application
remembers the user license & displays it only
once. Next time user visit will not show this
page.

I.VI LOGIN SCREEN & REGISTRATION

To track the usage of the application. Single
Sign On-App will ask only once the login next
user visits app will remember the credentials.

II. SECTIONS OF PAPER

1) **Section-I** Introduction, gives the overview
   of the application. It consist of Definition,
   Need & concept of cross platform for
   mobile OS, total number of Modules,
   language etc.

2) **Section-II** Literature Survey, explains
   the research of the cross platform application
   that is done on various mobile operating
   system. In this paper, the application is
   implemented for CAR.

3) **Section-III** Module Details, explain the
   modules used in the application & its
   description is explained in the sub-
   sections.

4) **Section-IV** Languages & Algorithms
   explains the language used in the
   application, web services for handling the
   web base tools, & the algorithms used.

5) **Section-V** GUI & SNAPSHOTS, this section
   shows GUI for our application.

6) **Section-VI** Result discussion and
   conclusions.

III. LITERATURE SURVEY

The main aim of our project is to
develop an application which is to develop
an application which would support various
mobile operating system. We have
implemented that application using the
“PhoneGap Framework”. This framework
creates a language for different operating
which would help developer to create the
application properly.
In this Project, we are developing a tool for **CAR Mobile Application**. It also provides user with information about the Cars. It also helps user to search the nearest showroom where he can locate a dealer & ask for the complete information about the car.

The application also provides with financial services that would provide user to purchase a car using loan system. The finance company details is being provided to the user by this application. The user can directly deal with the Bank & get the information about the monthly Installments (EMI’s) as per the price of the car.

This application fulfills all the requirements of the user & supports most of the mobile operating system & thus the name “**Cross-platform mobile for CAR application**”.

### IV. MODULE DETAILS

#### IV.I MODEL SEARCH

This module helps user to enter the name of the car that he/she is interested. User will get an image of the car and with some small information about it.

#### IV.II FIND USER LOCATION

This module displays location of the User Location & displays nearest Showroom which would take user to Dealers.

#### IV.III LOCATE A DEALER

This module displays list of various CAR dealers. The user will choose a nearest dealer which would take user to Dealers Web Site. Dealer web site provides information about all the models in detail & other related features.

#### IV.IV FINANCIAL SERVICE

This module provides information about the financial services to the users who would like to buy the car on EMI’s.

This module we show the financial companies that will provide the user loan for purchasing the car.

It explain the user with monthly installment (EMI’S) as per the price of the car.

#### IV.V RATE US

This module allows user to rate the mobile app from 1 to 10. User feedback will help us enhance the application furthermore.

#### IV.VI CONTACT US

The user can also contact directly with the showroom using email system and can request for test drive.

#### IV.VII TECHNICAL INFORMATION

The user can also get more Technical information about the car by visiting the original CAR site.

The Technical information will contain the features such as-

1) On-Road price
2) Ex-Showroom price.
3) Engine capacity.
4) Fuel Efficiency.
5) Horse power.
6) Ground clearance & more.

#### IV.VIII BROCHURE DOWNLOAD

This module provides various brochures which would help user to know the complete information by downloading this brochure.

This brochure will help the user to share the information to the other user fastly.
V. CROSS-PLATFORM SOFTWARE LANGUAGE & ALGORITHM

V.I LANGUAGES USED

a) HTML 5

HTML5, the 5th version of HTML, is the latest web technology with rich multimedia features and interoperability features for smartphones and tablets makes it compelling and doubtable. HTML5 web application can be accessed on mobile browsers and runs on different mobile platforms just like native applications. HTML5 provides offline support through local data and application caching without the need for internet connection.

b) JavaScript

JavaScript is used in lots of Web pages to improve design, validate forms, detect browsers, create cookies, and much more. JavaScript is popular scripting language on the internet, and works in all major browsers, such as Internet Explorer, Mozilla, Firefox, Netscape, Opera.

c) CSS3

Cascading Style Sheets (CSS) is a style sheet language used for describing the presentation semantics (the look and formatting) of a document written in a markup language. Its common application is to style web pages written in HTML5 and XHTML, but the language can also be applied to any kind of XML document including XMLLanguage, Scalable Vector Graphics and XML-based User interface Language.

d) jQuery Mobile

jQuery is a fast & concise JavaScript Library that simplifies HTML document traversing, animating, event handling and Ajax interactions for rapid development. jQuery is designed to change the way that you write Javascript.

V.II RESPONSIVE WEB DESIGN

Our mobile app basically targets different devices with varying screen sizes and also we target to run the same app for Desktop users in the form Web Application.

So to fit in on all these varying screen sizes we have to use Responsive Web design approach.

Its Elements are:
- Media queries
- The fluid grid
- Flexible images

V.III WCF JSON SERVICE

This module helps clients viz Mobile App and Web App for desktop users to fetch data from database and brings it to client application.

SO basically this service is the bridge between the client application and database server.

We have create JSON services because the data transferred over the HTTP is light weight so the performance of the application will be faster.

V.IV ALGORITHM

STEPS

1) First user will enter minimum three characters of Model Name.

2) Then we will be using jiQuery Mobile to request a WCF service by passing typed character.

3) WCF services will receive the request and start processing the logic.

4) WCF service logic will run injected stored procedure and try searching a model.

5) Stored procedure will search the model information in SQL server database. If model data available, it will return the list of all the models which starts with the characters passed or else it will return null.

6) Result of stored procedure is catched by the WCF service and then it return to the client program.
7) In client program, JavaScript parses the result set and displays in the dropdown list control.

8) This algorithm will also take care of filtering the model names displayed in the dropdown control as the user types the character or if the user removes the character result will be again filled up accordingly.

VI. GUI & SNAPSHOTS

[NOTE: WE HAVE TAKEN BMW CAR AS AN EXAMPLE IN SNAPSHOTS]

Fig. 1. Model Search Name

Fig. 2. Main Page GUI & Model Image

Fig. 3. Locate a Dealer
VII. CONCLUSION AND FUTURE SCOPE

Therefore, it is concluded from this paper that Developing using a multiplatform framework is a strategic decision that should consider different tradeoffs: while it permits to follow a develope once time, deploy anywhere approach.the performance of the final product may not be as good as in a native application. User experience is critical for the success of any mobile application.

It is very important to underline that the described advantages are potential benefits that may or may not occur as a result of attempting to do multiplatform development. Hopes may be turned into Disappointments depending on the organizations’ ability to scale up their processes, competencies and Knowledge to manage with the increased complexity of multiplatform development. There is still some future scope in this paper. We can also implement it for operating systems like mobile OS Symbian & web Operating System.

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REFERENCES


