Keivan Karimi

Building a mobile application using the Ionic framework

Helsinki Metropolia University of Applied Sciences

Bachelor of Engineering

Information Technology

Thesis

1 March 2017

Helsinki Metropolia University of Applied Sciences

Author(s) Title Number of Pages Date	Keivan Karimi Building a mobile application using the Ionic framework 42 pages 1 March 2017
Degree	Bachelor of Engineering
Degree Programme	Information Technology
Specialisation option	Software development/Network and communication
Instructor(s)	Anssi Ikonen, Senior Lecturer Peter Hjort, Senior Lecturer

The goal of this thesis was to build a mobile application by using the latest available technologies for mobile hybrid web application development. HTML, CSS, JavaScript, AngularJS and Ionic were used to develop a beneficial and user friendly application that would display the latest news in regard to the fashion industry.

The outcome of this project was an application called Shiksho. It has been produced and distributed in a local market application store. The application was downloaded for more than 50 times during its first date of publication. The Shiksho application has also received positive feedback from users since the early stages of publication.

This application has been developed to fulfil the gap between news websites and mobile applications; the problem that force users to search through different news and media channels to obtain daily news. There is also a possibility for further studies to improve the functionality and interface of the application alongside the data handling and architecture of the application.

Keywords	application, Ionic, AngularJS, hybrid application

Contents

1 Introduction 1

2 Theoretical background 2

3 Development tools, methods and materials 3
3.1 Operating systems 3
3.1.1 Linux: Ubuntu 3
3.1.2 Windows : Microsoft Windows 7 3
3.2 Development, design and test tools 3
3.2.1 Text editor: Sublime 3
3.2.2 Design: Adobe Photoshop 4
3.2.3 Network monitoring: Wireshark 4
3.3 Version control: Github 4
4 The WordPress and the back-end of the project 5
4.1 Definition of API 5
4.2 Definition of JSON 5
4.3 Definition of REST 6
4.3.1 Architecture of REST API 6
4.3.2 Handling data in REST API 7
4.3.3 Using REST API in WordPress 8
4.4 Using HTTP API request 9
5 The ionic framework 10
5.1 Introducing the Ionic framework 10
5.2 Ionic framework for building mobile applications 10
5.3 Cordova and ngCordova for the Ionic 10
5.4 Using the Android emulator or the Genymotion 11
6 The AngularJS framework 13
6.1 Introducing the AngularJS framework 13
6.2 The AngularJS architecture 13
6.3 Installing and using the AngularJS 14
6.4 Organizing the application code 15
6.5 The AngularJS components and directives 17
6.6 Data handling 17
6.6.1 Expressions 18

6.6.2 Filters 18
6.7 Dependency injection 19
6.8 AngularJS services 20
6.8.1 $http service 21
6.8.2 Factory 22
6.8.3 Routes and configuring routes in the AngularJS 24
7 Plugins for the Ionic framework 26
7.1 Installing and using the ngCordova plugin 26
7.2 Installing and using the ngStorage plugin 27
7.3 Installing and using the PhoneGap social sharing plugin 29
7.4 Installing and using the Ionic-toast plugin 33
8 Network security test 36
8.1 Man-in-the-middle packet sniffing 36
8.2 Installing and using the Wireshark 36
8.3 Building a Wi-Fi hotspot and packet sniffing 38
9 Conclusion 42
References 43

1 Introduction

Before the time of mobile web application development, mobile applications were limited to apps that were specifically designed and developed for mobile operating systems. In 2011, there was no easy solution for web developers who wanted to develop and build mobile applications. As a result web developers could not directly develop mobile compatible applications. By introducing Apache Cordova, which was known as PhoneGap, web programmers had a chance to build mobile applications with web technologies.

Apache Cordova has made mobile hybrid application development possible with HTML, CSS, JavaScript and all available libraries of JavaScript. Apache Cordova will wrap HTML, CSS and JavaScript in a way that programmers have the possibility to develop for any available operating system. As a result developers could develop hybrid mobile applications for iOS, Android, Windows phone and other major operation systems. Furthermore, developers can use same code and structure with minor changes for different operating systems for mobile phones.

The goal of this project is to build a mobile application using the available web development tools and Apache Cordova as a wrapper. The application would be called Shiksho and it would show data which are fetched from the WordPress website as a back-end. Finally, couple of network security tests will be performed on the application to check the possible security flaws.

Click here to download full PDF material