One App for All: Developing Mobile Applications For All Platforms

Alejandro Medina

Technology, as we know, has advanced at an astonishing rate. Today it is possible to have a phone, camera, GPS, personal digital assistant (PDA), media player, gaming console, clock, etc., in a single device that fits in the palm of our hand. We call such devices smartphones. These devices are "pocket computers" armed with a set of sensors and communications channels to receive and process information.

For many of us, smartphones are "necessary" for everyday life; they are entertaining, convenient, and useful, and they come in different colors, sizes, and shapes. However, what really makes them so popular is that they can be personalized for each owner. Users can customize their screen saver, ring tone, alert tones, vibration patterns, and even the way they look and behave. But the true customization happens when we install our preferred applications, or apps, because there is a vast universe of available apps.

Like any other computer, smartphones need an operating system (OS)—a platform. An OS is the main program running in the computer or phone and is in charge of administrating resources such as memory, input and output devices, and all its applications. Currently many different mobile devices manufacturers and platforms exist. Some manufacturers have proprietary platforms, for example Apple has iOS and Blackberry has BlackberryOS. Other manufacturers such as Samsung, LG, and Sony produce devices that use a third-party platform such as Android, Windows Phone, WebOs, etc. Some manufacturers uses both types, for example, Nokia has Symbian, a proprietary platform, and also uses Windows Phone from Microsoft. Of course, all this means a great choice of options for users. However, for application developers this variety means a lot of work to create applications that are compatible with all platforms. Each platform uses different operating systems, programming languages, and environments, making the task of developing an app program that behaves the same way in all devices very complex.

One solution to this problem emerges by looking at all smartphones and what they have in common. What kind of apps can run on all the devices? The answer is clear, websites. No matter what system a person is using, a web-based application will seem and behave the same in any smartphone (or computer, tablet, etc.). In this paper we discuss a way to develop mobile apps for all platforms (cross-platform apps), using PhoneGap, an open source framework for creating mobile apps using standardized web technologies.

A mobile website is a website that can be correctly displayed by adapting to the size and capabilities in a web browser running on a phone. Mobile web-based applications are created or programed using standard web technologies such as HTML/CSS and JavaScript. After having a mobile web app, the obvious next step is to convert a mobile website into a native mobile app that can run off-line in the phone, that is, installed in a phone and used without the need of Internet connection. This is where PhoneGap comes into play.

There are a few steps that should be followed to create a cross-platform app using PhoneGap. First, the mobile website has to be made using a specific library (a group of rules and styles) called jQuery mobile. Using web standards, jQuery mobile provides the elements to create graphical user interfaces (GUIs) that can use touch gestures and adjust to the size of the screen of the phone, thus giving a feeling of a mobile app. Then we use PhoneGap to compile or wrap up our mobile web app created with jQuery mobile into an actual application to be deployed in the targeting platform. In order for PhoneGap to create such an application, the "mobile website" code (HTML, CSS and JavaScript files) must be uploaded to its servers to be compiled. After compilation, the PhoneGap server makes available a link to download the application for every different system along with a QR (similar to a barcode) code that can be scanned with a smartphone for a direct link to download and install the app.

It is fair to mention that PhoneGap is not the only framework to create web-based cross-platform mobile apps. There are many that offer the same service, among them Appery.io, Appcelerator, and appMobi. But these frameworks have many problems. For example, some of them are completely web-based; everything has to be done in the web browser and mostly by "drag and drop" without the need for any programming. Most of them were created for users with no programming skills and this takes away the power to actually fully customize the app being created. Others require a paid membership, between 7 to 20 dollars per month for a single developer account.

Perhaps in the past the idea of developing an application that could work and behave the same across all different devices or platforms might have been too difficult to even imagine. However, web-based technologies have made this process feasible. PhoneGap is a free and open source framework that allows us to compile mobile apps created using standardized web technologies across platforms. Web-based technologies might be the technology used to develop the next generation of mobile apps. Big companies like Intel, Microsoft, and Google have been acquiring startup companies that either use these technologies to develop applications and games or that do research and development on these same technologies.

Nominating faculty: Professor Benito Mendoza, Department of Computer
Engineering Technology, School of Technology and Design, New York City
College of Technology, CUNY.