

Using Apps Stores/Markets as a Tool to Provide Industry Knowledge

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ABSTRACT

In this poster paper, core knowledge and concepts of designing, developing and delivering mobile software (apps) onto apps markets are presented. The poster covers the definition of app, the OOP concept, GUI design principles relevant to mobile devices, a summary of the app development lifecycle and in the last section, a teaching approach being taken by the authors of this paper. The aim of the poster is to promote the idea that apps store/market can be used as tool to encourage BIT students to develop mobile apps.

Categories and Subject Descriptors

K.3.1 [Computers and Education]: Computer Uses in Education

General Terms

Design, Experimentation.

Keywords

Mobile apps, OOP, GUI design

1. INTRODUCTION

Mobile computing has become mainstream in recent years and will keep on growing, according to The Economist. Research indicates that the volume of data traffic will be 21 times greater within five years [4]. The software industry must keep pace with technology growth in this area. A new strategy has been put in place to facilitate this evolving software eco-system where software products can be directly delivered to a customer's mobile device on demand. For example, Microsoft has "Windows Phone Store"; Apple has "App Store", Google started off with "Android Market" but has now repositioned their product as "Google Play".

The purpose of this research to find out what is required for education institutes and the next generation of IT professionals to catch up with this new trend [2, 6]. This paper describes the knowledge and concepts needed by learners in order to develop and publish software (apps) onto apps store or apps market.

2. APP (SOFTWARE APPLICATION)

App is actually another name for application software used in computing device, like a smartphone or hand-held device, to enable it to perform a specific function [5]. The concept of app is from a word-formation method linguists classified as back clipping. Clipping take place when a word is reduced into one of its parts, it also can refer as truncation or basically shortening. Another type of clipping called front clipping has been applied in the word blog instead of weblog which are used virally in recent years. As these examples have demonstrated, the words in clipped forms are easier in terms of spelling and pronunciation. Therefore, they are a lot more widespread than their longer equivalents and commonly surpassing them in daily usage. So people these days will use the term app and instantly make a mental connection to the little icons shown on the screen of a smartphone or device with a similar level of sophistication.

3. OOP DEVELOPMENT

The first stage in the design and development of an App is to learn the concept of OOP and the framework for different technologies such as IOS, Android and Windows that meet with the industry standards. The frameworks are discussed in the app development lifecycle (section 5 below). OOP involves writing code as class definitions that have data attributes and procedures (methods) to process the data attributes. Instances of such classes are called objects. Example: Class Member. It can have many instances like m1, m2.

4. GUI DESIGN FOR MOBILE DEVICES

The design parameters of an app are very important. Good usability is achieved through good user interface design. Good design in turn depends on understanding the user needs and the



Figure 1: Poster presentation

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task that the app aims to achieve, and thus designing the correct function to facilitate those tasks. [1].

Another important aspect is understanding the principles of good screen design, particularly for mobile devices. Design principles of predictability, simplicity, responsiveness, efficiency and optimization are essential to take into account when developing system menus and navigation schemes. This involves selecting the proper kinds of windows, device-based controls and screen-based controls and requires careful consideration of proper meaningful graphics, icons and image colours with appropriate organization and layout of windows and pages as interaction space in mobile devices are very limited. Text and messages need to be concise and clear to provide effective feedback, guidance or assistance. After all, prototyping and test, test, and retest in the targeted platform device is the road to success.

5. APP DEVELOPMENT LIFECYCLE

In brief, the process of developing an app is not much different from developing a traditional computer program. The key differentiator is the publishing process. In general, the following steps comprise the app development lifecycle:

1. Have a design idea or vision, it may be for a good cause to help people in some way
2. Choose a platform: iPhone, Android and windows phone are mainstream platforms.
3. Elucidate requirements and establish the requirements for the design idea
4. Sketch the idea for the visual aspect of the interface: how it looks, how it flows and what information it will present.
5. Refine the sketched idea using design principle to break it down into more specific considerations
 - Information architecture – organizing the content in the app.
 - Interaction design – how a user can move from different screens if necessary to accomplish task using the app.
 - Visual Design – overlay controls that focus on usability and key task of the app.
6. Validate the refined prototype with potential users (and go back to step 5 if the design goal is not meet).
7. Download the IDE for the chosen platform such as:
 - Xcode for iOS app
 - Eclipse for Android app
 - Microsoft Visual Studio for Windows app
8. Start the physical development such as coding and follow the consideration list below for the specific platform:
 - Frameworks – low level library; available classes and methods; data structures and protocols.
 - Design Patterns – templates for design that determine the programming language and existing architectures. Such as Model-View-Controller design pattern

- Human Interface Design – direct manipulation; feedback and communication; user control, consistency; aesthetic integrity; metaphors and mental model;

9. Locate the development centre website for the chosen platform to sign up for a developer account. Some documentation will have to be completed during the sign up process and this is an essential requirement for the app to be released to the public.

10. Test your app (using an emulator and physical device(s)) for unexpected outcomes such as:

- Logical errors
- Runtime errors

11. Submit the app to the App Store/Market and wait for approval. This process will be slightly different for different platforms but in general, after app submission, all apps are required to undergo a review process under the development centre by the app store/market. This involves internal staff member(s) from the store/market who produce a comprehensive evaluation report and make recommendations and/or requirements for the App to qualify to be published on the market. Feedback from the evaluator(s) can help the developer to make appropriate modifications for resubmission. This process will be iterated until the app has met all requirements or standards of the app store/market.

12. App is released to the general public for download or purchase.

6. CONCLUSION

Academics in New Zealand institutes of technology endeavour to provide up-to-date industry experiences to the learner. The authors encouraged their students to attend a Windows phone development workshop offered by Microsoft and to experiment with using app stores/markets to publish Windows App. In future we plan to use app stores in the HCI course as tools for GUI-based assessments involving Android or Windows phone development not only to deliver real world experiences but also to encourage and challenge learners to apply their knowledge and ideas on OOP and HCI related concepts.

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