

Mobile devices in our time



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Mobile devices are becoming powerful and are being widely as convenient mobile devices as a result of the rise of technology. To develop quality applications for these devices in a short period of time while overcoming constraints and limitations of mobile development, strong understanding of mobile architecture, design patterns and design purpose are key factors in developing well designed applications. Crashes and failures in applications as well as poor user experience can be avoided if good design patterns are implemented. This report aims to analyze and discuss some of the comobile application platform components as well as its uses and applications in the development life-cycle. Introduction Mobile devices with sophisticated functionalities and applications have changed people's life. There are many organizations and individuals leaning towards mobile application development. Understanding of the design purpose plays important role in developing well designed application. Design choices affect the quality of application and developers' design decision will have a significant impact on the applications.

For example, the implementation of layout, graphics, and animation will have performance implications. Defining the core building blocks of application encourages re-usability. Therefore, the design and implementation of a set of components can be optimized. Building the most appealing design is not the only goal in mobile development as the application must not only attract users but also to achieve balance in terms of functionality, aesthetics, usability and performance. Good design not only eliminating users' dissatisfaction, but it can prevent crashes or harmful

actions. Hence, developers need to take into account different aspects when designing mobile application.

The design used in mobile application influences how the application performs. Mobile applications need to be fast and reliable in order to be valuable in the dynamic environment. However, limitations of the medium impose significant challenges to design application that can meet all of those expectations. As architectural design plays a key role to overcome those constraints, there is a need for an improvement of the design patterns applied in mobile application development. In this paper, we aim to identify and analyze architectural or design patterns for mobile application development, implement the design patterns in mobile application, evaluate and verify the effectiveness. In order to increase efficiency, usability and re-usability, design patterns for mobile application development are proposed and design patterns are implemented in Android application. This report is organized into: Chapter 2 outlines some of the problem statements, and Chapter 3 gives a brief overview of Mobile Computing and Mobile Application Development. Chapter 4 explains the Significance of Design Patterns in Mobile Application Development followed by an Analysis and Implementation of the proposed Design Patterns in Chapter 5. In Chapter 6, we provide the evaluation of the implementation results. Chapter 7 concludes the paper. Mobile computing systems can be defined as “ computing systems that may be easily moved physically and whose computing capabilities may be used while they are being moved” [1]. Examples include laptops, personal digital assistants (PDAs), and mobile phones. Mobile computing has changed the way computers are used. In fact, it is expected that many devices will

become smaller and even invisible in future. Technologies improvements in certain areas such as in Central Processing Unit (CPU), Memory, Screen, Touch-screen interface, battery, and wireless have driven the rapid advances in mobile computing. Advances in hardware technology aligning with the current trends in web-based computing has led to a reduction in costs, thus increasing the availability of mobile computing paradigms. While the concept of mobile computing is well established, the research area and industry for Mobile Application Development has gained a lot of attention.

However, there are many challenges and limitations that need to be considered as developing mobile application differs from desktop or web-based application development. Many mobile applications available today provide different services and functionalities while previously, mobile apps were developed mainly to support productivity (i. e. email, calendar and contact databases). With the increasing demand and high user expectations, application such as mobile games, context-aware and location-based services, banking, and e-commerce have emerged. In fact, today mobile devices are considered as computers first and phones second as described by Hayes [2]. There are different approaches of mobile application development. Hence, developers should know whether they want to deploy a native application, web application or hybrid application as different platform

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