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Term Paper Assignment

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Mobile Operating Systems

Abstract

Mobile Operating System (MOS) is software that runs only on mobile devices, where it acts as the backbone of all the apps and phone programs. The paper seeks to analyze the various types of Mobile Operating System, their features, ownership, and how the MOSs are operated. Also, the paper will involve discussions regarding the devices, which use these Mobile Operating System. There are different MOSs that have been developed for phones, whereby some are specific and closed sources, implying they are limited to different devices and also developers. Various mobile companies have designed systems through which their mobile devices can run. The paper will explore the following main MOS: Android, Symbian, Apple iOS, Blackberry OS, Windows OS, BADA, Palm OS (Garnet OS), Open WebOS (Hp WebOS), Maemo, as well as MaeGo. Additionally, differences and similarities between the MOSs and the traditional systems developed for desktop and laptops are analyzed. The differences and similarities examined are based on the designs, services, and hardware requirements for the MOS.

Mobile Operating Systems (MOS)

MOSs can be defined as the software that runs only on mobile devices, where it acts as the backbone of all the apps and phone programs. As such, the mobile OS can be termed as the system on top of which everything in the mobile device sits. The MOS acts as the basics of all settings, such as how to connect the device to the internet, how to test, and how to keep calendar appointments, among other things. There exist different MOSs that have been developed for phones. Various mobile companies have designed systems through which their mobile devices can run. Such operating systems include Android, Symbian, Apple iOS, Blackberry OS, Windows OS, BADA, Palm OS (Garnet OS), Open WebOS (Hp WebOS), Maemo, as well as MaeGo. The main objective of the research paper is to explore these MOSs and the comparisons between the systems and the traditional systems developed for desktops and laptops.

The Various MOS Types: Analysis

The Symbian OS is a MOS owned by the Nokia mobile company, whereby for other firms to use the model will require legal rights from the company. A few years ago, Java Symbian OS was the commonly used operating system (OS) in mobile phones (Tilson, Sorensen & Lyytinen, 2012). The OS is broadly used in low-end mobiles phones. However, due to the continuous development of other mobile OS such as the Androids and iOS, whose popularity has increased, Symbian OS demand has decreased. Nokia has upgraded the Symbian mobile OS, making it capable of running on smartphones. The upgrade has led to the development of Symbian ANNA and BELLE, which are nowadays utilized by Nokia smartphones. The Symbian OS is well developed, which has helped in making user friendly (Tilson et al., 2012). Some of

the gadgets that are currently operating on the Symbian OS include Nokia C6-01, Nokia 603, Nokia 808 pure view, and Nokia E6 (ANNA).

The second MOS is Android, which was first released in 2008 by Google. The first model of the Android OS to be released was Astro, which was later upgraded to Bender and Cupcake versions. After the upgrade, Google started the trend of naming a different version of its Android OS after various dessert or in a desirable alphabetical order approach (Tilson et al., 2012). The Google Company has developed other Android versions like Donut, Éclair, Froyo, Gingerbread, Honeycomb, ice cream, among many others. Google operates an open platform that has enabled many developers to build multiple Android apps that can run in the android OS. The android OS gained popularity after the introduction of the smartphone and tablet in the market, which proved the efficient working of the OS and its beautiful appearances. New features continue to be introduced on the OS, which has contributed to the success of the Android OS, giving it a competitive advantage in the mobile market as they are the most used OS by many smartphone companies (Tilson et al., 2012). Besides, some companies such as HTC, TCL, and Samsung are using the Android OS for their devices, including television, which is using Android OS. Due to its demand and success in the market, the Android OS has been considered as one of the threats of the iPhone OS.

The third MOS is the Apple iOS, which was first developed and introduced in the market in 2007. It was created after the first development of the iPhone mobile device, which runs and operates on iOS. Since the introduction of this OS, it has been upgraded and continues upgrading the version with the current version being iOS 9 (Davidson et al., 2017). The Apple Company has restricted other manufacturers from operating on its OS, unlike Google, which runs on an

open platform. The iOS has concentrated more on the performances and appearances of the operating system, where the company has managed to retain the same appearances of its different versions of the OS (Davidson et al., 2017). The iOS is developed to make it user friendly, whereby its performances have contributed to making the iOS as the best MOS globally. The iOS architecture consists of various elements, such as the core OS, which is the kernel part of the OS. The second element is core services, which are the essential system-services, which are categorized into various framework and dependent on the C and objectives C, where the CFNetwork protocols. The next element is the media, which take into considerations the high-level structures that are used for graphics, audio, and video techniques. Another aspect of the OS is Coca Touch, which comprises of UIKIT, which is an objective of a C framework and ensure functions like the production of an iOS apps such as User Interface Management (Davidson et al., 2017). The iOS utilizes a sandboxing framework where the application has to be issued with a certificate to make sure that apps are not changed and ensures the runtime to ascertain if an app has not developed untrusted issue since its previous usage.

The next MOS is the Blackberry OS, which is owned by the Research In Motion (RIM). The blackberry OS was first introduced in the industry in 1999. The RIM Company has developed the OS in line with the blackberry line of smartphones that operate on this OS (Novac et al., 2017). The Blackberry OS varies from other OS in that the interface develop used and the smartphone develop as it has a tracking ball for scrolling on the menu or icons as well as a QWERTY keyboard. The blackberry OS operates on a close platform like Apple, where its use is limited to the company; thus, not available for other gadgets, companies, and manufactures. The current upgraded version of the Blackberry OS is blackberry OS7.1, which was introduced in the

market in 2007 (Novac et al., 2017). The OS is used in the Blackberry device like the Blackberry Bold 9930, Blackberry Curve, Blackberry Torch, and Blackberry 8520. Notably, the OS is very reliable and withstands every virus in existence, making it more secure. The blackberry application requires the OS developers to get registered with the Research In Motion, which helps in giving higher level of control and predicting the loading and actions of apps on the Blackberry phones.

The other MOS is the Windows OS, which is used in mobile phones. However, it is challenging for the standard mobile users who find it challenging to operate mobile gadgets running on the window OS. Windows OS is familiar to people due to its use in computers globally, and now it is being used in mobile phones (Novac et al., 2017). The window OS for mobile phones was made possible through the partnership of the Microsoft company, the owner of the Windows OS, and Nokia, resulting in the development and introduction of Windows OS in the market. The latest version of the Windows MOS is Windows 7, which has attracted the attention of all types of users who have installed the OS in their mobile gadgets. Features such as colorful and user-friendly interfaces make the Windows OS more attractive to many users, which has given the OS new life and increased demand in the market (Novac et al., 2017). Secondly, the latest Windows OS version is used in compelling mobile devices by Nokia, which has contributed to its success in the market. All series of Nokia Lumia mobile devices such as Nokia Lumia 800, and Nokia Lumia 900 operate entirely on the Windows OS. Besides, Samsung Focus, HTC, and Titan 2 also works on the Windows OS.

The next MOS is the Palm OS, which was made by Palm Company in the year 1996 for PDAs (Personal Digital Assistants). Essentially, the OS was initially developed to operate on the

touchscreen GUI (Bagga, Goyal, & Bansal, 2016). However, the OS was upgraded to enable it to run and support smartphones- whose demand in the market has skyrocketed. Unfortunately, the OS did not do well in the industry, thus not utilized in the newest top devices being developed. After the upgrade of Palm OS, it was utilized by various device manufacturers such as Lenovo, Legend Group, Kyocera, and IBM. Another MOS is the Open WebOS, also referred to as Hp WebOS, which was also developed by Palm incl. Before it became the property of Hewlett-Packard, after its launch in 2009, the OS was used in various smartphones and tablets (Bagga et al., 2016). The Hp upgraded WebOS at a high level by utilizing the OS in its high-end smartphones and tablets. The latest mobile gadgets running on WebOS include Hp Touchpad. However, with the introduction of Android OS in the market, the sale for WebOS-based tablets reduced. Later the HP Company announced the discontinuation of the WebOS-based devices (Bagga et al., 2016). Still, the company promised to continue supporting the users who were already using the devices by allowing for regular updates of their OS.

MeeGO is another MOS, also known as the Mobile Platform, developed to run on many electronic devices such as handhelds, in-car devices, television sets, and netbooks (Rubinfeld, 2018). The devices on this OS have a similar core, but the user interface varies depending on the specific device. Moorestown Tablet PC was the first tablet powered by the MeeGO device introduced in 2010. Also, mobile devices like Nokia N9 operate on the MeeGO OS. Lastly, the Maemo MOS was produced by Nokia and the Maemo community (Rubinfeld, 2018). The OS runs on smartphones and internet tablets, where its user interface is comprised of a menu from which the user can navigate to any location in the device.

Similarities between MOSs and Traditional Systems Developed For Desktops and Laptops

Both the OS(s) are developed to run and control the hardware of the device during their operation. Secondly, both the operating systems allow for the installation of various applications required by the user for varied functions (Götz, Stieger & Reips, 2017). Thirdly, for the two OSs to function, they need various hardware specifications for the device to be compatible with the OS. Also, there exist different versions of the operating system, which were updated regularly to capture various functionalities and features required in the devices. Another similarity is where these operating systems were efficient in their functionalities as they allowed the user to operate the devices and carry out the intended purposes. Another similarity is where both the OS requires a certain size of memory to install; they require memory for their functions.

The next similarity is where they both support and allow the device user to manipulate various settings in the device, whereby the OS enables the user to change the settings of their devices. The two operating systems are also easily attacked by viruses that, also, affect the performances of the devices by halting their operations (Furió et al., 2013). The OS is mandatory for the device to operate, whereby the operating systems are used in installing the apps in which the device users can interact and operate the phone effectively. The two operating systems have the start menu, which is used by the user to access the various applications installed in the devices. As such, both the operating systems come with the start menus that allow the users to use the devices in which they are installed.

Differences between Mobile Operating Systems and Traditional Systems Developed for Desktops and Laptops

The first difference between the two operating systems developed for the desktops and laptops and the MOS is that the latter are full-featured as their develop enables them to take

advantage of elements in the devices. Such components include fast CPUs, a high amount of RAM, and they can utilize the features of modern chipsets on most mobile gadgets (Rubinfeld, 2018). Contrary, MOSs are specialized for particular set of devices. The MOSs are not fully featured where they do not offer the user with complete access to the device system hardware (Administrator or “root” access). As such, the MOSs have stricter hardware requirements due to the strong connection of the ecosystem of mobile apps and mobile devices to specific hardware features. It is impossible to run the newest apps on an older MOS, or the latest mobile OS cannot run on significantly older devices (Rubinfeld, 2018). The second difference is the involvement of a lot of details while developing the traditional systems for computers and laptops as they were not development for mobile use across the wireless networks. In their developments, developers and engineers concentrated majorly on the technical information such as boot protocol, application threads, various process handling, CPU operation, as well as the various elements of these traditional OS (Rubinfeld, 2018). For the MOSs, there are fewer details as their primary focus are on the responsive develop of the OS, continuous network access, and the features of providing software apps employed across various wireless environments.

The other difference is where the MOSs have a mechanism in place that asks the installed apps to give back system resources required for its function and kill the resources that do not have corporate during its functioning (Kizza, 2016). On the other hand, the traditional OSes for the desktops and laptops will generally permit the apps, for example, to continue utilizing the memory unit until the system is too sluggish to use. The MOSs are lightweight compared to the traditional windows for desktop and laptops that are bulky due to their vast functionalities for the devices to handle more processes and applications simultaneously as opposed to the MOS that

are light as they offer fewer functionalities. The increase in complexity and features of the traditional operating systems for the desktop and laptop make them require a lot of memory for their installation. At the same time, the mobile application has fewer features that reduce the hardware requirements, such as the memory location (Kizza, 2016). As the traditional operating system for both desktop and laptops support visualization where various instances of an OS can run on one kernel, the MOS does not enhance the visualization.

Conclusion

The research paper has explored various types of MOS. Also, it has explored multiple similarities and differences between MOSs and Traditional Systems Developed for Desktops and Laptops. Such types of MOSs explored include Blackberry OS whose owners is the Research In Motion (RIM). The Blackberry OS first made its way in the market in 1999. Also, there is Symbian OS, a MOS owned by the Nokia mobile company, whereby for other companies to use the operating system will require legal rights from the Nokia Company. A few years ago, Java Symbian OS was the commonly used OS in mobile devices. The next type is Android, which was first released in 2008 by Google. The first model of the Android OS to be released was Astro, which was later upgraded to Bender and Cupcake versions. After the upgrade, Google started the trend of naming a different version of its Android OS based on various dessert or in an alphabetical order approach. The next type of OS explored is Apple iOS, which was introduced for the first time in 2007 after the first development of the iPhone mobile device, which runs and operates on iOS. Since the introduction of this OS, it has been upgraded and continue upgrading the version with the current version being iOS 9. Also, there is a Windows OS, which is used in mobile phones. However, it is challenging for the standard mobile users who find it challenging

to operate mobile gadgets running on the Window OS. Windows OS is familiar to people due to its use in computers globally, and now it is being used in mobile phones. The paper has also explored Palm OS, which was developed by Palm Inc. in 1996.

Besides, similarities of the two OS explored include the presence of a menu that is used by the user to access the various applications installed in the devices. Additionally, both support and allow the device user to manipulate multiple settings in the device where the OS allows the user to change the settings of their devices. Also, both the OSs allow for the installation of various applications required by the user for varied functions. The differences explored include two OSs developed for running in desktops and laptops, and the MOS is that the latter are full-featured as their develop enables them to take advantage of elements in the devices. The next difference is the MOSs have a mechanism in place that asks the installed apps to give back system resources required for its function and kill the resources that do not have corporate during its functioning. On the other hand, the traditional operating system for the desktops and laptops will generally permit the apps, for example, to continue utilizing the memory unit until the system is too sluggish to use among many others that have been covered.

Division of Work

We have divided the work equally right from the start. Both of us have gone through a lot of materials and references which we have mentioned in the reference section. We have discussed the learnings in multiple meetings held in zoom and started formatting the paper. Suchitra Reddy Chinnamail – Introduction(MOS), Various MOS Types:Analysis, Similarities between MOS and Traditional Systems for Desktops and Laptops.

Varun Lingabathini – Various MOS Types:Analysis, Differences between MOS and Traditional Systems Developed for Desktop and Laptops, Conclusion.

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