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| **System** **Software** | **Application** **Software** |
| Controls Hardware and Execution | Solves user specific problems |
| Without system software computer cannot run | Without application software computer can run |
| Windows,linux,unix,MacOs | Ms office, Ms word, Ms excel |

**Task 1 System vs Application Software**

**Task 2**

Types of Operating System:

**1. Batch Operating System –**   
This operating system does not interact with the computer directly. There is an operator which takes similar jobs having the same requirement and group them into batches. It is the responsibility of the operator to sort jobs with similar needs.

**2. Time-Sharing Operating Systems –**   
*Each task is given some time* to execute so that all the tasks work smoothly. Each user gets the time of CPU as they use a single system. These systems are also known as *Multitasking Systems*. The task can be from a single user or different users also. The time that each task gets to execute is called quantum. After this time interval is over OS switches over to the next task.

**3. Distributed Operating System –**   
These types of the operating system is a recent advancement in the world of computer technology and are being widely accepted all over the world and, that too, with a great pace. Various autonomous interconnected computers communicate with each other using a shared communication network.

**4. Network Operating System –**   
These systems run on a server and provide the capability to manage data, users, groups, security, applications, and other networking functions. These types of operating systems allow shared access of files, printers, security, applications, and other networking functions over a small private network.

**Task 3:**

|  |  |
| --- | --- |
| Desktop Operating System | Server Operating System |
| It is complex operating system. | It is simple operating system. |
| It runs on the server. | It runs on the client devices like laptop, computer etc. |
| It is an operating system that is designed to be used on server. | It is an operating system that operates within desktop. |
| It provides more security. | It provides less security. |
| It has greater processing power. | It has less processing power. |
| It is more stable. | It is less stable. |
| It is highly efficient. | It is less efficient. |
| Examples: Red Hat, Linux. | Examples: Windows, Android. |

**Task 04: Explain basic differences between the different versions of Android Operating System.**

**Answer:**

**Android 1.0 (September 23, 2008):**

Android 1.0 was the basic version of the android but it included basic applications like **Gmail,Maps,Calender, youtube** and all are integrated into operating system.

**Android Eclair (2.0)(December 3, 2009):**

Éclair was very revoluntionary in android history. Its main element was the addition of the **voice-guided turn by turn navigation** and **real-time traffic info** – something previously unheard. Some major updates were **live wallpaper, speech to text function, pinch to zoom**.

**Android Honeycomb(3.0) (Feb,22,2011):**

This was not so good time for android as Android 3.0 was first o***nly released for the tablets***. But it has reimagined the **UI for Android**. It had Space like holographic. Idea of tablet ***did not lasted long*** but it had left some basics for the android we know today. It had one other upgrade too which was the **on screen buttons** for android navigation.

**Android Ice Cream Sandwich (4.0) (18 oct,2011)**

Android 4.0 reunited tablets and phones with a single, ***unified UI version***.

It kept the use of Android 3.0s ***holographic system-wide highlight***.And it carried over core system elements like **on-screen buttons** and a card like appearance for **app-switching**. It also made **swiping common**.

**Android Lollipop Lemon Meringue Pie 5.0 (4,2014)**

This version of the Android introduced the **Material Design Standard**, the card based concept become core **UI pattern** – one that would guide appearance of everything, which showed the **Recent apps** list, which took on an unabashedly card-based appearance. It also introduced voice control through ***ok google*** command, support for multiple users on phones and a priority mode for better **notification management**.

**Android Marshmallow Macadamia Nut Cookie 6.0 (2,Oct,2015)**

Its most attention-grabing feauture was **screen-search** call **On-tap**. It also introduced **app permissions** for security reasons, support for **fingerprint readers** and support for **usb-C**.

**Android Nougat New York Cheesecake7.0 (22 Aug,2016)**

Its new features were **screen splitting mode**, new system for organizing notifications, and a **Data Saver feature**. Nougat added some smaller but still significant features, too, like and **alt-tab-like** shortcut for snapping between apps. Also **google assistant** was launced.

**Android Oreo Oatmeal Cookie 8.0 (21 Aug,2017)**

It added **picture-to-picture mode**,  **a notification snoozing option**, and **notification channels** that offer fine control over how apps can **alert** you.

**Android 9 Pie Pistachio Ice Cream (6 Aug,2018)**

Its most transformative change was its **hybrid gestures** and **button navigation system**, and this traded Android’s traditional **Back,Home** and **overview keys** for large and **multifunctional home button** and **a small back button** that appeared alongside it. Its other note worthy features are **reply system** for messaging notifications, **dashboard** of digital **well-being controls** and more intelligent systems for **power** and **screen brightness management**, and smart way to handle **wifi hotspot**, welcome twist to **Battery Saver Mode**, and **other privacy enhancement**

**Android 10 Quince Tart(3 sep,2019)**

It introduced totally reimagined interface for **android gestures**, this time doing away with the **tappable Back button altogether** and relying on a **completely swipe-driven approach** to system navigation. Other notable features include **updated permission system** with more control **over location** and **a dark theme**, **focus mode**, and **live captioning system** for any media activity.

**Android 11 Red Velvet Cake(8 sep,2020)**

Its most changes revolve around privacy, this update extended **permissions system** introduced in Android 10, added grants **apps location**,**camera**, **microphone permissions**, **makes difficult for apps** to request ability to detect **location in background** , on **interface level**, it included **refined approach** to conversation-related **notifications** along with a new streamlined **media player**, a new Notification History section, a native screen-recording feature, and a system-level menu of connected-device controls.

**Android 12 Snow Cone (7 mar,2022)**

The most important features are updated Material You., it brings renewed focus to Android’s widget system along with a host of important foundational enhancements in the areas of performance, security, and privacy, the update provides more powerful and accessible controls over how different apps are using your data and how much information you allow apps to access, for instance, and it includes a new isolated section of the operating system that allows A.I. features to operate entirely on a device, without any potential for network access or data exposure.

**Android 13 Tiramisu (15 August,2022)**

It is the most ambitious updates in Android history. It introduced new interface design for both tablets and foldable phones, with renewd focus of creating and exceptional large screen experience in this operating system itself and within apps, it introduced more capable split-screen mode for multitasking. It can function as a Smart Display and then allow to detch its screen use it as tablet, it is more specifically designed for google pixel products.

**Source**:

https://www.computerworld.com/article/3235946/android-versions-a-living-history-from-1-0-to-today.html?page=2













