Android Smart Phones & Tablets

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R. Hautanen - Senior Learners

Instructor Bio

<u>Rich Hautanen</u>
-BS Electrical Engineering, MS Computer Science
-8 yrs defense industry developing hardware & software to test satellite communications equipment.
-20 yrs computer network industry advising hardware design & developing software for testing computer network equipment.
-Developed and taught training classes for many projects

Rough Course Outline

- Basic Info; terms, history, sales, features
- Adding/removing apps
- FAQ - transferring photos, malware/virus security
- Voice commands, Voice to text ("voice typing")
- Maps/directions/navigation
- Cloud/backups/sharing
- Preparing to sell/donate/gift/trash your device
- Other security factors

Android Definition, Manufacturers

- Android is an operating system (OS) produced by Google. An OS is the fundamental software that allows other programs (aka apps) to run, i.e. the interface between apps & physical hardware (computer chips).
- Of the top worldwide smartphone sellers all but Apple use an Android OS. Apple uses their own OS (called iOS).

How many smartphones were sold last year?

Any guesses?

Global **Smartphone** market	SHIPMENT (MILLION)		SHARE (%)	
	CY 2018	CY 2019	CY 2018	CY 2019
SAMSUNG	291.8	296.5	19%	20%
HUAWEI	205.3	238.5	14%	16%
APPLE	206.3	196.2	14%	13%
XIAOMI	119	124.5	8%	8%
OPPO	119	119.8	8%	8%
VIVO	102	113.7	7%	8%
LENOVO GROUP	38.8	39.6	3%	3%
LG	40.8	29.2	3%	2%
REALME	4.7	25.7	0%	2%
TECNO	18.0	21.5	1%	1%
OTHERS	359.6	280.8	24%	19%
TOTAL	1505.3	1486.1	100%	100%

Counterpoint
Technology Market Research

US Market Share by quarter (smartphone)

	'18 Q3	'18 Q4	'19 Q1	'19 Q2	'19 Q3
Apple	39%	47%	39%	41%	42%
Samsung	25	22	28	21	25
LG	17	12	11	13	12
Lenovo (Motorola)	8	6	8	8	8
Others	11	13	14	17	13

Market Share 2018 (through November) https://deviceatlas.com/blog/android-v-ios-market-share

Operating System
- Android
- iOS

Created with mapchart.net ©
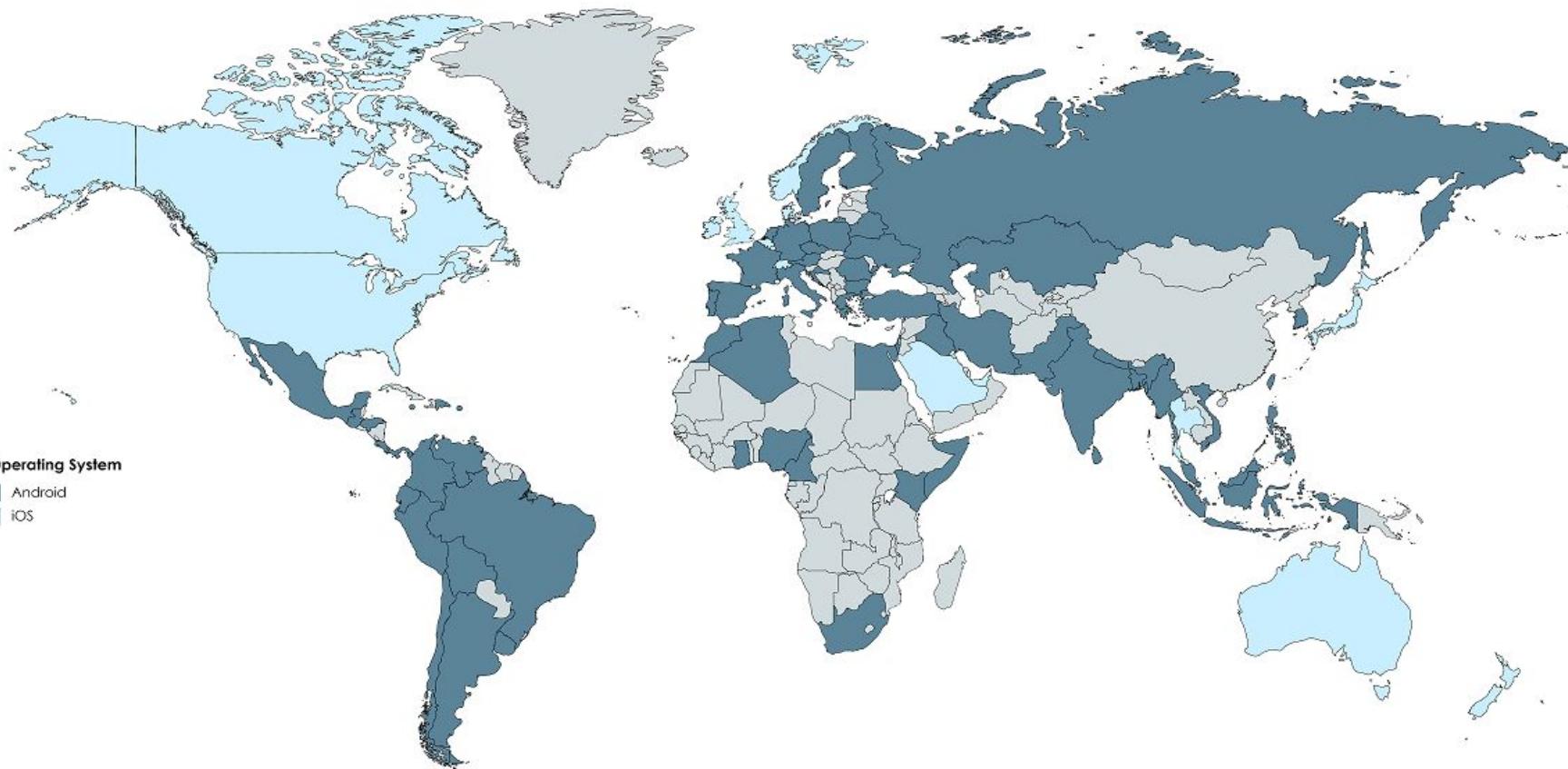
Android Sales, Models

- Android phones outsell Apple, with >85% market share. This fluctuates quarter by quarter, but have been slowly gaining on Apple iOS long term
- Many different models of Android devices, all with potentially different hardware and software (different versions of the operating system). They are all similar, but may have significant differences in features available, screen/button layout etc.

Tablet Market - global

Top Five Tablet Companies, Worldwide Shipments, Market Share, and Year-Over-Year Growth, Second Quarter 2019

(Preliminary results, combined company view for the current quarter only, shipments in millions)

Vendor	2Q19 Shipments	2Q19 Market Share	2Q18 Shipments	2Q18 Market Share	Year-Over-Year Growth
1. Apple	12.3	38.1%	11.6	34.1%	6.1%
2. Samsung	4.9	15.2%	5.0	14.9%	-3.1%
3. Huawei	3.3	10.3%	3.5	10.5%	-6.5%
4. Amazon.com	2.4	7.4%	1.6	4.8%	46.3%
5. Lenovo	1.9	5.8%	2.0	5.9%	-6.9%
Others	7.5	23.3%	10.1	29.9%	-25.9%
Total	**32.2**	**100.0%**	**33.9**	**100.0%**	**-5.0%**

Source: IDC Worldwide Quarterly PCD Tracker, August 1, 2019

OS version & how to find your version

Typical way to find your version of Android OS (will vary by device):

1. Open your device's Settings (Tap the Gear/Sprocket icon).
2. Tap 'About Phone' or 'About Tablet' or 'About Device'.
3. Tap 'Android Version' to display your version information (version number).

Android versions - older devices may not be able to run newer versions
https://en.wikipedia.org/wiki/Android_version_history

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

Smartphone Users, US & Worldwide

- In **2020**, # of **smartphone users in the world** is 3.5 Billion, which translates to 45% of the world's population owning a **smartphone**. In total, the number of people that own a smartphone or feature phone is 4.78 Billion, making up roughly 62% of the world's population
- In 2017 the #of worldwide smartphone users was just under 2 billion.
- Smartphone penetration by country as of Sept 2018
  - https://en.wikipedia.org/wiki/List_of_countries_by_smartphone_penetration
- Interesting prediction from 2015
  - https://techcrunch.com/2015/06/02/6-1b-smartphone-users-globally-by-2020-overtaking-basic-fixed-phone-subscriptions/

Sample Physical Layout

Notification & Status Bar

Search Box

Widget "Analog clock"

Right & left swipe to other screens

Folder with App icons

App icon (shortcut)

Apps Dock

On-screen Buttons (Return, Home, Recent apps)
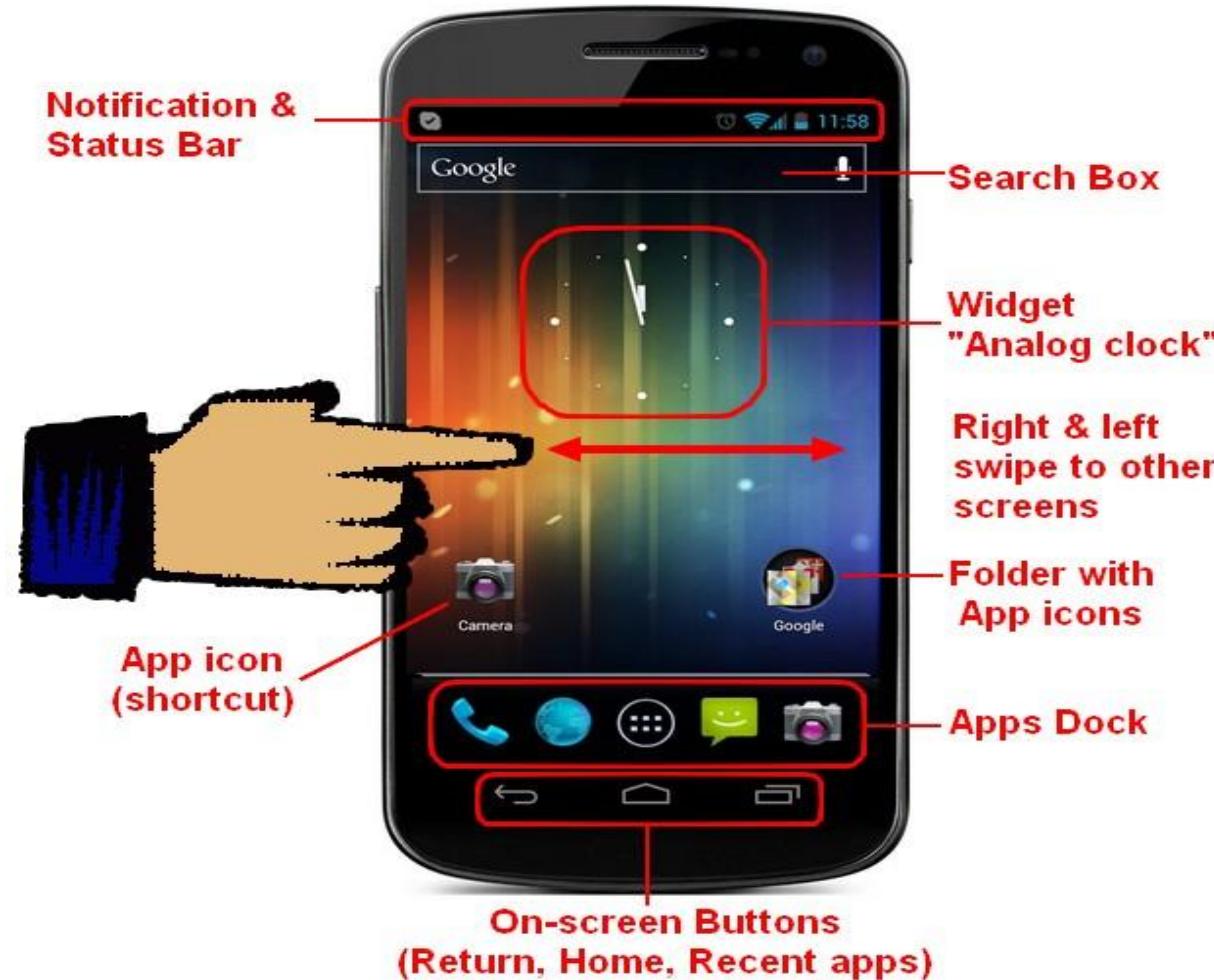
Apps vs Widgets vs Programs

- In general <u>Apps</u> are programs that you need to start or "open" for them to be running (aka active). <u>Widgets</u> are programs that are always running on your home screen (and potentially always using internet data). Widgets start automatically at power-on.
- Widgets are really specialized apps. Common examples: weather, clock, stock ticker …
- The two terms are now used interchangeably by many people

Videos on Android Basics

- Tutorial on Android OS. This video is dated (published early 2014), but still a good overview of many basic features.
  - https://www.youtube.com/watch?v=ABa3OvY-jLo
- Another decent video (a bit older even)
  - https://www.youtube.com/watch?v=lCircPalo6o
- Some devices or OS versions have focused tutorials about them. Sample searches;
  - "Tutorial Samsung Galaxy S6"
  - "Android Tutorial KitKat"

Getting New Apps

- Generic steps to get an app from Google's Play Store
  - Tap the "apps" icon (six or nine little dots, often on the bottom right of your home screen by default). Shows all installed apps.
  - Find the "Play Store" icon and tap on it.
- The first time you tap here, you may be prompted to sign in with your Google credentials and payment information. It will also prompt you to allow backup of apps to your Google account, and require you to accept the terms and conditions.

Getting New Apps part 2

- Tap magnifying glass in the top-right, type the name of the app you're looking for, and tap magnifying glass on the keyboard to search. Some suggestions will pop up below the search box as you type, which you can tap to reach directly. The search term can also be more general to find any apps that focus on a topic or keyword.

- Results will be presented for apps, movies, and books. To the right of the Apps subheading, tap the "__ more" button to see the full listing of results.   Continued....

Getting New Apps part 3

- Tapping the three dots on the right side of each entry will provide options to install right away or add the app to a wishlist for future reference.
- Tapping the box itself will provide more details for that app, including screenshots, video, a description, and reviews from users like you.

Deleting (uninstalling) or Disabling Apps

General procedure for uninstalling (or disabling) apps on most Androids

- Tap (launch) the **Settings** app; the icon looks like a gear or sprocket

- Tap **Apps & Notifications**, then tap **See all apps**
    - Older versions, tap **Application Manager** or something similar

- Scroll down the list until you find the app you want to remove and tap it

- Tap **Uninstall** *

* If the app can't be removed, then tap **Disable** instead. Some apps can't be removed because doing so might interfere with some other apps or part of the OS.

Deleting or removing apps (easy way)

Some devices have a very easy way, my LG for example which is running Android version 5.0.2 (aka "Lollipop")

- Long tap an icon (tap & hold a few seconds)
- The words Remove & Uninstall appear near the top of the home screen, drag the icon to one of those. **Remove** removes the icon but leaves the app installed. **Uninstall** deletes the app from your device

Deleting Apps - more detailed instructions

Some phone models may require slightly different procedures to remove apps. Below are links to a variety of helpful articles on removing apps.

https://www.digitaltrends.com/mobile/how-to-delete-apps-in-android/
https://www.androidauthority.com/how-to-delete-apps-android-789537/
https://www.androidpit.com/how-to-uninstall-preinstalled-android-apps
https://www.digitalcitizen.life/how-uninstall-apps-android-device
https://support.google.com/googleplay/answer/2521768?hl=en

FAQ - Transferring Photos

- Transferring/copying photos
  - Simple "manual" method (demo in class)
  - Transferring/copying photos - Article at DigitalTrends.com
    - http://www.digitaltrends.com/photography/best-ways-get-photos-android/

- Good youtube video; How to use Google Photos
  - https://www.youtube.com/watch?v=JI-5N2OJJaA

FAQ - Security

- Security Apps - if you web surf and/or download a lot. Article/review of security apps
- https://www.techradar.com/best/best-android-antivirus-app

Voice Commands; Digital Assistant, Virtual Assistant, AI

- Google Assistant – Google Allo – Google Home
  - "Assistant" responds to voice commands, similar to Apple's Siri, Windows 10's Cortana, Amazon's Alexa etc.
  - Built into new devices like Google's Pixel, and Google Home.
  - Smaller version is in Google's Allo messaging app which is available on many (most?) Android devices according to the advertising.
  - Article https://www.techadvisor.co.uk/feature/google-android/use-google-assistant-3574727/
  - Article https://www.lifewire.com/what-is-google-assistant-4120911
  - Video on how to set up https://www.youtube.com/watch?v=R1w_yWJ8KIE

Older links for virtual assistants

May be more applicable for people with older devices

- **Video – Allo app** https://www.youtube.com/watch?v=yL8vdofNwi8
- **Video –** https://www.youtube.com/watch?v=6xCvAFQ4Xag

Maps - Directions- Navigation

- These apps work nicely with "voice typing". Each app seems to different strengths and weaknesses.
- The most highly rated/recommended ones seem to be;
  - Google Maps, Waze, Maps.me
  - Google maps demo https://www.youtube.com/watch?v=7EYuucE_c4U
  - Google maps tips https://www.youtube.com/watch?v=DHyEnPSihdk
  - Waze https://www.youtube.com/watch?v=Uu-uTo_ma9c
  - Maps With Me (Maps.me) - How to. Review.
    - https://www.youtube.com/watch?v=Y_MNX7OO8zw
    - https://www.youtube.com/watch?v=FMEKq5FCm78
    - This one you download maps before a trip and use them as you travel without requiring you to be "online" at your destination.

Voice to Text, aka "Voice Typing"

- Available on many apps like notes, email, text messaging, "word" documents. Places where you can type in text, when the virtual keyboard is visible, there will be an icon that looks like a little microphone. Tap the microphone icon to activate voice typing. A lot of samples/demonstrations you will find on the internet show it being used on a computer, but apps on phones and tablets work much the same.

Voice Typing Demos

- Demos using Google Docs– Quick sample, country singer
  - https://www.youtube.com/watch?v=8e8KXIqD7cc
  - https://www.youtube.com/watch?v=zQueGjqeDBO

Email

- Basic how to set up accounts video
  - https://www.youtube.com/watch?v=DAjIDgfZu8I
- There are advanced apps for "aggregating" multiple accounts and/or giving a cleaner look. My general policy is go with something **free**, unless there is a feature I absolutely can not live without
  - Article for 2019
    - https://www.androidauthority.com/best-android-email-apps-579368/

Cloud Intro
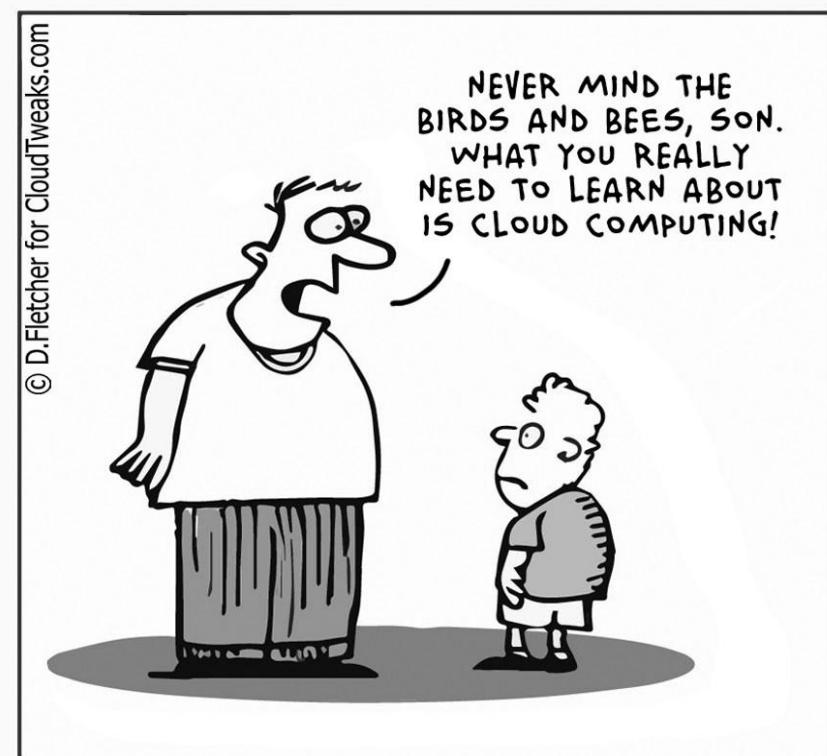
The Cloud

So What IS Cloud Computing?

The Internet and cloud computing is to computing what the electrical grid and electric company is to plugging in your coffee maker:

A more convenient and less expensive way to access the information, "computing power" and applications you need.

Things may be getting even "cloudier"

A Wall Street Journal article describes a future computing model where more is done in the cloud and less on individual devices. Our devices (PC, laptop, phone, tablet etc) could contain only I/O*.

https://www.wsj.com/articles/this-powerful-pc-runs-on-any-deviceand-never-needs-an-upgrade-1519751084

I/O means "Input/Output"; video (screen, heads up display), audio (speakers, microphone), keyboard, mouse etc. Plus a super-duper internet connection, which would be a must have for this type of thing to work.

Cloud - Storage - Backups - Sharing

- Many (most?) of these apps/services come with tiered pricing, including free:). The free version is adequate for many people.
- Some free versions give you more features if you refer friends and they register for the service too.
- Your device may come with a cloud service
- There are **many** options

Cloud Services - Storage - Backups - Sharing

- <u>Google Drive</u> comes with newer Android devices (probably). If not it can be downloaded on many older devices, or possibly accessed via browser.
- <u>Dropbox</u> is one that I have also used
- <u>Onedrive</u> is Microsoft (Windows 10)
- <u>iCloud</u> is Apple (Mac, iPad, iPhone)
- Depending on device you may be required to install an app to use a given cloud service, or you may be able to access it from a browser without installing an app.

Cloud - Storage - Backups - Sharing 3

Videos – powtoon, cloudwards (a little old, but still relevant)

https://www.youtube.com/watch?v=ssnMm7to2xA

Top 10 cloud apps – typical kind of list for these things, there are numerous ratings like this on the internet.

http://www.androidauthority.com/best-cloud-storage-apps-for-android-657338/

Another interesting rating site (up-to-date ratings)

https://www.cloudwards.net/comparison/
https://www.cloudwards.net/best-online-storage-for-android/

Other Links/References

- These are "Basic" or "Getting Started" websites, but they often will get you on the right track to finding the info you want with links to further info.
- Lifewire Android page (not as good as it used to be but still has some useful stuff)
  - https://www.lifewire.com/learn-how-android-4102757
- Goodwill Community Foundation - great place to start
  - http://www.gcflearnfree.org/androidbasics/

Cleaning a device before selling/donating/gifting or trashing it

Steps may vary depending on your exact model and software version

1. Back up (i.e. make a copy of)
   - Google apps data; contacts, calendar, photos, videos, text messages, call log
2. Encrypt data
3. Disable Factory Reset Protection; remove Google accounts that have been attached to the device
4. Do a "Factory Reset"

Links to guides for "cleaning" device

These are all decent guides and roughly equivalent. See the how-to geek article if you have a Google Nexus or Pixel and enrolled your device in their "beta" program.

Techlicious article

How To Geek

CNET

Androidpit

Raw links to guides for "cleaning" device

https://www.techlicious.com/tip/what-you-need-to-do-before-selling-android-phone-tablet/

https://www.howtogeek.com/304652/five-things-you-should-do-before-selling-your-android-phone/

https://www.cnet.com/how-to/how-to-wipe-your-phone-or-tablet-before-selling/

https://www.androidpit.com/how-to-sell-phone-second-hand

How-To Geek article has extra step for certain devices;

- ### Unenroll from the Android Beta (Nexus & Pixel Devices Only)

Other Security Features

Below are some links to good articles on using the overall security features on an Android phone. Amongst the most basic are;

- Have a secure lock screen (e.g. passcode, fingerprint, or special swipe pattern required to unlock access)
- Find My Phone (you may have to download the app)

https://www.pcworld.com/article/3332211/secure-android-phone.html
https://www.howtogeek.com/366653/how-to-make-android-as-secure-as-possible/
https://www.computerworld.com/article/3268079/android-security-settings.html