

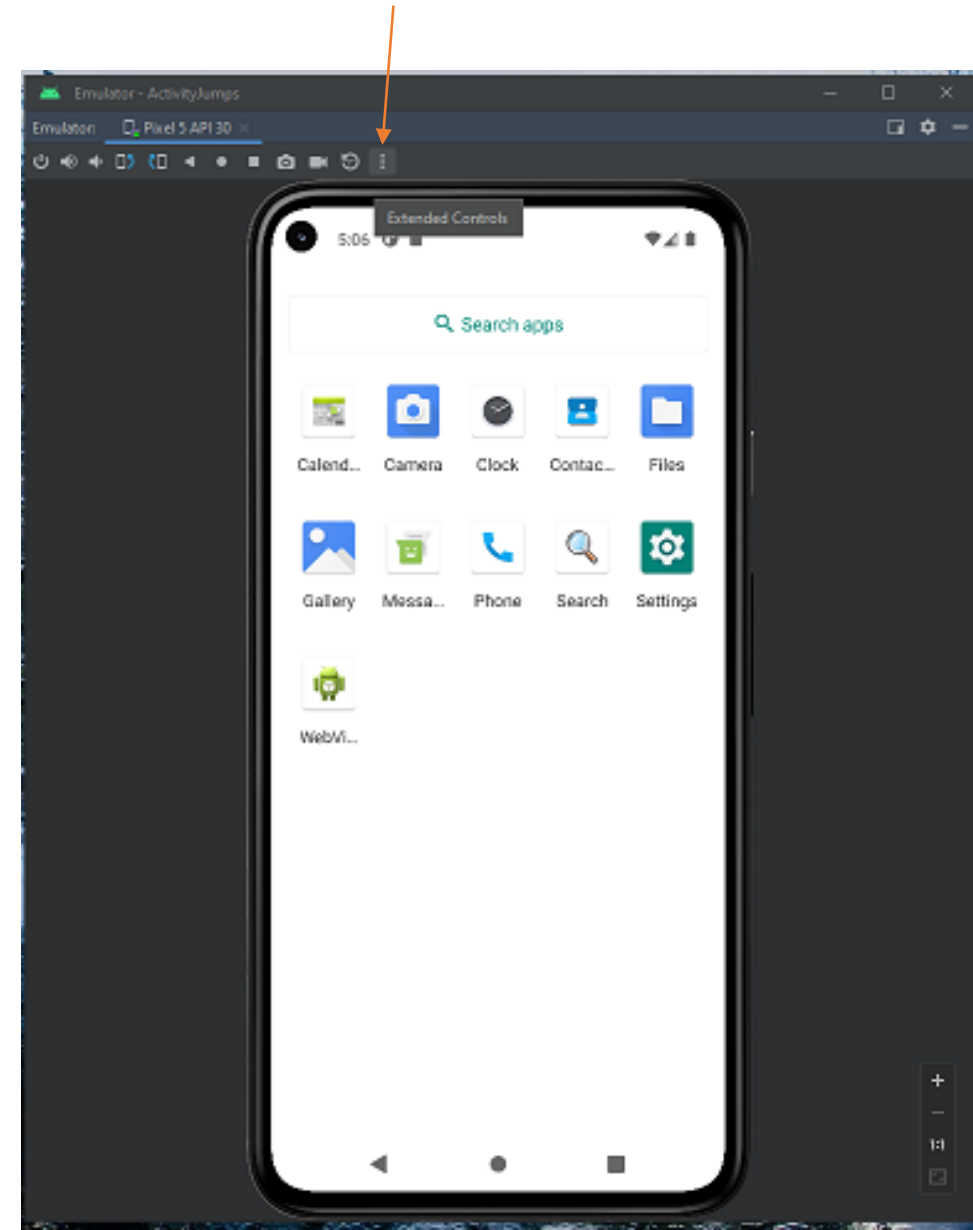
# Android Programming 101 --- Tools (Part2)

Dr. Charles Yu

- How to use emulated Android
  - Extended control
- Device File Explorer
- Screen mirroring
  - Tenorshare Phone Mirror

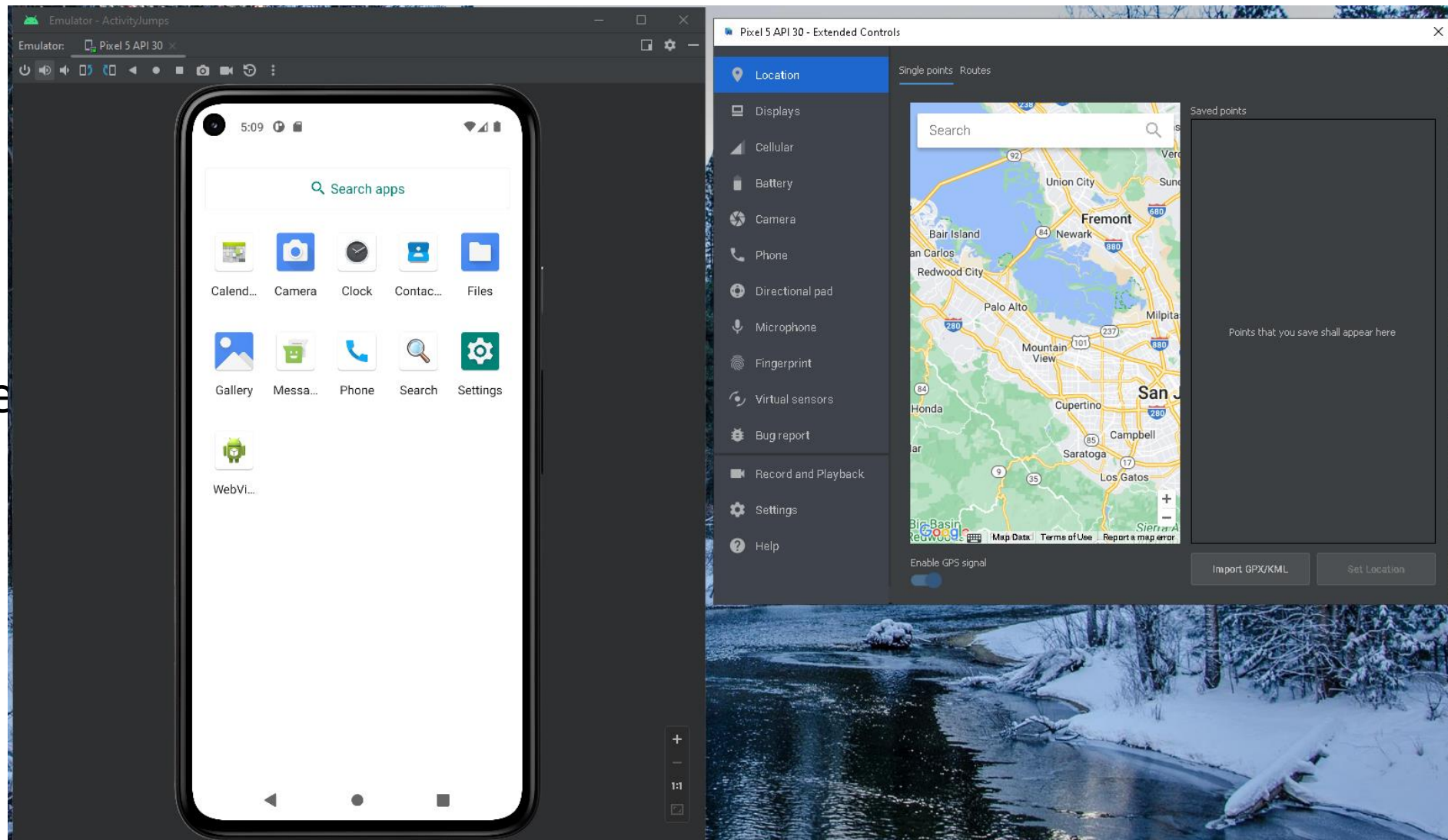
# Extended control

- There is an extended control
- Once you click that...



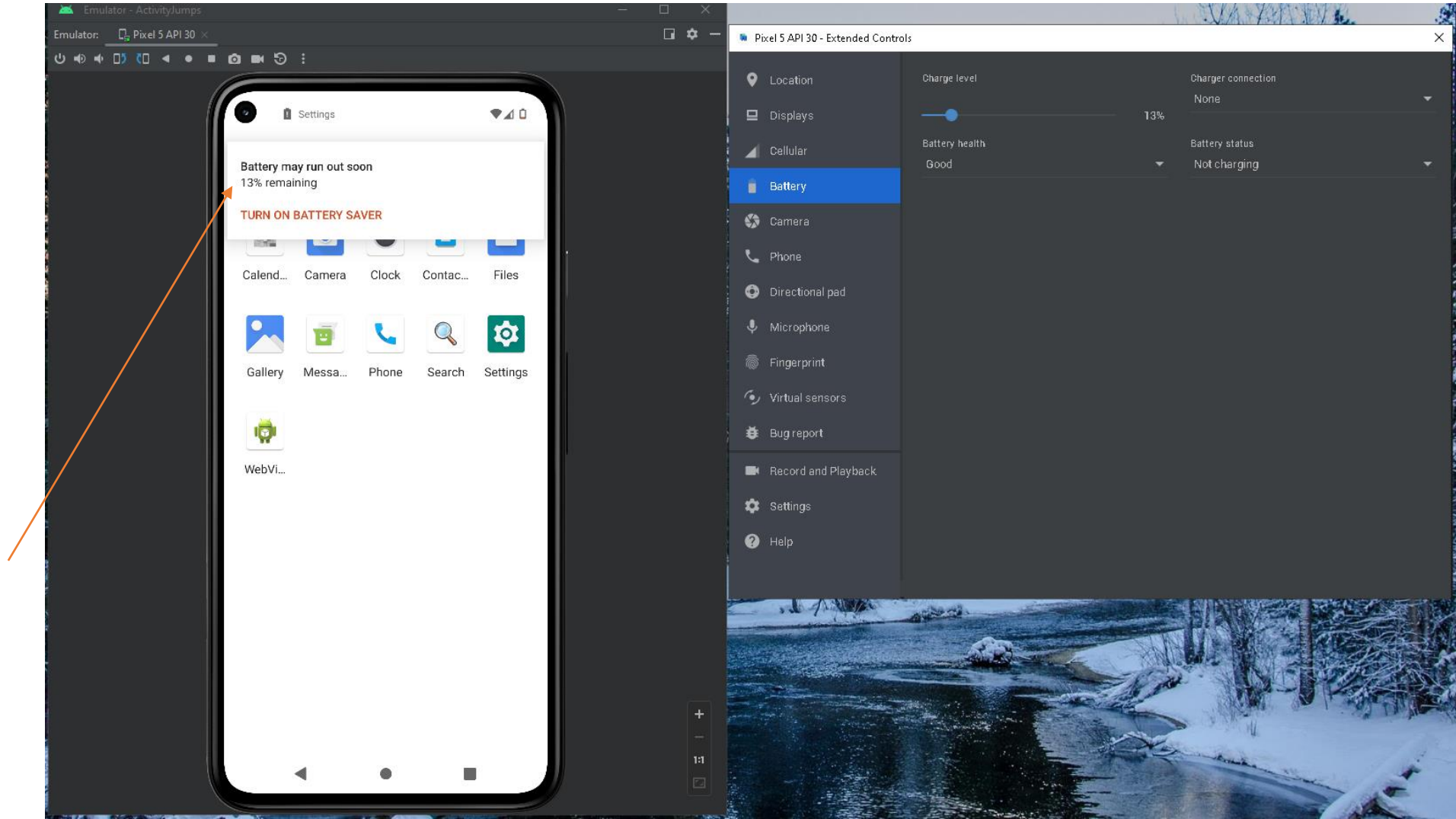
# Extended control

- There are so many emulated items in the list
- It can simulate some hardware features, but is NOT all.



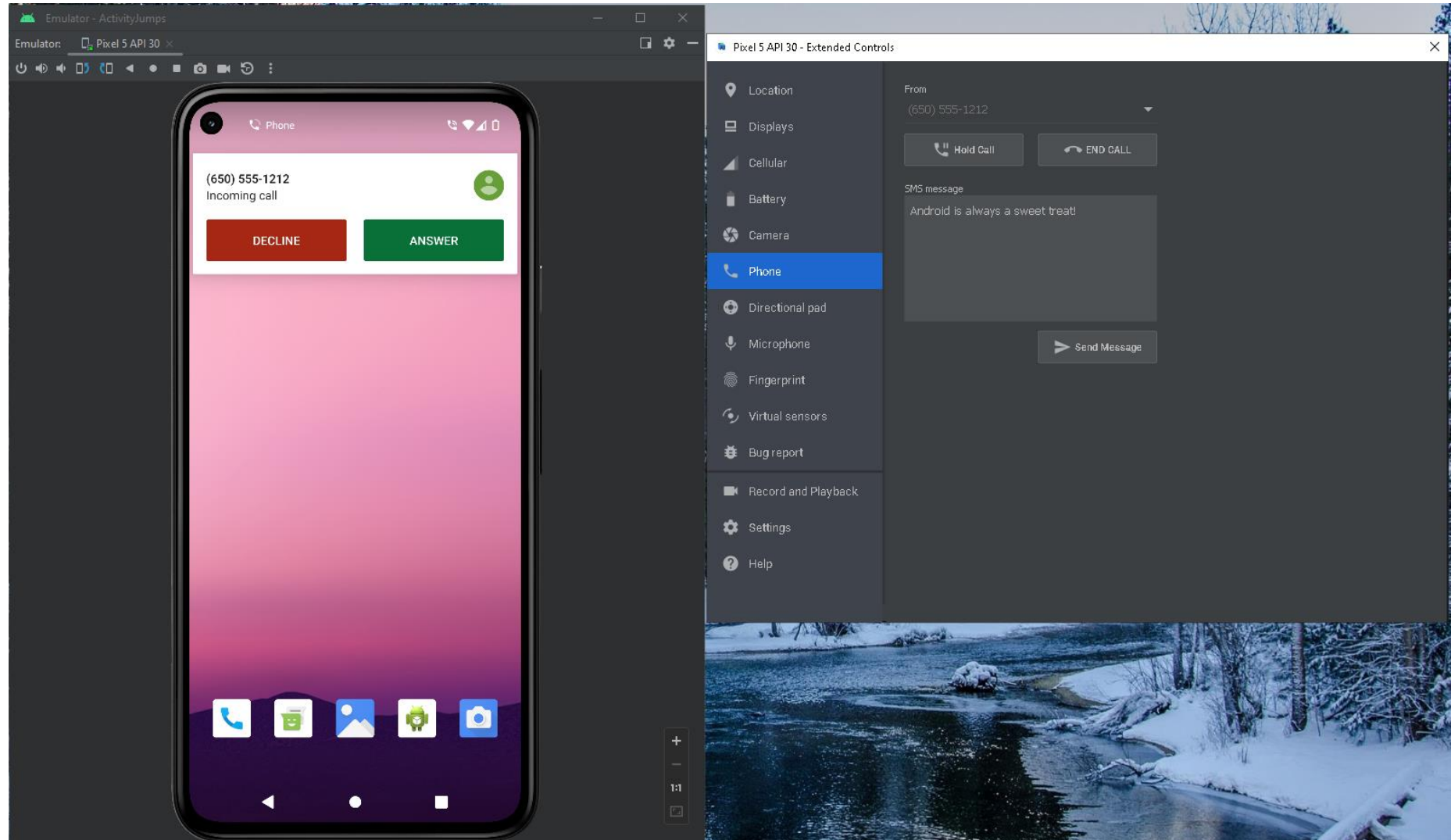
# Extended control

- For example, it can be used to simulate the current **battery Level**
- I drag the bar from 100% to 13%. Then, this low battery notification shows up



# Extended control

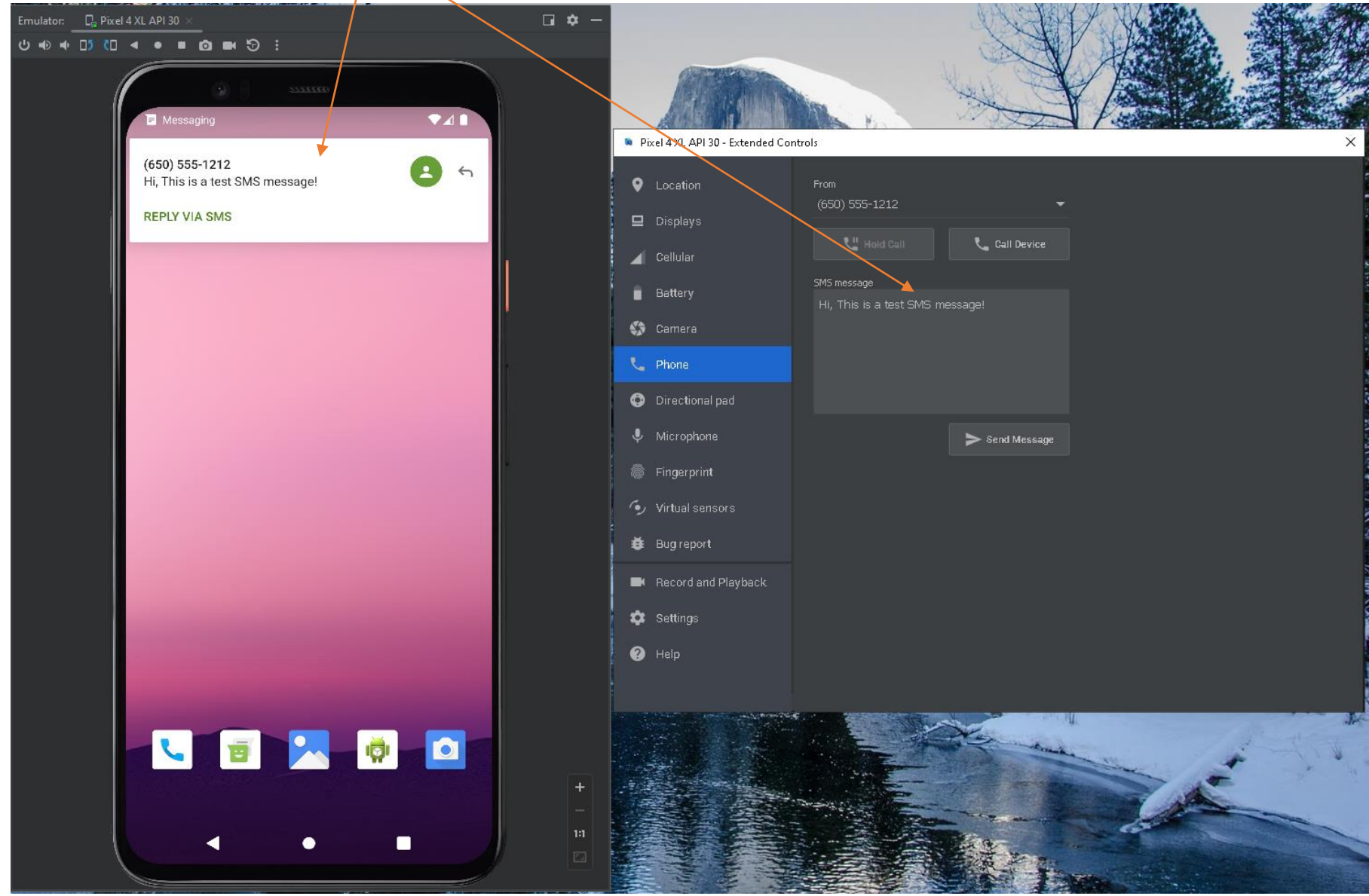
- You can also simulate the phone calls to this emulator
- You can input **some other numbers** to call this device





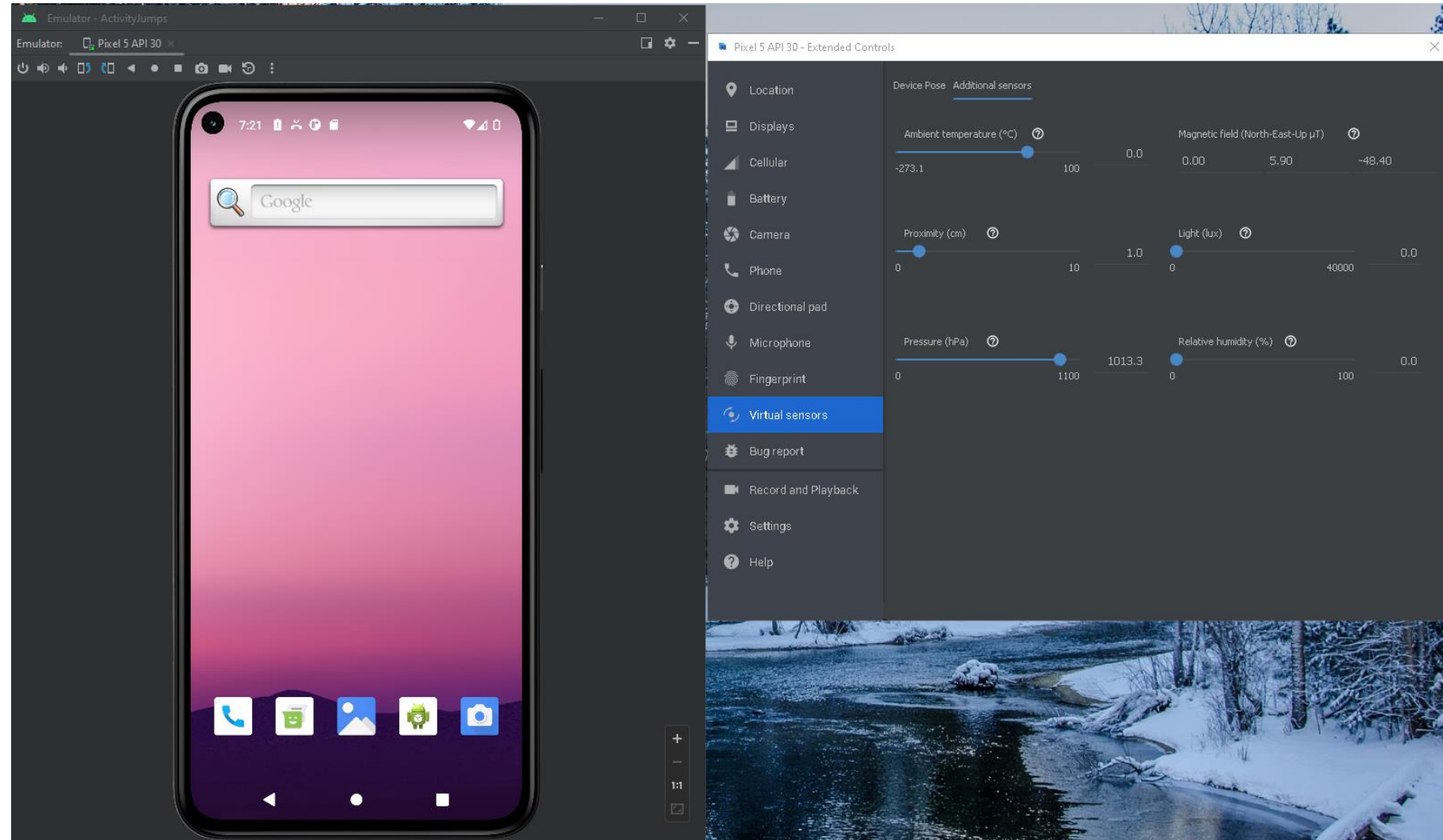
# Extended control

- Even the simulation of SMS is supported.
- But the MMS? You might need to have a physical phone.



# Extended control

- It supports virtual sensors.
- For example, you can do something programmatically to handle the sensor events



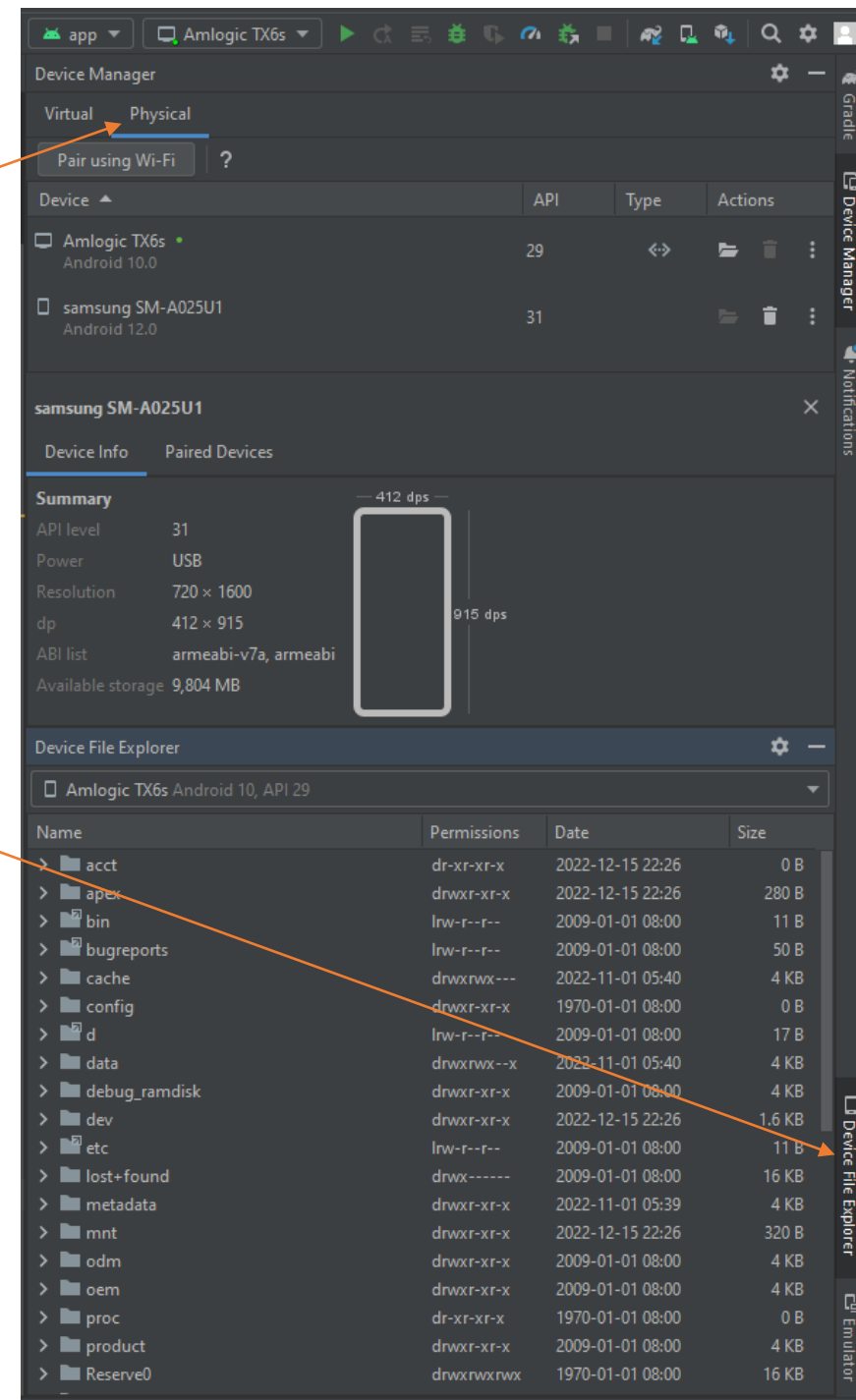


# Extended control

- They only support Ambient, Magnetic, Proximity, Light, Pressure, Humidity sensors.
- Motion sensors are not supported.
  - Accelerometer, Gyroscope,...

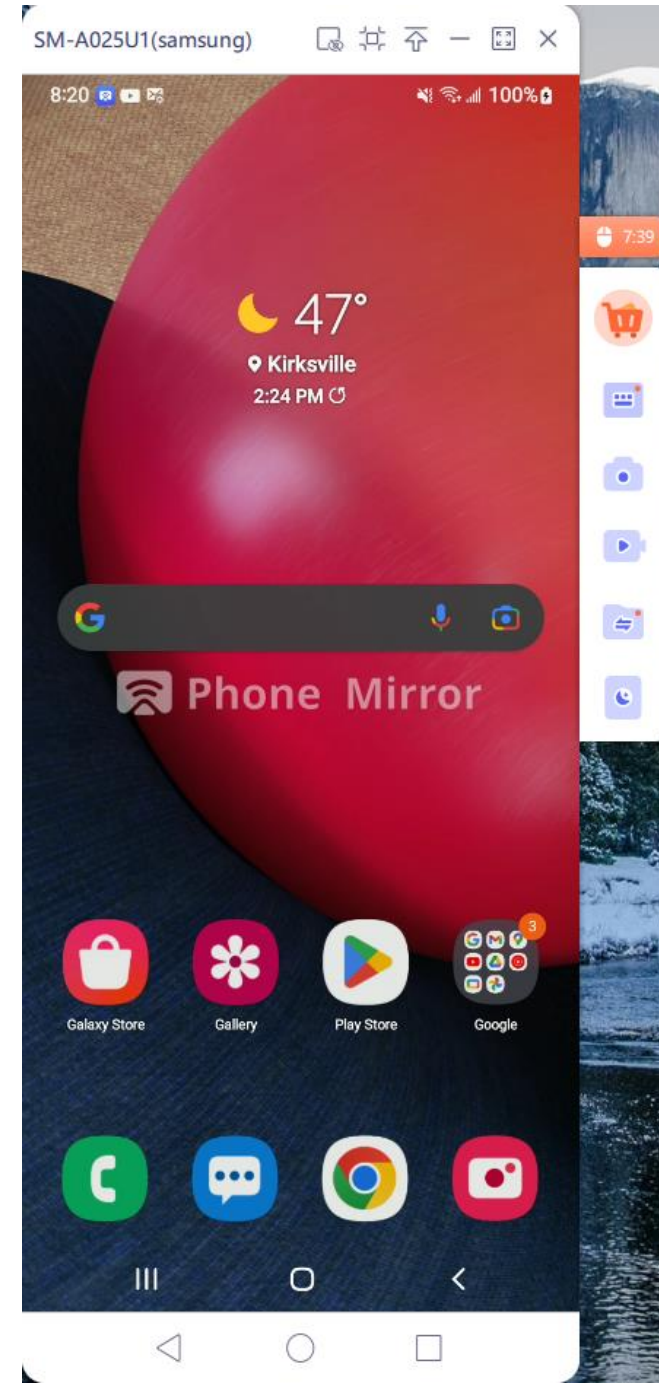
# Device File Explorer

- In the Android Studio, if I click the “Device Manager” and clicked the “**Physical**”, it shows I had 2 physical devices
- Then, I click the “Device File Explorer”, I can browse the files in this device.
- Similarly, you can browse the file system in the Virtual devices
- A directory, /sdcard/Download/ is regularly used by us to write out our files



# Screen mirroring

- Sometimes, we want to have our physical phone to project to the PC, Laptop or Mac
  - It can be accomplished by either an USB cable (the most popular solution)
  - Wi-Fi
  - ,or Bluetooth



# Screen mirroring

- Tenorshare Phone Mirror --- For Android phone mirroring to laptops, desktop (You need to install 2 parts)

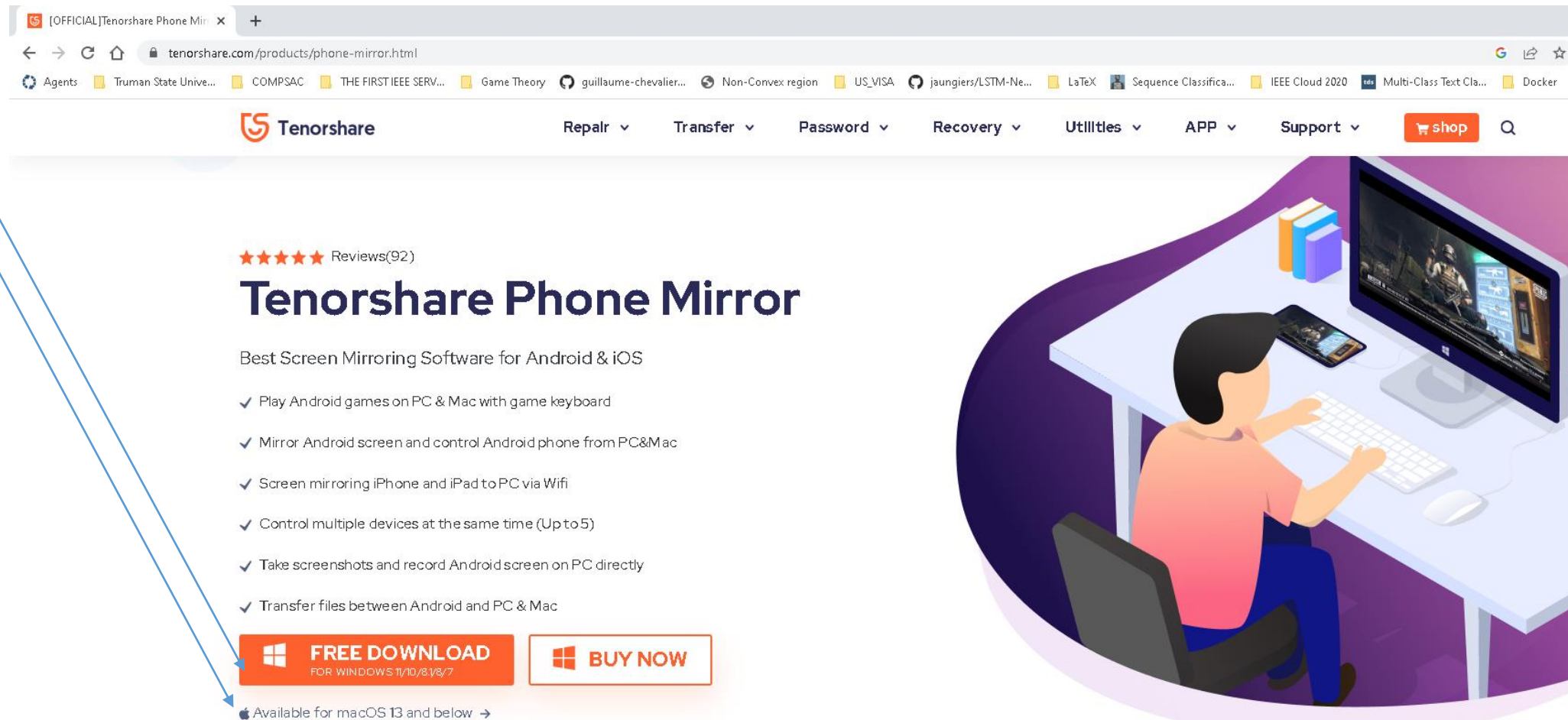
- PC

Windows

or MacOS

- This is for computers

(The 1<sup>st</sup> part)




The screenshot shows the Tenorshare Phone Mirror product page. At the top, the browser address bar shows the URL 'tenorshare.com/products/phone-mirror.html'. The page features the Tenorshare logo and a navigation menu with options like Repair, Transfer, Password, Recovery, Utilities, APP, and Support. A 'shop' button is also visible. The main content area highlights the product with a 5-star rating and 92 reviews. Below this, the product name 'Tenorshare Phone Mirror' is displayed, followed by the tagline 'Best Screen Mirroring Software for Android & iOS'. A list of features includes playing Android games on PC/Mac, mirroring Android screens, screen mirroring for iPhones/iPads, controlling multiple devices, taking screenshots, and file transfer. At the bottom, there are two prominent buttons: 'FREE DOWNLOAD FOR WINDOWS 11/10/8/V8/7' and 'BUY NOW'. A note at the very bottom states 'Available for macOS 13 and below'.


★★★★★ Reviews(92)


## Tenorshare Phone Mirror

Best Screen Mirroring Software for Android & iOS

- ✓ Play Android games on PC & Mac with game keyboard
- ✓ Mirror Android screen and control Android phone from PC&Mac
- ✓ Screen mirroring iPhone and iPad to PC via Wifi
- ✓ Control multiple devices at the same time (Up to 5)
- ✓ Take screenshots and record Android screen on PC directly
- ✓ Transfer files between Android and PC & Mac

 **FREE DOWNLOAD**  
FOR WINDOWS 11/10/8/V8/7

 **BUY NOW**

 Available for macOS 13 and below →

# Screen mirroring

- I used to use “Mirroid”, but
  - Their official web is down
  - Their app is not working after the update of Android OS to v12
- This is the 2<sup>nd</sup> part of Tenorshare
- You need to install this App from Google Play store.
- In this way, you can use screen mirroring on Android to PC or Mac

