Reverse Engineering Lab

The Complexity of a TI-84 Calculator

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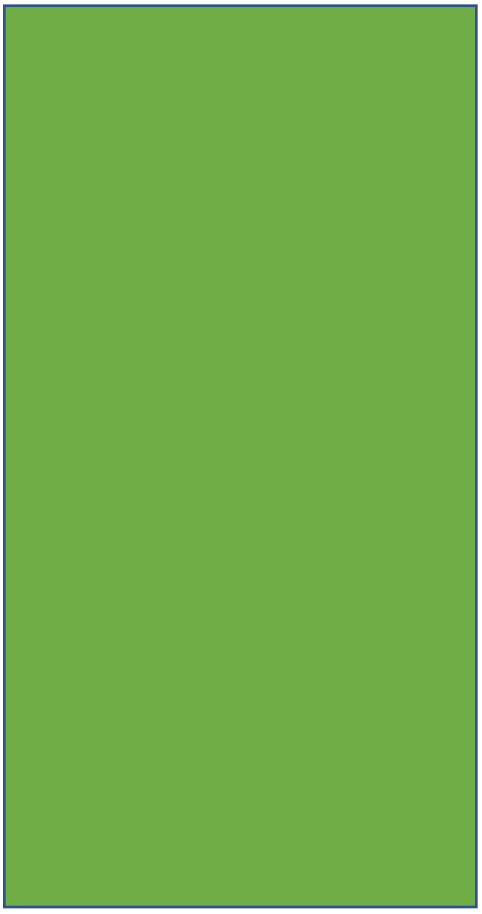
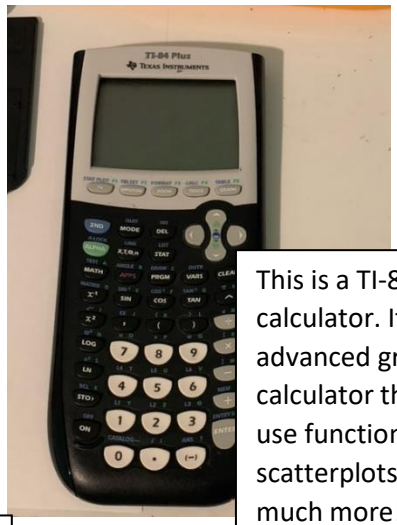
Table of Contents



Introduction of the Project

It all started in my Algebra class as the mashing of buttons on our calculators was the only thing heard in the room; frantic to find the answer to our subsequent inquiry when I asked, “What is inside my calculator, and how does it work?”



This is a TI-84 calculator. It is an advanced graphing calculator that can use functions, scatterplots, and much more!

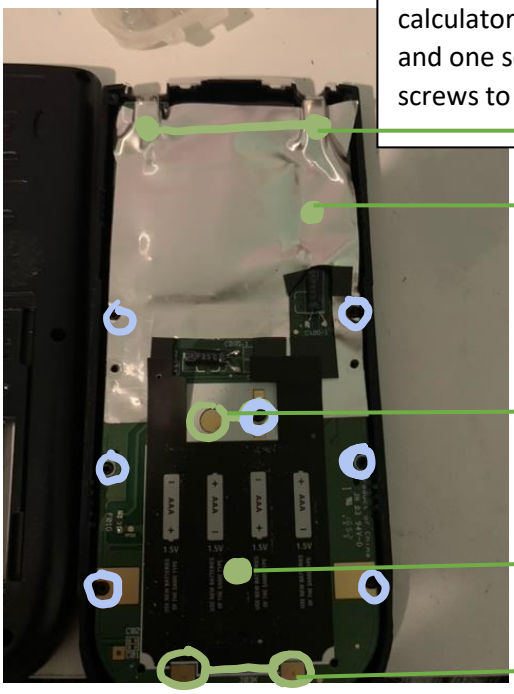
Identification of the Parts

Supplies:

Reverse Engineering subject: Texas Instrument’s TI-84 Calculator

Tools: a small screwdriver, a slightly bigger screwdriver, a metal end of a mechanical pencil, a small tray

Under the Cover Anatomy:



There are 7 screws on the back of the calculator, 6 being small and short, and one screw being longer that screws to the motherboard.

Charging Ports; they intake energy to continue function.

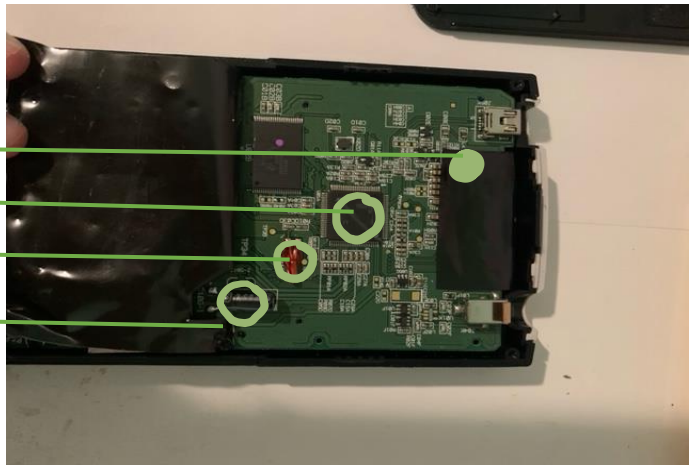
The Metal sheet over the motherboard to keep delicate parts safe.

A thin layer of copper so that the circular battery can transmit energy.

Where the Double A batteries go.

A thin layer of copper so the 4 double A batteries can transmit energy.

Motherboard Anatomy:



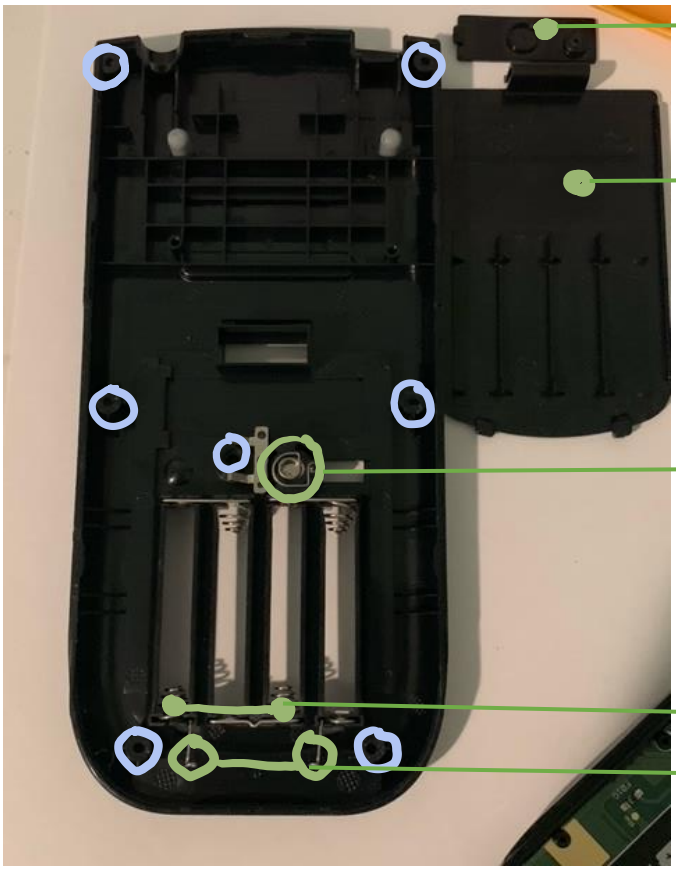
Tape that holds the screen to the motherboard

CPU (central processing unit)

Wire held down by glue

This piece holds memory

Battery cartridge Anatomy



Battery cover for circular battery, the right indention is for the screw. The left is for the battery.

Battery cover for AA batteries.

This coil is where the circular battery rests. The coil conducts the electricity for the copper underneath.

These coils conduct electricity from the AA batteries to the wires.

These wires take the energy from the coils and to the copper.

What did We Learn?

Me and my team learned on the vast complexity of this graphing calculatot. We saw how every part was there for a reason, for example, the copper plating and the wires that connected to the batteries so the calculator could be powered. The Central Processing Unit does all the calculations in binary code and then another unit translates this into numbers and puts it on the light screen.

Citations:

https://www.instructables.com/Ti-84-Basic-Disassembly/

https://www.explainthatstuff.com/calculators.html

https://www.reddit.com/r/ti84hacks/comments/k965dx/does_anyone_know_what_screws_the_back_of_a_ti_84/