Journal Entry

01/24/22 – 02/06/22

Objective: Rese/arch about the Razer Mechanical Switches to see how a piece of metal sheet can be inserted or adhered to the keycap or the area where the keycap is inserted to avoid any problems with the key's original construction and its motion. The keycaps are made of plastic and not metal, so they are not conductive because they are insulators.
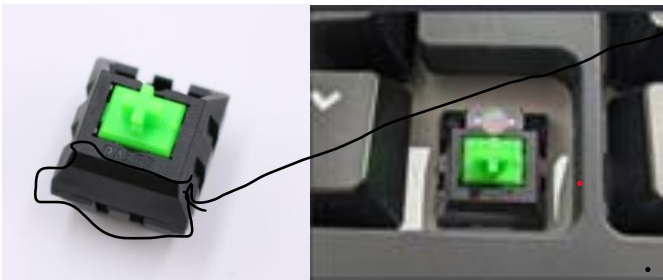

Original Keycap Construction

Idea #1:
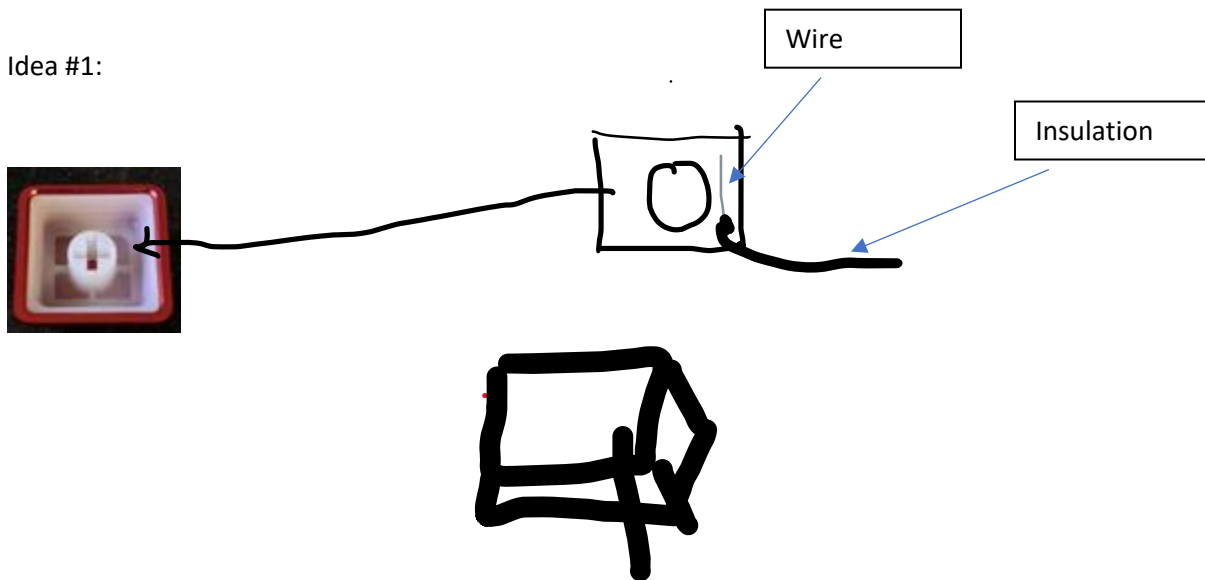
- A copper metal sheet with a hole could be inserted inside the keycap
  - The hole can be created using a small drill bit at the center
- Solder a wire to the metal and have the wire sit on this <u>area</u> of the switch

Disadvantages:

The metal sheet may affect the motion of the keys as it is pressed down, so it will have to be tested.

02/06/22:

Objective/Problem: Determine area for the compartment of the hardware in the physical keyboard.

Why: If the space is not determined, then we will not be able to house our compartment.

How: I am planning to resolve this by inspecting the keyboard myself and informing my team of my findings.

https://www.youtube.com/watch?v=FvHaXWMRfx8&ab_channel=SlowLivingTech

Razer Blackwidow Chroma Layers	Description
	Keycaps removed
	PCP board

	Keyboard Case

The keyboard space is not sufficient to carry our compartment since there is limited space because of its design. The bottom half of the case labeled in blue cannot be used as the location for the compartment since there is no empty space. The only location that seems to have a bit of empty space is what is labeled in red, but it cannot be housed there due to its small size. Therefore, it may be advisable to use a custom keyboard instead that can be modified for our specific needs.

02/09/22

Problem: Our initial keyboard does not have sufficient space to house our compartment.

Why: We need a keyboard that is customizable that can adhere to the space that our hardware requires as we decided that the hardware should be not visible to the user's eye.

How: I am planning to resolve this by researching customizable keyboards that may be applicable to what we are looking for as a team:

There were different custom keyboards that I searched for throughout the internet. I discovered that the Keychon brand were popular for customizable keyboards and a best seller. There are different types
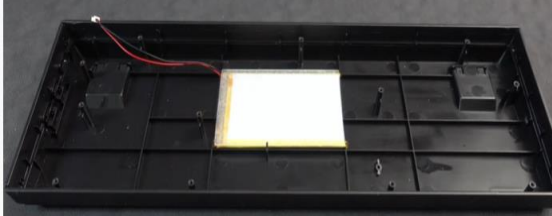
that they offer such as the K2, K6, and K8. They all are similar in layout but differ in terms of their number of keys. All of these types have a USB passthrough which is a similar feature to our initial keyboard.

Keychon Keyboard Model	Keyboard	Keyboard Specifications
Keychon K2		- 75 % layout (84 keys) - Wireless Bluetooth/USB Wired - Shortest on the front, taller on the back
Keychon K6		- 65% layout (68 keys) - Wireless Bluetooth/USB Wired - Shortest back
Keychon K8		- 87 keys - Wireless Bluetooth/USB Wired - Tallest in the front and back

The Keyboard K8 has a lot of empty space which may be useful for us for housing our compartment. Since it is the tallest in the front and the back, it may be suitable to use due to space depending on its thickness.

Keyboard K8 Disassembly

Parts	Description
	Initial Model

		Keycaps removed
		PCB board with keyboard case
		Keyboard Case with battery
		As you can see above with this figure, it is easy to place external objects in here such as foam which is commonly used underneath keyboard switches to get rid of the metallic sounds.

Reference videos: https://www.youtube.com/watch?v=LKK6WHnLQsk&t=443s&ab_channel=AustinV

https://www.youtube.com/watch?v=LN1yAAdHc-M&ab_channel=Clackson

02/11/22:

The EPOMAKER GK68X/GK68XS keyboard may also be useful due to its empty space that is available with the keyboard case. There is no USB passthrough which should not be a problem, but the thickness of the case may be a concern to fit the compartment compared to the Keychon V8. According to this video, another user attempted to insert foam into the case and when assembling it back together, the PCB was in contact with the foam in so many areas and it was not screwed back properly. This meant that it had to be installed in the battery compartment. In addition, its size may be an issue when routing wires since it is so compact.

Purchase Link: https://epomaker.com/collections/mini-64/products/epomaker-gk68xs (Keyboard)

Price: $119.99

EPOMAKER GK68X/GK68XS	Assembly
	Initial Model
	PCB Board with keycaps removed
	Keyboard Carrying Case

Amazon.com: GK61 GK61X PCB Plate Case 60% Keyboard Custom Hot Swappable RGB Keyboard DIY Kit Wired Tyce-C for 3/5 Pin Switch (GK61X White) : Electronics

EPOMAKER GK68X/GK68XS	Technical Specifications
	PRODUCT SPECIFICATIONS LAYOUT — 68 Keys BACKLIGHT — RGB backlight, supports 16.8 million colors HOT-SWAPPABLE OPTION — Yes CONNECTIVITY FOR GK68X — Wired mode CONNECTIVITY FOR GK68XS — Wireless and wired mode BLUETOOTH VERSION FOR GK68XS — 5.1 COMPATIBLE SYSTEM — Mac/iOS/Windows/Android CHARGING PORT — USB Type-C BATTERY CAPACITY FOR GK68XS — 1900mAh MCU — 32-bit MCU FLASH — Built-in 8M flash MATERIAL — ABS plastic or Aluminium USB TYPE-C CABLE LENGTH — 1.5m

Reference video: https://www.youtube.com/watch?v=auKFo3hnT7g&ab_channel=minimalistik

02/13/22:

I discussed my findings with my team, and we found an alternative. Our team decided to purchase a keyboard kit with swappable keys. I was able to contribute to this decision based on what I discovered from my research.