Week 3

Q 1.1

Specification

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| USB input | This must be a micro-USB input. It must be able to output between 4.5 and 5.5 volts which can then be used to charge the battery. It will need to be able to withstand high temperatures such as up to 80 degrees Celsius. |
| battery charger | The battery charger must be able to take the 5 Volt voltage source from the micro USB and charge the battery it must indicate when the battery is fully charged using a green LED and when the battery is still charging using a red LED. it must also be able to withstand temperatures up to 80 degrees. |
| undervoltage lockout | This must be connected to the lithium-ion battery. It must ensure that if the voltage provided by the battery goes below 3.3 volts no voltage is provided to the main circuits. |
| battery | This must be a lithium ion battery that fits into the [BH-18650-B1BA002](https://jlcpcb.com/partdetail/Myoung-BH_18650B1BA002/C2988620) holder. It must be a 3.3 Volt battery. It must be able to withstand temperatures around 80 degrees Celsius. |
| battery terminal pins | These need to be 2 pins that can be used to provide 3.3 volts to the main circuit in case the battery is not available or for testing purposes. |
| reverse polarity protection circuits | This must be connected to the battery. It must be able to detect whether the batteries polarity has been swapped or if the polarity at which the battery is being charged is in the wrong direction. If the polarity in either case has been swapped it must prevent the main circuit and battery from being powered or charged by this voltage. |
| 3.3 Volt regulator | This circuit must be able to take the voltage from the battery which will be 3.3 volts or higher and regulate it so that it is always provides 3.3 volts which can then be used to power our circuit reliably. |