Research and Documentation

Technology	Description	Benefits	Drawbacks
NFC	Near Field Communication	N/A	N/A
Low Frequency RFID (LF RFID)	30kHz - 300Khz Rang: 0-10cm	N/A	N/A
High Frequency RFID (HF RFID)	3MHz - 30MHZ Range: 0.1-1m	N/A	N/A
Ultra High Frequency RFID (UHF RFID)	300MHz - 3GHz Range: 0-12m	Up to 12m (~39ft) of range.	
Passive RFID	Read only chip with no internal battery storage	Small, cheap, common	Limited by range and tag back-splatter ($14-$500 for readers)
Active RFID	Read and Write chip with internal battery	Increases range up to 100m	Size and cost
Semi-passive RFID (BAP RFID)	IInternal battery assists the send back reliability of the data	Limits passive tag back-splatter, on the cheaper side	New technology
Antenas	*Circular Polarization* *Transmits across a variety of planes (wider variety of tag orientations)*	*Linear Polarization* Transmits in only 1 plane (longer range)	

Research Sources

https://lowrysolutions.com/blog/what-are-the-different-types-of-rfid-technology/

Hardware

1. https://www.google.com/shopping/product/3231119196082442729?q=passive+UHF+tag+reader&prds=epd:4821350654370195626,prmr:1&sa=X&ved=0ahUKEwiBo7qpl4jsAhVBR60KHSVOB1MQwzwICw

2. https://vetco.net/products/rfid-reader-writer-module-for-arduino-d40?gclid=Cj0KCQjwzbv7BRDIARIsAM-A6-2gQQ1L_9Ek992I7PShBaJ3ZcHk068vsXq3NRVkKcpZRZX-6xRgUSYaAp1VEALw_wcB

3. https://www.nephsystem.com/android-rfid-reader-suits-perfectly-for-smart-phones-a-58.html

4. https://www.atlasrfidstore.com/turck-u-grok-it-uhf-rfid-reader-for-smartphones/

5. https://www.digikey.com/product-detail/en/adafruit-industries-llc/364/1528-1781-ND/6238001
6. https://thinkifyit.com/collections/frontpage/products/tr-65-rfid-reader-module-with-antenna-usb-ttl-rs232
7. https://www.atlasrfidstore.com/thingmagic-rain-starter-kit/?utm_source=adwords&utm_term=&utm_medium=ppc&utm_campaign=Smart+Shopping_All&hsa_src=u&hsa_ver=3&hsa_ad=410019744933&hsa_mt=&hsa_cam=8756130666&hsa_tgt=pla-923050487925&hsa_acc=4442410237&hsa_kw=&hsa_net=adwords&hsa_grp=90907195089&gclid=CjwKCAjw8MD7BRArEiwAGZsrBayTKa8em19R_W-XlO0L8uJWEN37_i8ykmi-EHRSXqyx9Y_ohZt0uxoCPPMQAvD_BwE
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https://www.security-warehouse.com/free-shipping-uhf-rfid-reader-module-usb-interface-with-uart-uhf-passive-6c-uhf-reader-mo

Feasibility Study and Research:

- Initial research was difficult since applications that detect RFID distance aren't common.
- Arduinos proved to be the greatest value. It was not the cheapest option, but it was the option with the most support to develop the project.

Project Planning:

- Determined the minimum requirement for this prototype was to read an RFID chip and switch between different chips.
- We will crudely display the distance away from the tag at first.

Design:

- The design is simple. One user will read one tag at a time and will only interact with the device to switch it on or off.

Implementation:

- Reading an RFID Tag and showing console feedback was fairly straightforward.