*Be sure to take pictures of your group building the prototype for future use
**Extract only the necessary page(s) for submission

Meeting 21 - Before Class Prototype Building and Testing Development
Your prototype is not due yet. We are looking at your progress so far

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Provide all details and descriptions of your group prototype building below. Notice the rubric before starting!

- Description of the prototype (how you will make it, what it will be made of, etc.)

  Our prototype will consist of two parts. The first will be the development of an app that would be able to connect to the second part of the prototype, which will be the actual locking mechanism we will be creating. For the app, we will be using an app created by a MIT app developer that will have bluetooth capabilities.

  For the locking mechanism, we will need the following materials:

    - Small bar attachment (may be plastic or cardboard)
    - Servo motor
    - Copper wires (around 6)
    - Arduino
    - AA Batteries (around 4)
    - Battery case
    - MAYBE:
      - We might need a breadboard for wire connections. If we do need one, it will be between the arduino and the servo motor. In this case, we may need more wires.

  This will be a rough prototype with a lot of cardboard and tape to hold things together, but the moving parts should be fully functional. We will be working on the prototype over the next two weeks in class, as well as out of class, at scheduled times to ensure we are able to finish it before the deadline.

- Preliminary sketches of prototype

- Description of the functionality(ies) being investigated by the prototype

  On the app side of the prototype, it must be able to create a connection to the locking mechanism, and ask the user for a PIN or some time of authentication before opening the lock. There should be a user interface that is interactable.

  For the actual locking mechanism, it must be able to lock or unlock a dorm door without any physical interference (except for the signal from the app being sent to the lock). A person should be able to use their phones to choose whether to lock or unlock their door, both inside and outside of their dorms (within a reasonable distance).

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- Description of relevant test conditions
  - Which constraints/criteria will be tested?

We will be testing the functionality of the prototype concerning how well the locking mechanism is able to keep doors closed as well as if the app can consistently communicate with the lock. The lock must maintain its state according to that which is defined by the app and should not be able to be tampered with by outside influences. Additionally, we will also be testing how easy the prototype will be to use, as well as how expensive it would be in terms of the resources we would need.

For constraints, we have to ensure that it follows dorm policies (which it does), and that the locking mechanism on the door would still be accessible if a user were to lose their phone (i.e key and lock should still be functional).

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