Please provide the following information to be shared with on capstone information exchange platform:

1. **Project number:** S20-20

2. **Project title (as will appear on the poster):** GlassKey - The Universal NFC Key

3. **Team members:** Harshil Parekh, Shivum Mehta, Shaan Parikh, Avi Patel, Adarsh Gogineni

4. **Adviser(s) name(s):** Dr. Chung-Tse Michael Wu

5. **Up to 5 keywords that will help to classify the project scope:**
   NFC, Android Application, Lock and Key Manager,

6. **Project abstract (up to 250 words) to be shared with judges:**
   (General guidelines: The abstract should include: (a) A background review of the state of the art in the relevant field; (b) The problem addressed in the project; (c) Objective of the proposed projects; and (d) The adopted approach)

   Many mechanisms in today’s world require different keys to unlock (password managers, door keys, mailbox keys). Because of this, we are forced to carry multiple different physical keys, in order for us to unlock various things in our everyday lives. We can eliminate the need to carry these keys, when we can replace the keys with our smartphones.

   NFC (Near Field Communication) is a technology that uses a radio frequency field to exchange data between devices. Because smartphones now implement NFC technology, users can transfer data with a simple touch. When combining this with Raspberry Pi and Arduino boards, we can create more efficient ways to open/unlock doors and different objects.

   Our objective is to remove the physical key from people’s pockets and instead implement a technology already used in most modern mobile devices today, Near Field Communication (NFC). Mobile phones are already one of the most secure pieces of technology, and they’re only getting better, so our aim is to take advantage of this.

   We aim to create a proof of concept that shows this in action. We will centralize our solution and create a single smartphone application to develop a way for users to unlock anything in their daily life without the need for a physical key or digital key (passwords). Using NFC in our phones, our application will be able to send a specific key to its corresponding lock. Using this, we hope to show that any lock can be unlocked with only a smartphone.