RFID LOCKING SYSTEM

**Apparatus:**

1. **Arduino uno board & connector**
2. **RFID-MFRC522 kit**
3. **Servo motor**
4. **LCD display**
5. **Bread board**
6. **Door lock**
7. **Jumper wires**
8. **10k pot**

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* **The Arduino uno is an open source microcontroller board based on the microchip ATmega328P microcontroller. The board is equipped with sets of 14 digital pins, 6 analog pins and it is programmable with arduino IDE. It can be powered by the USB cable or by an external 12 volts source (adapter) though it accepts between 7 and 15 volts.**
* **RFID MF RC522 is a highly integrated read and write card chip to the 13.65MHZ contactless communication. The MFRC522 uses advanced modulation and demodulation concept which fully presented in all types of 13.65 MHZ passive contactless communication methods and protocols. Radio waves are used to transfer data from tag to reader.**
* **A passive tag that does not contain a battery, the power is supplied by the reader.**

**Working:**

**As we are using this key card system in many ways likewise in biometric, ATM cards, toll gate systems etc.. we are using the same principle for door locking and unlocking. The background working of this system is based on the principle of a frequency generation with electric current.**

**Here we connect the pins accordingly to the code, and arduino uno is dumped with the compiled code to read the data on the other hand the arduino has a 5 volts output so it is connected to the RFID to power it up, as the RFID reader consist of a radio frequency module, a control unit and an antenna coil which generates a high frequency electromagnetic field.**

**The data from the card or tag is transferred by the load manipulation method. These tags have 1Kb of memory and have a microchip that can do arithmetic operations. Their operation frequency is 13.65MHz. We add the card data to the source code and then we dump this information into the Arduino to process it, the card which is used to authorize is called as master card. Now coming to the LCD display we use 16\*2 display and the data to be displayed is called in the source code. First it displays place the card as it is a default message. The servo motor is used to open and close the door or we can use any other locks like solenoid lock to operate a door or locker as the servo is more powerful to open a tight lock also. (The source code is in last page.)**

**Output:**

**When we place the card near the reader if the card has access means it is the right card then the LCD displays “Authorized access”, the servo rotates to 90 degrees and it is connected to a lock so the door opens and the door automatically closes after five seconds (optional time can changed in the code), if the card is not a right one that is it is not a master card then it displays “Access Denied”. After this the default message is displayed.**

**Advantages:**

* **The main advantage is, it is a simple security system can be used for personnel people authorization only into restricted areas.**
* **The code can encrypted so that it is more secure and lock.**

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