The main objective of this project is to design and build a front gate automation system, with RFID security using Arduino. The working of this gate mechanism is quite simple. The authentic person will be provided with a keychain which holds a UID. There will be an RFID reader module, that is mounted on the gate pillar for reading the keychain. The person can approximate the reader with his keychain for opening the gate and if the keychain is of the correct UID, the gate will start opening. Else, the gate will stay closed. If the card is not genuine, an alarm will ring right away. After approximating the card with the genuine tag, the gate will only be open if the IR sensor detects the vehicle. Otherwise, the gate will stay closed.

We build the project on Arduino - an open-source electronics platform based on easy-to-use hardware and software. Arduino board senses the environment by receiving inputs from many sensors, and affects its surroundings by controlling various actuators. The Arduino board is programmed by writing code in the Arduino programming language and by using the Arduino Integrated Development Environment. Unlike most other programmable circuit boards, the Arduino does not need a separate piece of hardware (called a programmer) in order to load new code onto the board - you can simply use a USB cable.

The main components used in this project are:

* **Arduino Uno Microcontroller board** based on the Microchip ATmega328P microcontroller is used in this project. This board also consists of other components such as crystal oscillator, serial communication, voltage regulator, etc. to support the microcontroller. Arduino Uno has 14 digital input/output pins (out of which 6 can be used as PWM outputs), 6 analog input pins, a USB connection, a Power barrel jack, an ICSP header and a reset button.
* **RFID** consists of two main components, a transponder/tag attached to an object to be identified, and a Transceiver also known as Reader. A Reader consists of a Radio Frequency module and an antenna which generates high frequency electromagnetic field. RFID is a method of data collection that involves automatically identifying objects through low-power radio waves.
* **Servo Motor** is low speed and high torque motor. It has four main components - a DC motor, a gearbox, a potentiometer and a control circuit. It is controlled by sending a series of pulses through the signal line.