VIETNAM NATIONAL UNIVERSITY, HO CHI MINH CITY

HO CHI MINH CITY UNIVERSITY OF TECHNOLOGY

EMBEDDED SYSTEM PROJECT

TOPIC:

RFID BASED DOOR LOCK SYSTEM WITH ARDUINO

CLASS: TT01 - GROUP: 7 - SEM232

STUDENTS' INFORMATION

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Product Requirements Document
RFID Based Door Lock System with Arduino

Overview

When power ON this door lock, the servo motor activates and pushes the door lock forward. Also displayed as “Welcome, put your card” on the LCD. Then when the RFID tag is moved closer to the RFID reader, it is scanned. In that case, it is displayed as “scanning” on the LCD. Then, if the RFID tag is correct, the servo motor is activated and the door lock is pulled back. The LCD shows “Door is Open”. When the RFID tag is moved closer to the RFID reader again, if it gets the correct tag, the servo motor will push the lock forward. Displays “Door is locked” on LCD. If a wrong RFID tag is used according to the program, it will be displayed as “Wrong card” on the LCD.

Product Requirements

I. Industrial Design

#	Feature/Characteristic	Product Requirements	Technical/Engineering Specifications	Comments
I.1	Visual Interface	Shall have an LCD display	- 16x2 I2C LCD Display	
I.2	Placement	Shall be able to be placed on an existing door, window…		
I.3	Communication	Shall have: - A module RFID reader and writer card - An I2C module to connect the LCD Display	- RFID NFC 13.56MHz RC522 - I2C module	

I.4	Interrupt	Shall have a servo motor	- RC Servo 9G	

II. Display Screen

#	Feature/Characteristic	Product Requirements	Technical/Engineering Specifications	Comments
II.1	Always On	The display shall always show messages.		
II.2	Display Controls	Display shall be enabled with the following controls: - ON/OFF - Settings (to change right or wrong RFID tag)		

III. Power

#	Feature/Characteristic	Product Requirements	Technical/Engineering Specifications	Comments
III.1	Power	Shall operate with 9V DC supply		

IV. Out of Box Experience (OOBE)

#	Feature/Characteristic	Product Requirements	Technical/Engineering Specifications	Comments
IV.1	Software/Firmware Setup	Overall software setup shall be done in 7s or less		
IV.2	Data Storage	IDs data and working history shall be saved on the computer.		
IV.3	Distance	Shall recognize RFID Tag under 5cm distance		

V. Security & Privacy

#	Feature/Characteristic	Product Requirements	Technical/Engineering Specifications	Comments
V.1	Password Protection	Shall utilize encryption and not expose WiFi and account credentials of the user		