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Embedded Systems
Security System Design Assignment
9/27/13

As a homeowner, if I could request an embedded systems developer to design a home security system, I would want many aspects to be included in the system. Firstly, I would want a keypad that would be used to enter and exit the home. The keypad password would be a 4 digit decimal number and it would be changed on monthly basis to increase security. After 30 days have passed, the system would remind me to change the password to reduce the risk of a person learning the code and breaking into my home. The exit system would be easily able to be turned off and on, depending on whether you want to keep your teenager in for the weekend or if you are alone at the house and do not want to be entering a code every time you leave your house. When the code is activated, there would be another 4 digit decimal number used as the exit code, and the code may or may not be the same as the enter code. The garage would be entered and exited similarly to the home entrance; there would be enter and exit keypads to ensure security.

In an emergency situation where a firefighter, police officer, or ambulance technicians needed to enter my home, there would be an 8 digit code known to only emergency personnel that would also be changed every 30 days. There would be some sort of identifier on the keypad to enter in that number. Doubling the number of digits for this code will reduce the possibility of hackers to figure out the code and enter into anyone's home without their permission. Changing the code every 30 days will also reduce the risk of break-ins by discharged or fired emergency personnel because the code would not stay the same after they left the organization in which they were involved in to get the code. This emergency code would benefit society for two reasons: no more broken down doors or windows from emergency situations and also in a situation in which an intruder is harming the homeowners in the home, there would be an element of surprise working in the police officer's favor because the intruder would not hear them coming.

The home security system would be dependable, but also affordable to the consumer. Everyone deserves to have the opportunity to make their home feel safe and secure. I would prefer for the cost to be affordable and maybe the designer would use less expensive components to create the hardware rather than having very technological savvy instruments to operate the system and then it cost a significant amount more. I would care more about what the system does instead of how it looks, and I'm sure that there are plenty of homeowners that would agree with me. I would be willing to pay a small amount each month to make sure that the developers are continually improving the system and also to ensure that I would get reminders to change my codes every 30 days.

While the system would ideally be dependable, there are some situations in which maybe there is a software update and the security systems would be unavailable. In addition, maybe you would like your child to have a way to enter the house for a particular day, but do not want to give them the enter code. In these situations, there would be a key that could be used to enter the home. However, the option for this function would be enabled by the homeowner (or by the developers if they need to take the system down for a software update). With these design objectives met, I would be a very satisfied customer.

Boroff

Keyless security home system

Nawar Obeidat 9/27/2013

If I want to think of all keyless security home systems, I'll prefer to deal with fingerprint technique to control the entry/exit for houses.

The issue that when you want to enter or exit your home, you don't need more than your fingerprint which is so secure because nobody will ever have yours. And in case of emergency, you don't need any time to look for a key or a card or any other thing to exit your house right away.

Requirements and functionality :

- Scanner
- Processor
- Memory
- Output lights (red and green)
- Sound system

The scanner is to scan the fingerprint, then the processor to authenticate the picture taken from the database in memory for all authorized fingerprints in the house, so if its authorized, a green light blinks with a certain sound and if not, a red light blinks with another sound.

The system should be fast , so the processor should be fast enough. And other point which related to safety that it must have a sensor to prevent closing garage door for example while someone or the car is so near.

Quality :

Quality is so important in this system to make it more secure and friendly use without too much errors specially in accuracy in processing fingerprints pictures. The disadvantage in this case is the high cost, if the quality increases, the cost will increase too. One thing that will increase the cost too is that we need a scanner for every entry and exit in the house.

Also, the system should be reliable and has a long life time by performing enough testing to make sure that the system operates properly.

One of the fancy points is to choose a very good material that resists the winter weather.

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CLASSWORK/

ASSIGNMENT : KEYLESS BUT SECURE ENTRY TO HOME & GARAGE.

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Features that system should have :

1. Input to the system is either through a keypad or a remote control system - when the right set of access code is entered the system automatically unlocks the door.
2. Additionally a cellphone can also be used to unlock the door by enabling bluetooth on both the ends and through the access of the right set of pass codes.
3. The system can also be backed up with fingerprint access since there can be a chance to forget passwords and the phone is also not working.
4. Lights can be turned on during night time where it is difficult to find the numbers.
5. To ensure security, there should be accessibility to change passwords often and also if the wrong set of passwords are entered for reasonably more number of times, the system should alarm / alert police or hang up for few hours or it should alert the owner through a message depending on the user's preference.
6. Since all these are electrically operated, in case of battery failure, a battery backup is necessary.
7. Traditional way of using the keys will also be a good option in case of failure of any one of the features.

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