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PARKING ENFORCEMENT SYSTEM

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Abstract

The proposed system makes use of vacuum pump which flushes out air to create vacuum and thus suction cup create pressure of 750 pounds. At first, the system is placed on the windshield of the car .The user then dials the OTP which is stored in microcontroller .The microcontroller then produces logic '1' which goes into one of the input of relay .The other input of relay is from 12V DC battery .If the output of microcontroller is logic 1 then the signals before reaching relay, passes through ULN 2003A which acts as an amplifier and boosts the signal before reaching the relay. Then the relay switches the circuit to vacuum pump and vacuum pump flushes out air to create vacuum and then the suction cup sticks on the windshield and get locked .For unlocking the user has to dial the same OTP .Then

the micro controller verifies that OTP from the previously dialled OTP .If they do not match then nothing will happen .If they match then microcontroller produces logic'0'. Then the output of relay is logic'0' and the vacuum pump stops and then the vacuum is released and the cups can be removed.

Introduction

We feel that current parking enforcement methods are at times inefficient. We understand that space is a limited resource and demand is high for convenient parking. Effective parking enforcement and collection activities are a critical part of maintaining an efficient parking management solution. We know that most people resolve their parking violations on their own, but some need a more compelling method of ensuring they pay their debts. When these rules are not enforced, those that follow the rules are forced to carry the burden for those that don't.

To overcome all the horrible things about the wheel clamps, also known as a wheel boot, a Denver boot, and any combination of expletives. Parking enforcement types typically deploy them against scofflaws with piles of unpaid tickets. But they're almost as big a hassle for them as they are for you. They're also tricky to install.

The Barnacle is a breeze in comparison, weighing in at under 20 pounds. Simply unfold it and stick it on the windshield, aligning it to obscure forward vision. Then use the built-in pump to draw air from the suction cups, creating a vacuum.

At this point, you've got two options: Call the authorities and have them come take your money and release the car, or make a payment over the phone in exchange for the code needed to release the damn thing. You've got 24 hours to return it, and don't even think

about affixing it to someone else's car. The pump is locked into the tough high-impact ABS plastic body.

Forget about prying the Barnacle off. The suction is so strong—about 700 pounds—you'd pull the windshield out. A security ring prevents getting a 1

This device attaches securely to the windshield , obstructing the view and immobilizing the vehicle .It contains two commercial grade suction cups that provides hundreds of pound of force .

Barnacle is a user-friendly, lightweight alternative to a car boot.

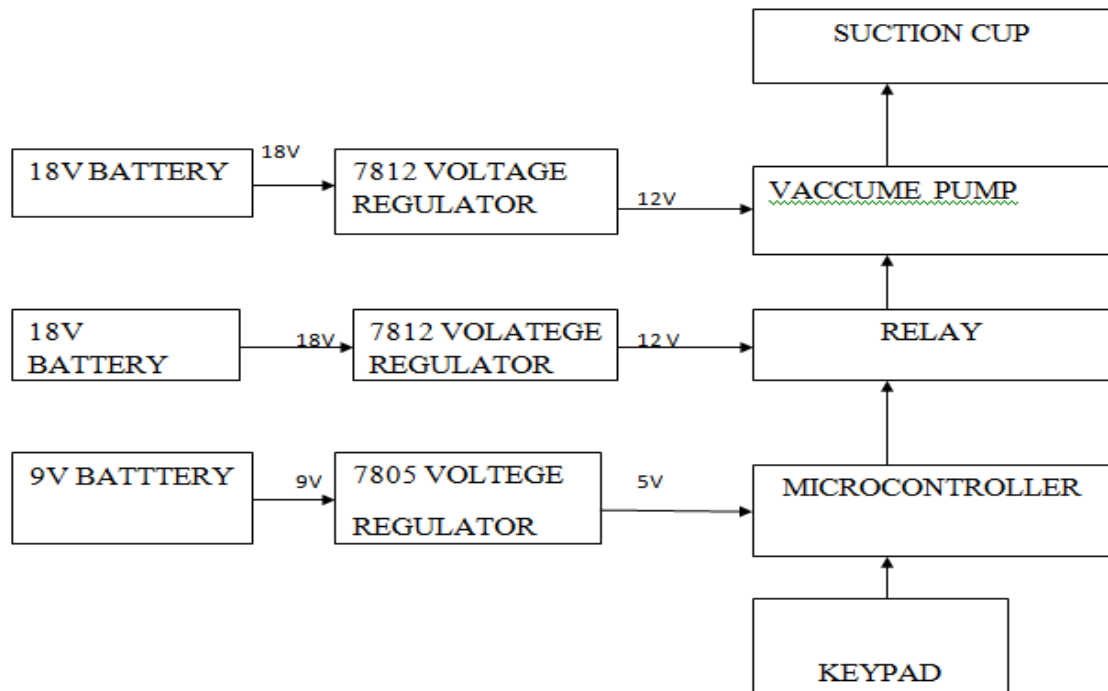
It is a long piece of plastic, which can be folded in half , that stretches across a windshield to block the driver's view.

Commercial grade suction cups attached to the glass that provide 750 pounds of force per suction.

A built-in anti-tamper alarm will sound and will notify authorities if someone attempts to remove it.

Drivers use the Barnacle's 'Pay and Remove' system, which allows them to call and pay over the phone with a credit card, remove the device and return it to a drop off location within 24 hours.

Block Diagram



The proposed system makes use of vacuum pump which flushes out air to create vacuum and thus suction cups create pressure of 750 pounds. At first, the system is placed on the windshield of the car. The microcontroller is powered by a 9V dc battery. The microcontroller accepts 5 V, so by using a 7805 voltage regulator 9V is converted into 5V. The user then dials the OTP which is stored in microcontroller. The microcontroller then produces logic '1' and the vacuum generator starts. For powering the generator two 9V batteries are kept in series to generate a 18V supply and by using 7812 voltage regulator the final voltage we get is 12V. This 12V supply is given to the breadboard and by the parallel connection we take 12V for relay and vacuum generators. Then the vacuum pump flushes

out air to create vacuum and then the suction cup sticks on the windshield and get locked .For unlocking the user has to dial the same OTP. Then the micro controller verifies that OTP from the previously dialled OTP .If they do not match then nothing will happen .If matched then the microcontroller produces logic'0'. The vacuum pump stops and then vacuum is released and the cups can be removed.

The system has three functional units: the dial pad , vacuum pump and suction cup:

A. DIALPAD

This unit is installed outside every system. Every concerning authority has to come with one time password and locks the system with that password .The system can be unlocked by the same one time password.

B. VACCUM PUMP

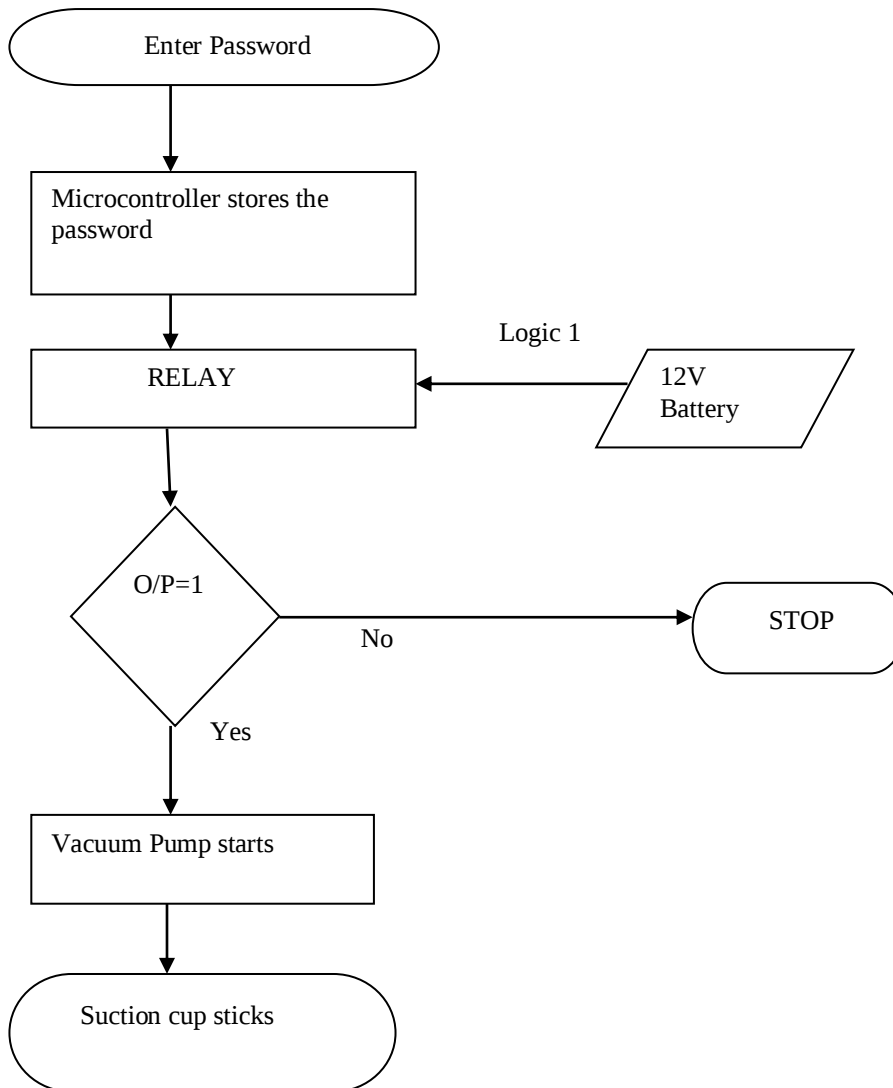
This unit is installed just before the suction cups to create vacuum. If it receives logic'1' from the the power driving circuit then the vacuum pump starts and flushes out air and creates vacuum.

C.SUCTION CUPS

When the vacuum is created, the suction cups exerts pressure of 750 pounds each on the windshield and gets locked and it can be only removed if the user dials the exact same one time password.

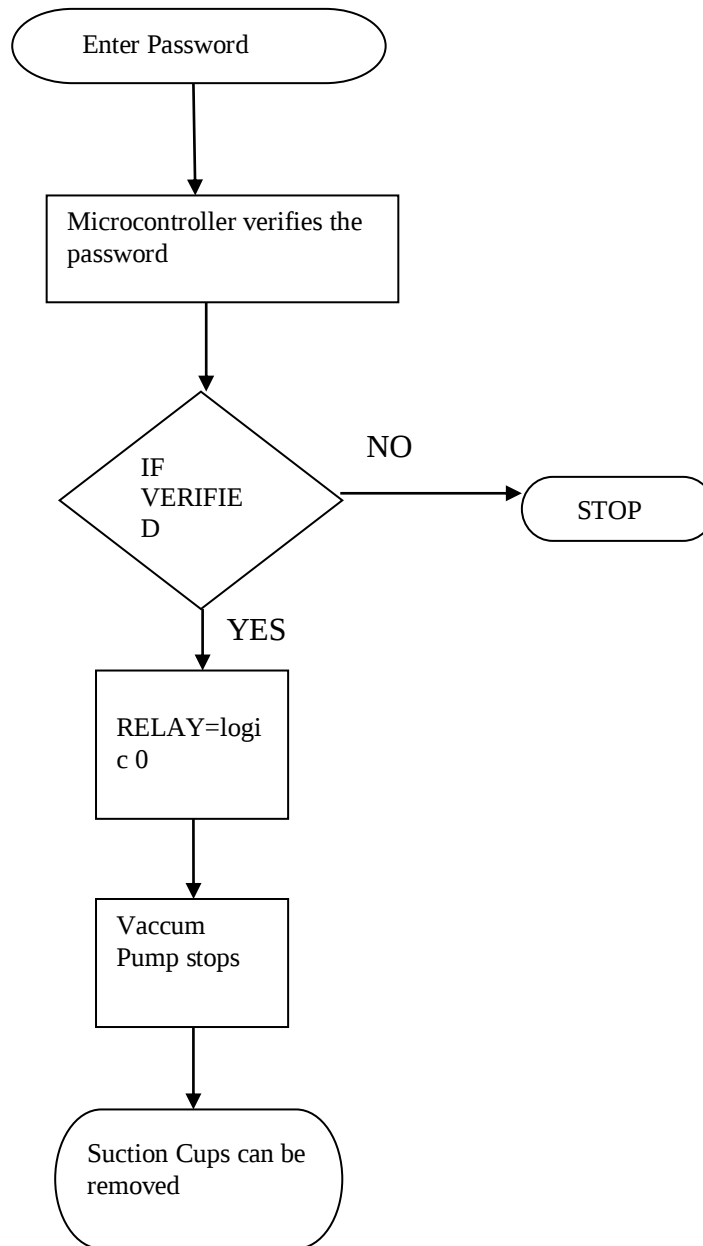
System Implementation

Flow for locking



Flow for locking

Flow for unlocking



Flow for unlocking

Advantages

- Optimizes the resources.
- Reduces the labor needed on law enforcement.
- Getting a step closer to developing smart cities.
- Saving enforcement personnel's lives.
- Saving and generating the administration money.
- Saving the environment for us all.

Conclusion

Traditional booting programs require the motorist to wait hours before having the device removed. This system comes equipped with a “Pay and Remove” system, allowing the motorist to call and pay over the phone with a credit card, which allows them to remove the system themselves, in minutes. Our lightweight, user-friendly design allows the violator to easily remove the device, without having to wrestle with a cumbersome boot or kneel down in traffic. They can then return it to a convenient drop off location within 24 hours, and they don't have to miss that important meeting. Kneeling down in traffic next to a parked vehicle is dangerous even in the best of circumstances, but is especially risky on a narrow and busy city street. We designed the system to be able to be deployed from the safety of the curb side of the vehicle, eliminating the risk of being struck by a passing car.

Future Scope

1. If we install an integrated GPS, it will signal an alarm if the car moves, alerting authorities about the attempted escape.
2. We can use manual pumping instead of electrical pumping.

References

<http://barnacleparking.com/infficiencysolved-1/>