**Objectives**

This project is a "Toll Collection System" using Arduino as microprocessor. Toll collections from vehicles to pass any streets, highways and bridges must be fast and digitalized. In order to fast movement and transport, computerized and automated system is necessary. That is why implementing the digitalization in toll system is the main motive and objective of this project.

In this project, as achieving fast transport is the main goal, there will be maintained a two-lane system for the vehicles. And the lane that has comparatively small number of vehicles will be displayed so that drivers can take decision and choose the faster lane.

**Social Values**

The system will

1) Ensure fast transport

2) Implement computerized digital toll system

3) Cancel out the hassle of manual toll system

4) Reduce the waiting time for giving toll and hence reducing traffic jam

In the context of Bangladesh, in recent days, government is concentrating more on transport system. More highways and bridges are coming out. So, to ensure the right management system for the vehicles, this project can be of a great use.

**Required Components**

These following parts and tools are required for building this project

* Arduino Mega
* MFRC522 RFID Reader
* 13.56 MHz RFID Tag
* Servo Motor
* 16\*2 Lcd Display
* 4\*4 Keypad
* IR Obstacle Sensor
* Buzzer
* 10k Potentiometer
* 330ohm Resistor
* 4.7k Resistor
* 1k Resistor
* Breadboard
* Some jumper wires

**Working Procedure**

* RFID Reader

For transaction & recharge

* Servo Motor

To open & close the gate

* Lcd Display

To show the messages

* IR Obstacle Sensor

To detect the vehicles

* Buzzer

To make alarm sound

In this project, there will be a one-way road with two lanes, heading to the toll booth. The transaction here will be performed through RFID technology. There will be two gates in a single lane. After the completion of transaction, the first gate will open and let the car go. The remaining cars will follow a queue behind the second gate. After that the first gate will be closed and the second gate will open and the next car will enter and then second gate. There will be a display at each lane showing how many cars are there in the lane. This will help the driver to choose the fastest lane.

**Estimated Budget**

|  |  |  |
| --- | --- | --- |
| Equipment | Quantity | Budget (Tk) |
| Arduino Mega | 2 | 4000 |
| MFRC522 RFID Reader | 2 | 400 |
| 13.56 MHz RFID Tag | 2 | 60 |
| Servo Motor | 2 | 190 |
| 16\*2 Lcd Display | 4 | 1000 |
| 4\*4 Keypad | 2 | 150 |
| IR Obstacle Sensor | 6 | 540 |
| Buzzer | 2 | 30 |
| 10k Potentiometer | 2 | 40 |
| 330ohm Resistor | 2 | 100 |
| 4.7k Resistor | 2 | 10 |
| 1k Resistor | 2 | 60 |
| Breadboard | 2 | 310 |
| Some jumper wires | 2 | 200 |
| Total | | 7090 |

**Conclusion**

Arduino based microcontroller is easy to use and cheap and yet perform very well. using Arduino as a microcontroller this project can be one properly. This project can be greatly beneficial for the development of toll system. So best effort will be given to this project In Sha Allah.