International Journal of Technical Research and Applications e-ISSN: 2320-8163,
www.ijtra.com Special Issue 39 (KCCEMSR) (March 2016), PP. 54-56

SMART BEST STATION ALLOCATION SYSTEM

[1]Aditya Mestry, [2]Manish Thakur, [3]Siddhesh Kanse, [4]Sanket Shelar
[1,2,3,4]: Department of Electronics Engineering, KCCEMSR, Thane
adi.reddevil.7@gmail.com

Abstract— **A key aspect of the project is to identify a developing allocation system in timely manner, and to alert the bus vehicle occupants and generate message. It is the role of parking monitoring and control. Depending on the space scenario, the system will firstly provide a means to identify a place and automatically sends an alert to the bus driver or occupant. Another function is the transmission of position information signal to the server department where information about occupied slots and vacant slots is kept.**

This allocation system is implemented with the help of embedded system. At the gate of the depot and in parking slot , sensors are placed. These sensors are connected to embedded system which transmits the signal to the server using wireless transmitter which is Xbee, Xbee at receiver end receives the signal and passes it to the server which has all the information about occupied and vacant parking slots, server then sends status of space to the lcd monitor at the gate of the depot. The bus driver can then goes and park the bus in the vacant slot.

I. INTRODUCTION

A parking deck is a symbol of efficient use of limited space to provide the most parking spots in a given area. As you add more and more spots, however, it becomes increasingly difficult for a driver to find the closest spot. This is heightened difficulty necessities driving in circles around the parking deck and looking for a spot all while decreasing the focus on safe driving. In today's world, the word "smart" is used to describe everything from cell phones to homes which all feature more communication and interactivity between the user and the product. If a home can be "smart" why can't a parking spot? This is the question which was posed and it is a question been solved with a system called SMART BEST ALLOCATION SYSTEM. It uses embedded sensors to detect the status of a parking spot. Most of these systems rely on screens that show the number of spots left on a given floor or a light board where each light represents the status of a spot, red for closed green for available. While the initial data gathering is done similar to the way we chose to, the display of this data to drivers is far different. They leave much of the stress and guesswork of finding a spot still in place since the driver either has to stop to frantically look at big light board to determine which spot they want with no guarantees that when they get to said spot that it is still available. The same inconvenience can be said of the displays that show the number of in an efficient and helpful manner as well as spots on each floor. While less cluttering or confusing as the giant light board idea, it too has its limitations. Drivers still aren't given specifics and so still have to drive around finding a spot of their choice. The proposed system hopes to eliminate this issue. The system created aims to improve on the communication of data to the driver manages the costs of upgrading to a "smart" parking deck. A main issue with many of the options for creating a more convenient solution for parking management is the upfront installation cost. As stated before the price per parking spot of a conventional parking deck is around $15,000. To create a compelling system, one must minimize the increase to this ratio of cost per spot. To this end after careful consideration of both the level of complexity, timeframe, and invasiveness of the kind of system we wished to make, a general consensus was reached.

Our system would start by using a device equipped with an infrared sensor to detect the presence of a vehicle in a parking space. We then decided that we wanted to implement a Wireless Sensor Network (WSN), forgoing using wired connections in order to reduce the material cost of the system as well as to test the capabilities of a WSN within a parking deck structure. We also knew that in order to differentiate our system design from others already out there, that we would need to take a new approach to communication with patrons of the parking deck to better inform them about the locations of potential available spots that would be of interest to the driver. To achieve this we would need to design and write our own program to not only interface with our WSN but that would also allow for the level of clear and precise communication between the parking structure and the driver. With the main goals of our system in place we divided the work into three parts: Hardware, Networking, and Software and began to create. The system that our group has developed is relatively simple yet coupled with our software creates a whole new level of interactivity between drivers and the parking deck, effectively creating the "smart" parking experience.

Wireless Sensor Network (WSN) technologies has attracted & increased attention and are rapidly emerging due to their enormous application potential in diverse fields. This buoyant field is expected to provide an efficient and cost-effective solution to the efficient car parking problems have taken a lot of the guesswork out of driving.

II. PROBLEM DESIGN

At depots hand written data is maintained at main entrance gate. After entering the premises of depot and parking the bus at available parking space that data sheet is updated with parking spot occupied and bus number.

To make depot technically advanced our group has used IR sensors, Wireless Sensor Network (WSN) and server to automatically update the necessary information and it will be

displayed on screen present at entrance for bus driver to notice it.

III. BLOCK DIAGRAM

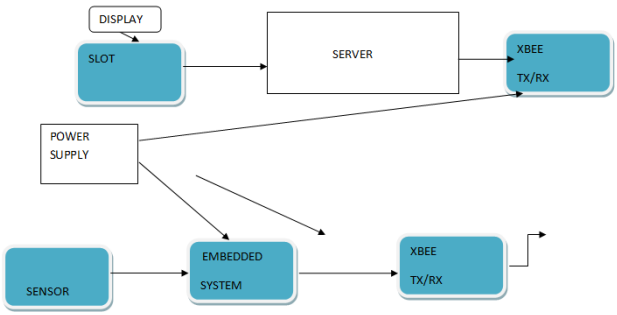
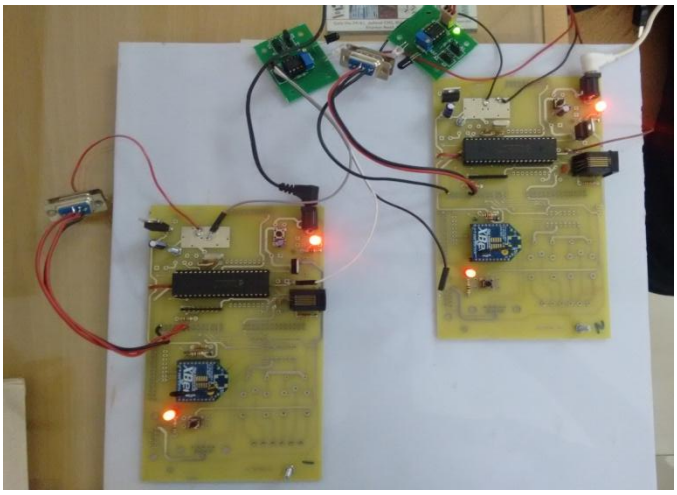


Fig (a): Block Diagram

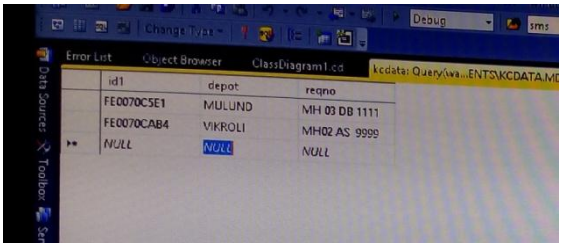
The system has multiple nodes connected with embedded system which has slot information. Embedded system transmits node number along with empty and occupied status of slot. This process repeats for all nodes with respect to server which gives command to individual node.

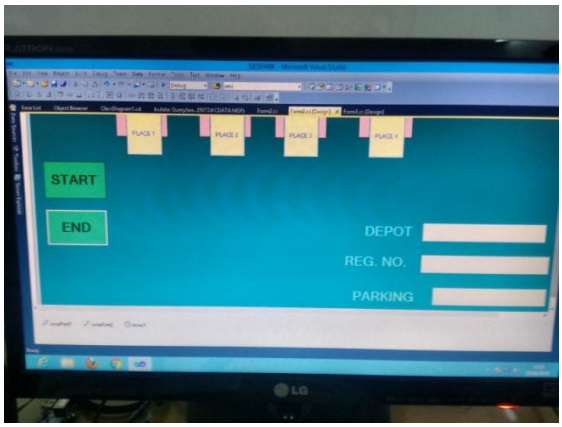
Server then computes the best suitable position of slot and indicates on LCD so that driver can park at correct slot to communicate with server. Zigbee is used and pic microcontroller is used to scan position.

IV. HARDWARE SYSTEM DESIGN



V. RESULT





VI. PUZZLE TYPE PARKING SYSTEM

VII. COMPONENTS USED

PIC microcontrollers (Programmable Interface Controllers): are electronic circuits that can be programmed to carry out a vast range of tasks. They can be programmed to be timers or to control a production line and much more. They are found in most electronic devices such as alarm systems, computer control systems, phones, in every any electronic device

Power supply: Most of the electronic products or projects need a power supply for converting mains AC voltage to a regulated DC voltage

RFID: The RFID device serves the same purpose as a bar code or a magnetic strip on the back of a credit card or ATM card; it provides a unique identifier for that object. And, just as a bar code or magnetic strip must be scanned to get the information, the RFID device must be scanned to retrieve the identifying information.

VIII. OBSERVATIONS

CASE 1: Park the bus:

1. Bus enters the depot gate.
2. Sensors at gate senses the bus and allocates available parking spot.
3. Driver parks the bus.
4. Sensors at the parking spot updates server regarding occupied spot.

CASE 2: displace the bus:

1. Driver displaces the bus.

2. The sensor at that parking spot updates the server regarding availability of that parking spot.
3. Server updates that parking spot as vacant.

IX. ADVANTAGES, APPLICATIONS

Advantages:

1. Automated parking Saves Space.
2. Additional Economic Benefits to Developer
3. Automated parking is Safer, Secure, and Convenient.
4. Simple structure, Simple Operation

Applications:

1. Commercial Areas Malls
2. Shopping centers Industrial
3. Sport Stadiums
4. Residential Buildings Offices

X. CONCLUSION

1. Implementable in developing countries.
2. Cost reduced. (Cheaper components)
3. Power minimized.
4. The model reduces the existing faults in the presently implemented systems.
5. Ready for practical use.

REFERENCES

[1] Y. Bi, L. Sun, H. Zhu, T. Yan, and Z. Luo, "A parking management system
Based on wireless sensor network," ACTA AUTOMATICA SINICA, Vol.
32, No. 6, pp. 38-45, November 2006.

[2] Y. Peng, Z. Abichar, and J. Chang, "Roadside-aided routing (RAR) in
Vehicular networks", in Proc. IEEE ICC '06, Vol. 8, pp. 3602-3607,
Istanbul, Turkey, June 2006.

[3] R. Lu, X. Lin, H. Zhu and X. Shen, "SPARK: A New VANET-based
Smart Parking Scheme for Large Parking Lots," in Proceedings of IEEE
INFOCOM'07, 2007.