A Novel Method for Secured Assessment And Evaluation System in Education Paradigm

Dr. P. Krishna Subbarao
Associate Professor & Head Of The Department, Department Of Computer Science & Engineering
G. V. P. College Of Engineering, Madhurawada, Visakhapatnam, India
N. V. Ramana Murty
Associate Professor & Controller Of Examinations, Department Of MCA
G. V. P. College For Degree & P.G. Courses (A), Rushikonda, Visakhapatnam, India
D. S. S. N. Raju
Network Supervisor, G. V. P. College For Degree & P.G. Courses (A), Rushikonda, Visakhapatnam, India

Abstract:
Assessment & Evaluation play a major role in Accreditation of educational institutions. Problems like leakage of question paper; coding, decoding, valuation of scripts in the present examination pattern can be overcome with scientific use of information technology. At present there is no standard tool that comprehensively addresses such factors to test the new generation of students with vast potential for learning in the electronic age.
This research paper proposes a novel model of multipoint secured system. Zigbee is a standard-based technology designed to address the unique needs of wireless sensor and control networks. Since Zigbee can be used in any field of knowledge - based testing, it is proposed to implement it in Assessment & Evaluation needs of higher education to maintain security and safety and to make it paper less in assessment and evaluation of students' performance. Additional advantage is to reduce space and other infrastructure used to store answer scripts for desirable duration

Key words: Zigbee, Wireless Sensor, Control Networks, Security and Safety, Paper Less

1. Introduction

At present, education has become wide spread and Technical education is reaching the nook and corners of the country. Introduction of Semester System beyond 10+2 level and conducting examinations frequently is posing a severe threat to secrecy and maintenance of standards in Assessment and Evaluation of students' performance, consuming large quantities of white paper besides keeping huge bundles of answer scripts for years, for revaluation and verification. Thus the load on education system is becoming higher and higher. But little attempts have been made to improve the systems at sustainable levels. One such method to overcome some of the above deficiencies is no doubt on line examination, but this is confined to areas and institutions where sophisticated computer networking is available. To overcome the deficiencies and make the technology easily adoptable, movable and workable in places where there is power shortage and power cuts and improper networking, a new system and machinery is proposed to be designed for adoption, maintaining high security, reduce paper use and storage methods.

In technical education, special stress is given to continuous analysis of students' performance throughout the term or session. Cases of malpractice like outflow of question papers and adoption of unfair practices poses serious lapses in the examination system. Though more than one set of question paper in each subject is used to lower security threats, large gap in time of sending the question paper from the University to the Colleges is giving a scope for leakage and cancellation of examinations. Similarly impersonation also poses a threat in evaluating genuineness of the candidates' abilities. To overcome such security lapses, impersonation and to make it paperless and avoid its storing in evaluation system, e-pen and e-notebook are proposed. Avoiding storage of used stationary for years helps to reduce not only costs but also health hazards due to filing and storing the question papers and answer sheets for years.

2. Importance of This Research

The fundamental aim of this research work is to develop an analytical engine to design a secured data transmission system by using Zigbee technology and display the parameter on a notebook computer at multipoint screens using serial communication where both synchronous and asynchronous transmissions are supported. These operations can also be controlled if needed by using a micro controller at receivers for performing respective tasks efficiently.

Compared to other wireless protocols, the Zigbee wireless protocol offers lower complexity, reduced resource requirements and most importantly, a standard set of specifications. It also offers three frequency bands of operation along with a number of network configurations and optional security capability.

3. The Novel Methodology

The Research Work Proposed in this paper can reduce the Exam-paper consumption and can develop the flexibility of circulation of instructions in a better way. This device can be handed over to all the staff in the office and so the notification can be circulated easily. This device will be connected through RF. Hence so no mobile signals are required and we can reduce mobile communication in the corporate. If this technology develops, we can soon expect a paperless exam, it can also have best secured exams with minimum cyber corruptions. As shown in the Fig.1, As every student attends the exam with this device, he will be logging into his account and as this involves only a neural network and not a web server, hence nobody can hack it.
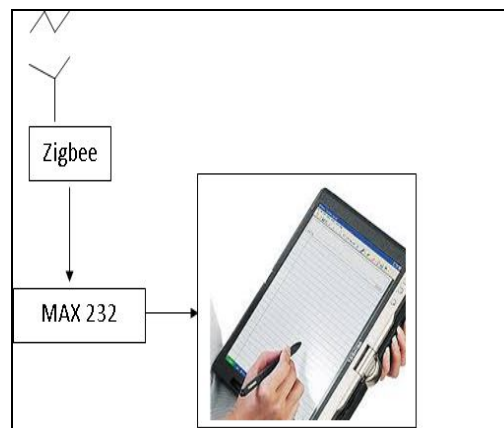

Figure 1

The question paper (Objective Type/ Descriptive Type) will be displayed over the device and after answering the question with e-pen (with a confirmation) the answer will be immediately sent to the invigilators' systems. Here we transfer the secured data from transmitter collected by the micro controller through serial communication and transmitted to the receiver section through wireless medium.

4. Results & Conclusion

This research work helps to improve security, reduce paper consumption, develops flexibility for conducting examinations in odd circumstances and in remote places with less power and battery backup, using e- pen and e-notebook. Evaluation can be done without any additional investments and by using the existing systems available in the laboratories in the educational institutions.

5. Future Outlook

Through developing this technology, we can soon expect a secured and paperless examination system in India. For administrators, it is low cost, simple, secure and an effective method, which can definitely reduce examination and evaluation period.

6. References

1. "Design And Implementation Of A Zigbee - Based Wireless Automatic Meter Reading System", by Hung-Cheng CHEN, Long-Yi CHANG; Przegląd Elektrotechniczny (Electrical Review), ISSN 0033-2097, R. 88 NR 1b/2012, pp. 64-68.
2. "Design And Implementation Of Remote/Short-Range Smart Home Monitoring System Based on Zigbee And Stm32", by Yuanxin Lin, Rui Kong,Rongbin She and Shugao Deng; Research Journal Of Applied Sciences, Engineering And Technology, 5(9),PP. 2792-2798, 2013 (ISSN: 2040-7459; e-ISSN: 2040-7467),Maxwell Scientific Organization, March 20th 2013).
3. "Zigbee Technology in Future Data Communication System", by Sushila Gupta, 2012 S-JPSET; (ISSN: 2229-7111), Vol. 3, Issue 2, pp. 73 – 78.
4. "Research On Routing Algorithm Based On The Zigbee-GPRS Technology And The Hyper graph Model"; by Ameng HAN, Yongshan LIU, Journal Of Computational Information Systems 8: 9 (2012) pp. 3895–3902.