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# Development of Prepaid Electricity Payment System for a University Community Using the LUHN Algorithm

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## Abstract

This work presents a University Community based electricity prepaid billing system. Generally in Nigeria, electricity customers face a lot of problems with respect to their electricity bills from the distribution companies. The challenges they face include wrongly calculated bills as a result inaccurate reading of meters, general human errors in bill preparation among others. In some other semi-automated systems in which prepaid meters are used, consumers waste much time in purchasing utility units for electricity. This is the case presently at the university community we are considered in this work. This paper presents the design and implementation of a combination of a web-based and SMS alert prepaid electricity system called for the community. The implementation of the system was done using C# programming language and Microsoft SQL Server as the database platform. The system incorporates the Luhn algorithm for generating pins for use on the simulated

prepaid meters. The system is able to run on the university intranet and can also serve as internet based application.

## Keywords

Prepaid electricity Luhn algorithm Payment system Pin

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## References

1. 1.  
Bruce, W.: Prepayment utility meter systems: a case study from Aleut region (2006). [https://www1.eere.energy.gov/tribalenergy/guide/pdfs/cs\\_aleutian\\_pribilof.pdf](https://www1.eere.energy.gov/tribalenergy/guide/pdfs/cs_aleutian_pribilof.pdf)
2. 2.  
Omijeh, B.O., Ighalo, G.I.: Design of a robust prepaid energy metering and billing system. *J. Res. Natl. Dev.* **10**(3), 146–153 (2012) [Google Scholar](#)
3. 3.  
Directinsite: Advantages of electronic payment system. [www.directinsite.com](http://www.directinsite.com) (2016). <http://www.directinsite.com/The-Advantages-of-an-Electronic-Payment-System#sthash.3cNiWrYP.dpuf>
4. 4.  
Stanescu, D., Ciubotaru-Petrescu, B., Chiciudean, D., Cioarga, R.: Wireless solutions for telemetry in civil equipment and infrastructure monitoring. In: 3rd Romanian-Hungarian Joint Symposium on Applied Computational Intelligence (SACI) (2006). <http://www.bmf.hu/conferences/saci2006/Ciubotaru.pdf>
5. 5.  
Sharma, S., Shoeb, S.: Design and implementation of wireless automatic meter reading system. *Int. J. Eng. Sci. Technol. (IJEST)* **3**(3), 2329–2334 (2011) [Google Scholar](#)
6. 6.  
Ling, Z., Sihong, C., Biao, G.: The design of prepaid polypase electricity meter system. In: IEEE Conference on Intelligent Computing and Integrated Systems (ICISS) (2010) [Google Scholar](#)
7. 7.  
Malik, S.H., Aihab, K., Erum, S.: SMS-based wireless home appliance control system (HACS) for automating appliances and security. *Issue Informing Sci. IT* **6**, 887–894 (2009) [CrossRef](#) [Google Scholar](#)

8. 8.

Maheswari, C., Jejanthi, R.: Implementation of energy management structure for street lighting system. J. Mod. Appl. Sci. **5**, 6–10 (2009) [Google Scholar](#)

9. 9.

Amit, J., Mohnish, B.: A prepaid meter using mobile communication. Int. J. Eng. Sci. Technol. **3**(3), 160–166 (2011) [Google Scholar](#)

10.10.

Luhn, H.P.: US Patent 2,950,048 - computer for verifying numbers, 23 August 1960. Luhn algorithm. <http://www.google.com/patents/US2950048>. Accessed 1 May 2016

11.11.

1000 Projects: Web based bill payment utility CSE project. 1000projects.org (2016). <http://1000projects.org/web-based-bill-payment-utility-cse-project.html>

12.12.

Wasi-ur-Rahman, M., Tanvir, A., Lutful K.: Design-of-an-intelligent-SMS-based-remote-metering-system. In: International Conference on Information and Automation, ICIA 2009, pp. 1040–1043 (2009) [Google Scholar](#)

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