

ABSTRACT

At the present time, long queues at the supermarket cashier is a regular sight. queue at the cashier is generally caused by two factors : first, cashier must shoot one by one barcode on goods purchased. And the second, cashier should count and calculate money paid money for the rest of the payment.

Therefore in this research designed a RFID-based automatic invoicing system that can reduce the length of queues at the supermarket checkout. RFID system on this final project is same with barcode system, but because RFID has the ability to send and receive data so the grocery items do not need to be pick up from the shopping cart to identify it. To complete the second queue factor, RFID is also used as an electronic payment device with RSA cryptographic algorithm as security of data communications between merchant and server. Six points in this research is : cryptographic key generation algorithm RSA, merchant GUI design, sms gateway system design, design of serial communication between the microcontroller and the merchant computer, server system design, and measurement of level detection accuracy and speed system performance.

From the testing results show that average level detection accuracy of goods is 92.23%, average speed of scanning items is 5.19 seconds/shopping cart, average speed data communication between the merchant computer and the server via sms is 17.41 seconds / transaction.

Keywords: RFID, Cryptography, RSA, Serial communication.