ABSTRACT

Nowadays, the use of electronic voting in an election has been widely adopted as a replacement for conventional voting system. Apart from the benefits of using this system, in fact there are still many problems that can occur, such as system errors, network security, data confidentiality, and others. One of the main problem is it does not guarantee the confidentiality and accuracy of the data that to be stored and used. Cryptography is the science of mathematical technical to secure the message offer solutions for the related problems.

In this final project discussed the offered solutions that utilize cryptography on the security of e-voting system. This research will be used Okamoto-Uchiyama Cryptographic algorithm to ensure the security and confidentiality of the voting data, as well as utilizing the homomorphic properties of this algorithm to dot he counting. This algorithm will hide the data by encrypting the votes that choosen by the voters and the system can perform calculations using the data that still encrypted without having to be decrypted first.

According to the test, this system can encrypt the voting data, resulting ciphertext with size 3 times larger than the plaintext, with average encryption processing time 387799,2 nanoseconds, and resulting ciphertext that has different value each other. The system can perform the calculation using homomorphic property and produce output that has same result with desired plaintext after decrypted.

Keywords : E-voting, Cryptography, Okamoto-Uchiyama, Homomorphic.