Abstract

Medical record is very important for many people, especially for the patient itself to get medical services fast and precisely. However, the storage of the medical record in written note paper obstructs the medical service works, whereas the computerized medical record does not interoperable with other medical instances. Therefore, it needs a kind of portable secure electrical storage media concept in Electronic Medical Record (EMR) namely smart card. Interoperability is the important factor so that the smart card can be accessed everywhere without concerning about hardware environment. The appropriate smart card type for this condition is java smart card. Java smart card is different from another smart card because in this smart card there is Java Card Runtime Environment (JCRE) to support java programming language, especially platform java card. The implementation of EMR that is done by developing java card architecture is form in off-card application as user interface for doctor and java card applet as the application inside the card to process data. There are 2 kinds of methods data object storage, ISO7816-4 standard and non-standard. ISO7816-4 standard requires the usage of the ASN.1 BER TLV to be applied on java card's data object. The implementation of java card application using basic communication model of java card, message passing, so the program can be seen clearly. The turnaround time testing of each CRUD process indicates that the process of read needs the most turnaround time, whereas delete process needs the least turnaround time. The process of update needs more turnaround time than create process. The testing of turnaround time and memory space needed on both of data object's storage method indicates that standard method needs more turnaround time and memory space, except the process to delete is same. According to the results of the analysis and implementation of java card, is expected that the usage of java card technology in EMR can increase the medical service quality in storing patient's medical record more effevtively and efficiently.

Keywords: *smart card, java card, Electronic Medical Record (EMR), ISO7816-4, ASN.1 BER TLV, message passing, Create Read Update Delete (CRUD)*