ABSTRACT

Presence is the main thing in teaching and learning activities, because it becomes evidence of the implementation report. Generally, attendance is done manually, Students put a signature on a paper that is circulated. This final project designed and implemented QR-Code technology usage in presence system based on Android.

The system has a configuration consisting of an encoder system, a hardware system, and a decoder system. The encoder system discusses the encoding process of data in the form of a National Student Identification Number (NISN) into a QR-Code. The system uses the Bose, Chaudhuri, and Hocquenghem (BCH) codes as error correction programmed with the MATLAB application. The hardware system consists of an android device and an embedded QR-Code student card. The decoder system discusses the QR-Code detection process with the Smart Presence application that was created with the Android Studio program.

The system is tested by black box testing, detection distance testing, light-based detection testing, and contamination of student cards. Black box testing shows the good functionality of each display in the Smart Presence application. Detection distance testing produces minimum and maximum distance QR-Code detection. Light-based testing and contamination of student cards have results accuracy and computational time. The test parameters on the student card contamination consist of the dirty ink test, mud dirty test, and friction or scratch test. Testing ink dirty is done on five colors with light, moderate, and hight testing levels. The total ink dirty testing was carried out on 150 student cards. Mud dirty and friction or scratch tests have light, moderate and hight test levels. Total mud dirty testing was carried out on 30 student cards. Total friction or scratch tests are carried out on 30 student cards. The results of the study, QR-Code detection has a minimum distance of 3 cm and a maximum distance of 45 cm with an accuracy rate of 98% and an average computation time of 1.3 seconds.

Keywords : Presence, *Qr-Code*, *BCH Code*, *Smartphone, The Bose Chaudhuri and Hocquenghem*