

ABSTRACT

Mechatronics Laboratory Workshop is one of the laboratories in the Faculty of Applied Sciences, University of Telkom. This lab is divided into two parts, namely practicum and research. In doing the research lab and the lab assistant will be very busy and moreover should be shared with the college. Often the assistant had problems with the tools and the rooms were still not awake or still a mess after use because it can impact the loss of tools or equipment damage, and therefore the assistant should be more attention to the existing laboratory instruments even though it is difficult to do. From the author of the above problems create a toolbox that can be used as a storage facility with a password authentication on a particular tool suitable group.

Toolbox created by the author using a security password to open it, the main control of the microcontroller ATMEGA 8535. Keys used are solenoid door lock that works based on the logic of the microcontroller. The Toolbox also uses a 4x4 keypad for input and operate the menu, than this toolbox has a display size of 20x4 character LCD character. Each occurred lending loan data will be stored in external memory that has been provided, namely external EEPROM type AT24c1024 that will keep a log of borrowing in the form of the name, borrowed tools, and time borrowing. Loan periods sampled by the DS1307 RTC will paralleled with external EEPROM in SDA and SCA pin.

After the measurement, the output voltage of the power supply block microcontroller is 4.944V. Microcontroller operating voltage on the average is 4.93 V with setabil. The success rate of the writing on the EEPROM is 100% in 23 of 110 samples of writing user data, the success rate to make the relay work and move the solenoid is 100% of 10 attempts. The overall success of the tools to detect, read data assistants, and reading time is borrowing 100% of the lending 48 times with 6 different users. Initial system initialization time 25.97 seconds. The number of user data and logs the user maximum 110 maximum loan 3226 loan record the data.

Keywords: Laboratory of Mechatronics Workshop, Toolbox, ATMEGA 8535, AT24c1024, DS1307 RTC.