# Training for Vocational High School Teacher and Student in Computer and Network Engineering Department

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**training in computer and network engineering for Vocational High School teachers**

Group of lecturer in Computer Network, Faculty of Computer Science, Brawijaya University (Fakultas Ilmu Komputer Universitas Brawijaya/FILKOM UB) held training for teachers at Vocational High School, Department of Computer and Network Engineering, for three days (25-27/Aug/2017). The training was conducted at learning laboratory of Faculty of Computer Science. Whereas the participants who attended consisted of teachers of SMK Muhammadiyah 1 Kepanjen, SMK Telkom Malang, SMKN 1 Kepanjen and SMKN prigen.

There were three important materials delivered in the training. The first day, the training material was about "The making of Virtual Computer Laboratory using Virtualbox" delivered by Kasyful Amron, S.T., M.Sc. Kasyful mentioned that Virtualbox is a free software owned by Oracle which has function to visualize one or many operation systems within a main system. Virtualbox has several important features such as can run several operation systems simultaneously, the installation process is easier, allows system and data recovery system, as well as infrastructure efficiency. The software allows to use and test some operation systems without having to have multiple computers. Therefore, Virtualbox can be used to support the making of virtual computer laboratory at Vocational High School which has limited number of computer devices.

On the second day, Sabriansyah Rizqika Akbar, S.T., M.Eng delivered a presentation on "Raspberry Pi for Internet of Things with Server Blynk". The presentation opened by an explanation on definition and history of microcomputer as well as Raspberry Pi. Microcomputer is an interconnection between microprocessor with main memory and I/O devices conducted by using bus interconnection system.

Microcomputer was created after the discovery of Integrated Circuit/IC technology (1959) and microprocessor (1971). The IC technology enables miniaturization of computer memory circuits, whereas microprocessor technology is significantly able to minimize the size of CPU computer.

Both technologies able to give birth to the first microcomputer in 1974. Microcomputer is growing rapidly up to the year of 2006. Eben upton, a computer doctoral graduated from University of Cambridge created a very simple

computer named Raspberry Pi. Ideas behind the computer initiated from the desire to create a new generation of programmers. As mentioned in the official site of Raspberry Pi Foundation, on that time, Eben Upton, Rob Mullins, Jack Lang and Alan Mycroft, from Computer Laboratory of University of Cambridge had worries to see the increasingly decline of students' skills and numbers who will learn computer science. Eben Upton then found Raspberry foundation in 2009 hand-in-hand with Pete Lomas and David Braben. Three years later, Raspberry Pi Model B entered its mass production. In its first launch in the end of February 2012, within a few hours already sold 100,000 units. About two years later, Raspberry Pi had sold over 2.5 million units worldwide. Despite Raspberry Pi's size is merely as big as credit card, but this computer has reliable capabilities. In a Raspberry Pi, already installed a Linux operation system, a free software which usually used by computer experts. Raspberry Pi almost can do all sophisticated computer's works. The presentation was then pursued with a detailed introduction on single-board microprocessor Raspberry Pi. The implementation is the way to install Raspbian OS in Raspberry Pi until IOT implementation project using Raspberry Pi to have temperature and humidity monitoring.

The third day was filled with material presentation on "Building WMN (Wireless Mesh Network) with Raspberry Pi" delivered by Eko Sakti Pramukantoro, S.Kom., M.Kom. Different with two days before, participants who attended in the third day were Vocational High School students in Malang City. Whereas the detailed presentation delivered on the occasion was including WMN introduction including definition, characteristics, architecture, a media transmission until operation mode used in WMN. Furthermore, in the end of the session, Eko also delivered the implementation of WMN by Raspberry Pi. [Dina/Humas UB/trans. Denok]

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