UNIVERSITI TEKNOLOGI MARA
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MEC299

ARDUINO WELDING TABLE

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ABSTRACT

This Final Year Project (FYP) is called Arduino Welding Table. It is a welding table that can be controlled by Internet of Things (IoT) system. This project consists of a skill in coding and work in welding. Firstly, to do this project it is required a coding from Arduino IDE applications to make Arduino works properly when the instructor run the test on the table. The aims of this study are to create a safety awareness welding environment for the welder instructor and to educate students to know the welding process using the Internet of Things (IoT) system. After that, the original welding table that placed in welding workshop is measured accurately and precisely then illustrate in the solidwork software. A danger always happens while doing the welding process. It can lead to major injuries to the welder such as spark & damage to the person. Then, welding work is usually done in a classical way that more likely does not have any types of safety features for the welder when doing the welding process. The solidworks software will create a model of this Arduino Welding Table that works just like the real project when it finishes. Then, the Arduino Uno then install to the demonstrate welding table followed the illustration that have made in solidwork software. Lastly, the Arduino Welding Table is tested by creating a real process of Gas Metal Arc Welding (GMAW). With this method, it can sense any of error of this Arduino Welding Table either it is from Arduino coding or a mistake at its installations. Some of the functions of this Arduino Welding Table is, it can detect any fire that can be caused by spark of the welding. This Arduino Welding Table is expected can run with the safety features and can works perfectly with IoT system as illustrated in solidworks. To conclude this Final Year Project (FYP), this project can reduce the risk of danger to the instructor.

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CHAPTER 1

INTRODUCTION

1.1 Background Of Study

In this era of modernization, there have been many sorts of creation that may help people to try to their standard of living. one in every of the creations that currently is IoT system. The IoT system is known as Internet of Things (IoT) system. Internet of Things (IoT) system involve of services distributed in distinct devices, collaborating with one another to fulfil common goals of IoT applications. to create a sturdy and effective IoT system, one must initially derive the correct architectural requirements of the system. As IoT could be a young and sophisticated technology domain, insights into its system requirements aren't widely available and so not well understood. [1]
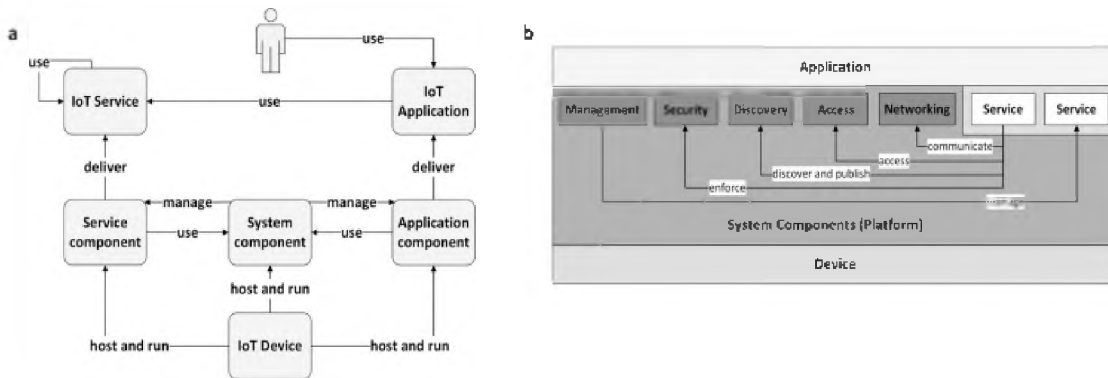

Figure 1.1: IoT System [1]

The Internet of Things (IoT) system includes a device called The Arduino Uno. A short story, the Arduino project began in 2005 as a tool for college kids at the Interaction Design Institute Ivrea in Ivrea, Italy, attending to provide a low-cost and effortless way for novices and professionals to form devices that interact with their environment using sensors and actuators [2]. The Arduino Uno may be a microcontroller board supported the ATmega328. It is a 14 digital input or output pins of which 6 may be used as PWM outputs, 6 analogue inputs, a 16 MHz oscillator, a USB (Universal Serial Bus) connection, an influence jack, an ICSP header, and a push button. It contains everything needed to support the microcontroller. Then, all it need is just connect it to a computer with a USB cable or power it with an AC-to-DC adapter or battery to urge started. The Arduino Uno is basically a brain of a computer because it is control anything that run the whole computer [3].

Figure 1.2: Arduino Board [3]

The Arduino can read inputs such as light on a sensor, a finger on a button, or a Twitter message and the turn it into an output. It also can activate a motor, turning on an LED (Light Emitting Diode) or publishing something online. It is commonly used for computing projects, interactive installations, and rapid prototyping. The Arduino has many types which is ARDUINO UNO, ARDUINO LEONARDO, ARDUINO 101, LILYPAD ARDUINO USB, ARDUINO ROBOT, ARDUINO ESPLORA, ARDUINO MICRO, ARDUINO MEGA 2560, ARDUINO NANO, ARDUINO MINI, ARDUINO YUN AND ARDUINO ZERO [2].

Figure 1.3: ARDUINO TYPES [2]

There was a certain technique to program the Arduino. First, the Arduino coding is programmed in a software called Arduino IDE. The Arduino Integrated Development Environment, sometimes known as the Arduino Software (IDE). This software includes a code editor, a message area, a text console, a toolbar with buttons for common functions, and several menus. It communicates with and uploads programs to the Arduino hardware. The Arduino IDE's programming language is C or C++.