UNIVERSITI TEKNIKAL MALAYSIA MELAKA

DESIGN AND DEVELOPMENT OF SMART BEDROOM CONTROLLING WITH IOT PLATFORM

This report is submitted in accordance with the requirement of the Universiti Teknikal Malaysia Melaka (UTeM) for the Bachelor of Electronics Engineering Technology (Telecommunications) with Honours.

by

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APPROVAL

This report is submitted to the Faculty of Electrical and Electronic Engineering Technology of Universiti Teknikal Malaysia Melaka (UTeM) as a partial fulfilment of the requirements for the degree of Bachelor of Electronics Engineering Technology (Telecommunications) with Honours. The member of the supervisory is as follow:

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ABSTRACT

Bedroom is the place to rest and do variety of certain activities personally. Thus, the bedroom able to spread the calmness and become the place to engage tiredness but sometimes the bedroom can enhance the bad mood to its owner. This can be proven as if electrical appliances in the bedroom was forgotten to switch off when being outside of the bedroom or the house. The owner will definitely become worry and anxious. Nevertheless, bedroom nowadays provide a lot of functions that can ease the owner to do things beyond human control through electronic sophistication era and it is called smart bedroom. The purpose of creation of the smart bedroom is to develop a smart bedroom using Arduino which can ease the bedroom user to control all the electrical appliances and monitor the condition in the bedroom. This can be achieved by controlling and monitoring all the electrical appliances and non-electrical appliances in the bedroom from the cell phone only by using Blynk application through WiFi that connected to Arduino Mega 2560 and ESP 8266. As the result, all electrical appliances such as fan, light, air conditioner and all non-electrical appliances such as bed, door, windows and humidity can be controlled and monitored using Blynk application even when outdoors. This can absolutely have a positive impact on its users while also saving energy consumptions. Moreover, many unwanted incidents can also be avoided.

ABSTRAK

Bilik tidur ialah sebuah tempat untuk berehat dan melakukan pelbagai aktiviti tertentu secara peribadi. Bilik tidur sentiasa memberikan ketenangan dan menjadi tempat untuk melepaskan penat lelah tetapi kadang-kadang bilik tidur boleh menaikkan *mood* yang tidak baik kepada tuannya. Hal ini dapat dibuktikan sekiranya alat-alat elektrik di dalam bilik tidur itu terlupa untuk dimatikan ketika berada di luar rumah. Hal ini boleh mendatangkan kegundahan kepada tuannya. Namun begitu, bilik tidur kini juga menyediakan banyak fungsi-fungsi yang dapat memudahkankan tuannya melakukan perkara yang berada di luar kawalan melalui era kecanggihan elektronik dan dipanggil bilik tidur pintar. Tujuan bilik tidur pintar ini dicipta adalah untuk menjana sebuah bilik tidur menggunakan Arduino yang memudahkan pengguna bilik tidur mengawal segala peralatan elektrik dan memantau keadaan di dalam bilik tidur. Hal ini boleh dicapai melalui kawalan dan pemantauan dari sebuah telefon bimbit sahaja menggunakan aplikasi Blynk melalui WiFi yang bersambung dengan Arduino Mega 2560 bersama ESP 8266 untuk berhubung dengan segala peralatan elektrik atau bukan elektrik di dalam bilik tidur itu. Hasilnya, segala peralatan elektrik seperti kipas, lampu, penyaman udara dan segala peralatan bukan elektrik seperti katil, pintu, tingkap, kelembapan dapat dikawal serta dipantau melalui aplikasi Blynk walaupun berada di luar rumah. Hal ini pastinya dapat memberikan impak positif kepada penggunanya di samping dapat menjimatkan penggunaan tenaga. Lebih-lebih lagi, pelbagai kejadian yang tidak diingini juga dapat dielakkan.

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DEDICATION

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LIST OF SYMBOLS

GHz	-	GigaHertz
Mbps	-	Mega bit per second
MHz	-	MegaHertz
V	-	Voltage
A	-	Ampere
mA	-	milli Ampere
m	-	meter
cm	-	centimeter
k / K	-	kilo
kΩ	-	kilo Ohm
MΩ	-	Mega Ohm
Ω	-	Ohm
kB	-	kilo Byte
µs	-	micro second
°C	-	degree Celcius
MB	-	Mega Byte
ms	-	milli second
%	-	percentage
±	-	plus minus

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µA	-	micro Ampere
Hz	-	Hertz
RPM	-	Revolutions per minute
W	-	Watt
mN.m	-	milli Newton meter
H	-	horizontal (angle)

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