

**UNIVERSITI TEKNOLOGI MARA**

**IOT-BASED TEMPERATURE  
AND HUMIDITY MONITORING  
OVER DATA LOGGER  
THINGSPEAK USING ARDUINO  
UNO**

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## ABSTRACT

Temperature and humidity are useful variables and often measured for various applications in a variety of locations, including football field, farms, greenhouses, hospitals, industrial buildings, homes, and workplaces for monitoring purpose as for well- being as well as safety precautions. For instance, excessive temperature and humidity could influence our thermal comfort, and cause impact on human health. With this motivation, a data logger for monitoring temperature and humidity is developed in this study using Arduino UNO which offer remote access and control through IoT. In addition, ThingSpeak platform is utilized for visualization of the measured data while the controlling is done by the Blynk module. The project involves both simulation and hardware prototype development. The results showed that the simulation model of the data logger is successfully developed and outputs the expected outcomes. On the other hand, the data logger model operates successfully and is capable of logging temperature and humidity data over time.

## TABLE OF CONTENTS

CHAPTER	TITLE	PAGE
	<b>AUTHOR’S DECLARATION</b>	<b>ii</b>
	<b>APPROVAL</b>	<b>iii</b>
	<b>ACKNOWLEDGEMENT</b>	<b>iv</b>
	<b>ABSTRACT</b>	<b>v</b>
	<b>TABLE OF CONTENTS</b>	<b>vi-</b>
		<b>vii</b>
	<b>LIST OF FIGURES</b>	<b>vii</b>
		<b>-ix</b>
	<b>LIST OF TABLES</b>	<b>x</b>
<b>1</b>	<b>INTRODUCTION</b>	
	1.1 Background	<b>1</b>
	1.2 Problem Statement	<b>1-2</b>
	1.3 Objectives	<b>2</b>
	1.4 Scope of Work	<b>2-3</b>
	1.5 Project Significant	<b>3</b>
<b>2</b>	<b>LITERATURE REVIEW</b>	
	2.1 Introduction	<b>4</b>
	2.2 Automatic Temperature Control for a Plant House	<b>4-5</b>
	2.3 Design and Implementation of an Arduino - Based DHT11 Sensor-based Automatic Room Temperature Management System	<b>5-6</b>
	2.4 Arduino-Based Temperature and Humidity Control for Condensation on Wettability Engineered Surfaces	<b>6-8</b>

# CHAPTER 1

## INTRODUCTION

### 1.1 Background

The ability to monitor and make adjustments in real-time to maintain ideal environmental conditions in varied situations makes IoT-based temperature and humidity control of vital value. These systems provide remote access and control, energy efficiency optimisation, data-driven decisionmaking, and predictive maintenance through the use of IoT connectivity. They are useful in sectors like residential, commercial, industrial, healthcare, and agriculture because they improve comfort, decrease energy waste, improve operational efficiency, and take safety into account. Generally, ideal temperature ranges between 24 to 31°C [6].

Meanwhile, ideal humidity which is regarded as ideal range for human comfort is typically ranging between 40% and 60% of relative humidity [7]. Extremely high or low in temperature and humidity could cause be uncomfortable and even dangerous.

In conclusion, the complex interactions between the monsoon seasons, high humidity, and tropical temperature define Malaysia's climate. The nation's natural diversity, agricultural difficulties, and distinctive weather patterns are shaped by these climatic elements, which also have an impact on the people's daily experiences.

### 1.2 Problem Statement

The proposed initiative aims to mitigate the difficulties caused by unanticipated weather patterns by identifying and alerting people to possible hazards, with a particular emphasis on maintaining proper body temperature. The programme acknowledges that extremely high temperatures can cause heat stress, which can result in serious health problems like heart attacks, strokes, or respiratory disorders[8].

Humidity affects human health by determining our thermal comfort, or whether we feel overly hot or cold. Because heat is harder to escape the body through sweat evaporating into the air, the body finds it more difficult to stay cool in warm