

FACULTY of ELECTRICAL ENGINEERING

UNIVERSITI TEKNOLOGI MARA



FINAL REPORT of DIPLOMA PROJECT

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'MILLISECOND DIGITAL STOPWATCH'

PREPARED BY

MOHD HASRI BIN HAMZAH

99042485

EE 111

NOOREASTMALI BIN IDRIS

99042613

EE111

PREPARED FOR

ENCIK ALI BIN OTHMAN

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MOHD. HASRI B HAMZAH
99042485
EE 111



NOOREASTMALI B IDRIS
99042613
EE111

1.0 **ABSTRACT**

“Time is gold”, “Time is sharper than sword” and “Time change everything”. This three aphorism can tell us how important time in our lives. Watch is the device to determine the time. It's included to determine date, hour, minute and second. Even to comparing how fast thing moves between two points, time is useful in this case. That's why we create the device called '*Millisecond Digital Stop-watch*'. This stopwatch is suitable to measure the time for a thing moves between two points. And this stopwatch can read until 0.001 seconds. Actually, this stopwatch is widely use in sports arena like Formula One Racing and Sprint that can give us the exact result. Win or loose is consider to the time difference. So, we can proof that time is very important although even only 0.001 second.

CONTENTS

	PAGE
ACKNOWLEDGEMENT	i
1.0 ABSTRACT	1
2.0 INTRODUCTION	2
3.0 COMPONENT REQUIREMENT	
3.1 Component Requirement	3
3.2 Cost of Project	4
4.0 SYSTEM AND CIRCUIT DESCRIPTION (GENERAL)	
4.1 Resistor	5
4.2 Capacitor	8
4.3 7-Segment Display	9
4.4 Integrated Circuit	11
4.4.1 555 Timer	12
4.4.2 7408 2-Input AND Gate	14
4.4.3 7447 BCD to 7-Segment Decoder	16
4.4.4 7490 Decade Counter	18
5.0 CIRCUIT OPERATION	
5.1 Basic Operation	
5.1.1 555 Timer	19
5.1.2 7490 Decade Counter	26
5.1.3 7447 BCD To 7-Segment Decoder	29
5.2 Circuit Operation	33

2.0 INTRODUCTION

Millisecond Digital Stopwatch is the device to measure the time close to 0.001 second. We can say its will measure how fast an anything moves between two points. Actually, it's widely used in sports like car racing or sprint.

In this project, we will present to you in detail how this stopwatch will be function, the characteristic of the devices that we will use in this project and the result that we can get. But here, this is a briefing about how this circuit will be functioned.

How this circuit will be operated? Its start when you push the SET button. Then, the 555 Timer IC will start the counting by produce the clock pulse. The basic clock generator used in the astable mode. The output of the 555 Timer is a 1 kHz square wave, which is fed to one input of the AND gate. The 2-Input AND Gate will be function as switch based on their characteristic. It will drive by the ANDed output from 555 Timer drives to Pin 14 of 7490-Decade Counter. The 7490 or a *ripple counter* is a serial counter. The term *serial* refers to a series like application of the clock pulse. Note that clock input is applied to only the first of the series of flip-flop. Clock pulses for the other flip-flops come from the preceding flip-flop. Thus, the clock pulse 'ripples' through the circuit in series fashion. Such a circuit is also called *asynchronous* since the only pulse required for operation is the clock pulse.

The output of the decade counters is fed to the BCD to 7-Segment Decoder drivers. This decoder is a circuit used to change a coded input such as BCD to another code which is in this case it decode to a decimal numbers. The decimal number that decode by the BCD will be present in 7-segment LED display. In this case we connect the decoder to a common anode type display.