

الآية

قال تعالى:

بسم الله الرحمن الرحيم

[أَلَمْ تَرَ أَنَّ اللَّهَ سَخَّرَ لَكُمْ مَّا فِي الْأَرْضِ
وَالْفُلْكَ تَجْرِي فِي الْبَحْرِ بِأَمْرِهِ وَيُمْسِكُ
السَّمَاءَ أَنْ تَقَعَ عَلَى الْأَرْضِ إِلَّا بِإِذْنِهِ إِنَّ اللَّهَ
بِالنَّاسِ لَرَوُّوفٌ رَحِيمٌ]

صدق الله العظيم

(سورة الحج الآية 65)

Dedication

To father and mother
Brother and sisters
Through the long way
To whole that suffer in our country
And extended to those who are burning
To lighting ... teachers

Abstract

A microcontroller is computer on a chip optimized to control electronic devices it is a type of microprocessor emphasizing self-sufficiency and cost-effectiveness, in contrast to a general - purpose microprocessor, the kind used in a (PC).

Typical microcontrollers contain all memory and I/O interfaces needed where as a general purpose microprocessor required additional chips to provide these necessary functions. This research describes how the microcontroller controls program, the code wrote to drive stepper motors and control the direction of rotations

The research described the control processing of external devices by microcontroller the program written to activate two stepper motors and control of speed and direction of rotation the purpose of that to rotate the module vertical and horizontal.

The microcontroller connects to the computer to program the program stored in memory.

تجريد

إن المتحكم الدقيق عبارة عن حاسوب على رقاقة حُسنّت للتحكم في الأجهزة الالكترونية. وهي نوع من المعالجات الدقيقة و تمتاز عنها بقلة التكلفة لأنها تقوم بوظائفها دون الحاجة إلى رقائق إضافية بالمقارنة مع المعالج الدقيق المثالية على كل من الذاكرة ومنافذ الإدخال التي يحتاجها. يصف هذا البحث عملية تحكم المتحكم الدقيق في الأجهزة الملحقه الخارجية بواسطة برنامج تحكم، سوف يكتب برنامج تحكم لتفعيل محركي الخطوة والتحكم في السرعة واتجاه الدوران وذلك لغرض تدوير منصة الهوائي بالمستوي الافقي وبالمستوي العمودي .

تتم عملية برمجة المتحكم الدقيق بواسطة الحاسوب من خلال وصلة تربط بينهما وبعد كتابة البرنامج يتم تخزينه في ذاكرة المتحكم الدقيق .

LIST OF CONTENTS

CONTENTS	PAGE NO.
الآية	I
DEDICATION	II
ABSTRACT BY ENGLISH	III
ABSTRACT BY ARABIC	IV
LIST OF CONTENTS	V
LIST OF FIGURES	VIII
LIST OF TABELS	IX

ABBREVIATIONS	X
CHAPTER ONE	
Introduction	
Introduction	1
1.1 Background	1
1.2 Objective	1
1.3 Approach	1
1.4 microcontroller chip	1
1.5 Description of microcontroller chip	3
1.6 Research out line	4
CHAPTER TWO	
Antenna	
2.1 Introduction	5
2.2 What is an antenna	5
2.3 Antenna Reciprocity	6
2.4 Two dimensional aperture synthesis	6
2.5 Antenna module	7
2.6 Antenna measurement	7
2.7 Tracking with antenna	8
CHAPTER THREE	
The Microcontroller	
3.1 Overview	10
3.2 Introduction to microcontroller	13
3.3 Analog ports	16
3.4 Digital I/O Ports	18
3.5 Serial Communication, RS232, UART	19
3.6 Timers	19
3.7 I ² C:	19
3.8 programming Languages	20

CHAPTER FOUR	
Types of Microcontroller	
4.1 Personal Internet Communicator (PIC)	22
4.2 Basic stamp	27
4.3 Motorola microcontrollers	29
4.4 Scenix microcontrollers	30
4.5 ARM	30
4.6 Power PC	31
4.7 Atmel Microcontrollers	32
4.8 Hitachi	33
4.9 Zilog	33
4.10 Picaxe	34
4.11 Rabbit controllers	35
CHAPTER FIVE	
Hardware	
5.1 introduction	36
5.2 Hardware Contains	36
5.3 Stepper Motor	36
5.4 Types of Stepper Motors	37
5.5 Stepper Motor Advantages and Disadvantages	38
5.6 HD74LS373	39
5.7 ULN2803A	39
5.8 Board Panel	40
5.9 Operation Circuit Design	40
5.10 Design Steps	42

CHAPTER SIX	
Software	
6.1 Introduction	45
6.2 General operation theory	45
6.3 PBASIC language	45
6.4 Introducing the BASIC stamp Editor	46
6.5 The program	49
CHAPTER SEVEN	
Result and Discussion	
7.1 Results	53
7.2 The practical Circuit	53
7.3 Experimental Result	54
CHAPTER EIGHT	
Conclusion and Recommendation	
8.1 Conclusion	55
8.2 Recommendation	55
References	
Appendix	

LIST OF FIGURES

FIGURE NO.	FIGURE TITLE	PAGE NO.
1.1	microcontroller – base system – on – a chip	3
2.1	Antenna module design	7
3.1	One chip solution	13
3.2	A microcontroller is just an IC	14
3.3	Augmented microcontroller	15
3.4	Connected external device	15

3.5	development board	16
3.6	Convert an angle signal to a digital signal	17
3.7	Square wave for PWM	18
5.1	Diagram for programming The Microcontroller	41
5.2	Circuit Design	42
6.1	Flow Chart	48
7.1	The connection of the hardware design	53

LIST OF TABLES

TABLE NO.	FIGURE TITLE	PAGE NO.
5.1	Connection of microcontroller to the IC No (1) HD7LS373	42
5.2	Connection of microcontroller to the IC No (2) HD7LS373	42
5.3	Connection of the IC No (1) to the IC No (3) ULN2803	43

5.4	Connection of the IC No (2) to the IC No (4) ULN2803	43
5.5	Connection of the IC No (3) to the stepper motor No (1)	44
5.6	Connection of the IC No (4) to the stepper motor No (2)	44

ABBREVIATIONS

MCU	Microcontroller Unit
PC	Personal Computer
RC	Resistant Circuit
DSP	Digital Signal Processor
UART	Universal a synchronous Receiver Transmitter
JTAG	Joint Test Action Group

ARM	Atmospheric Radiation Measurement
RAM	Random Access Memory
ROM	Read Only Memory
I²C	Inter-Integrated Circuit Bus
HF	High Frequency
VHF	Very High Frequency
SWR	Standing Wave Ratio
VSWR	Standing Wave Ratio
IC	Integrated Circuit
CPU	Central Processing Unit
EPROM	Erasable Programmable Read Only Memory
EEPROM	Electrical Erasable Programmable Read Only Memory
ADC	Analog to Digital Converter
LED	Light Emitting Diode
PWM	Pulse Width Modulation
PIC	Programmable Interface Controller
OTP	One-Time Programmable
OSC	Organic Semiconductor Center
TTL	Transistor Transistor Logic
SCI	Serial Communication Interface
SPF	Serial Peripheral Interface
SOC	System-On-Chip
RISC	Reduced Instruction Set Computing
ASSP	Application Specific Standard Product
VR	Variable Reluctance