IC Tester And Recognizer

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Project Abstract

IC's are the main components of each and every electronic circuit. Our project does the job of recognizing and testing IC's. The IC recognizer recognizes the IC, displays the IC number. The IC tester confirms whether the IC under consideration is working properly or not and displays the result on the LCD interface. The IC tester requires the IC number which can be provided by the IC recognizer.

Generally, debugging an electronic circuit is difficult as we don't come to know whether the circuiting is creating problem or the IC itself is dead. The IC tester can, therefore, be used for efficient circuiting in labs.

INTRODUCTION

The subparts of the project are following:

1) IC Tester

The IC to be tested is inserted in the base. The user enters the IC number through keypad which is simultaneously displayed on the LCD. The coding is such that each and every pin is tested for its corresponding function.If the IC gives correct output for all sets of input, then the LCD displays *"IC is OK"* else it displays *"IC is not OK".*

2) *IC Recognizer*

The IC to be recognized is inserted in the base. The MCU checks the output for some particular predefined sets of input. If the corresponding output matches with the predefined output of an IC, then its IC number is displayed on LCD.

PROJECT DETAILS

HARDWARE

1)We have used one **ATMEGA 16** MCU for coding of both Recogniser and Tester.

2) **Keypad** is used to input the IC number, controlling functions of reset and clear and for selecting the tester/recogniser mode. For this we used a 16x1 MUX. When a key is pressed on the keypad, that particular number is given as input to the MUX and then its corresponding output is processed in the MCU and hence the digit is displayed on the LCD screen.

3) We have used the **LCD** screen for displaying purposes.

4) **Multiplexer**(4067 16x1 mux)

5) IC Testing **Base** for placing ICs.
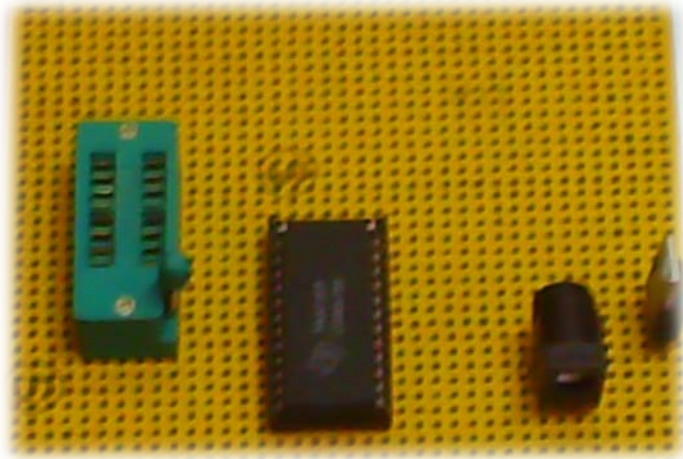
SOFTWARE

We programmed the MCU using CVAVR and AVR Studio.

The code was written using C Language. It was divided into two parts, using Switch-Case, namely – Tester and Recognizer.

The main code contains a sub code for each IC to be tested.

 Each sub code is contained in a 'function' which initializes the input pins of the IC with various possible sets of inputs and checks for the corresponding outputs and displays the results accordingly.
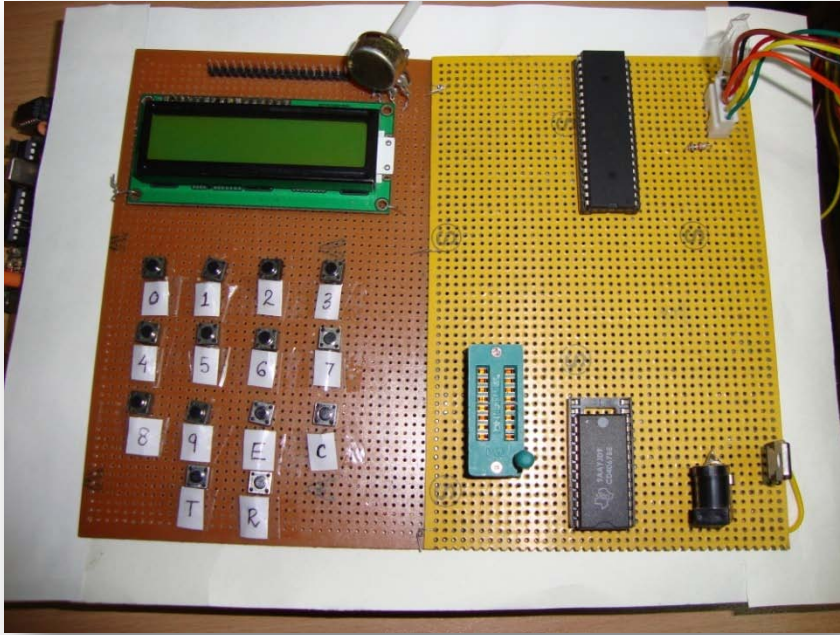
ICs that can be tested and recognized

- 4069-Hex Inverter (NOT Gate)

- 4081- Quad 2-Input AND Gate

- 4071- Quad 2-Input OR Gate

- 4001- Quad 2-Input NOR Gate

- 4011- Quad 2-Input NAND Gate

- 4070- Quad 2-Input Exclusive OR Gate

- 7266- Quad 2-Input Exclusive NOR Gate

- 4073- Triple 3-Input AND Gate

- 4075- Triple 3-Input OR Gate

- 4082- Dual 4 input And gate

- 4052- 4 X 2 *Multiplexer*

- 4051- 8 X 1 *Multiplexer*

- 4053- 2x1 *Multiplexer*

- 7485- 4 bit binary *comparator*

- 74194- 4 bit bidirectional *Shift Register*

Problems Faced

The code became too long when we combined both recogniser and tester codes.To solve it out ,we used several functions in the program so that the length of the code can be minimised.

Circuit Diagram
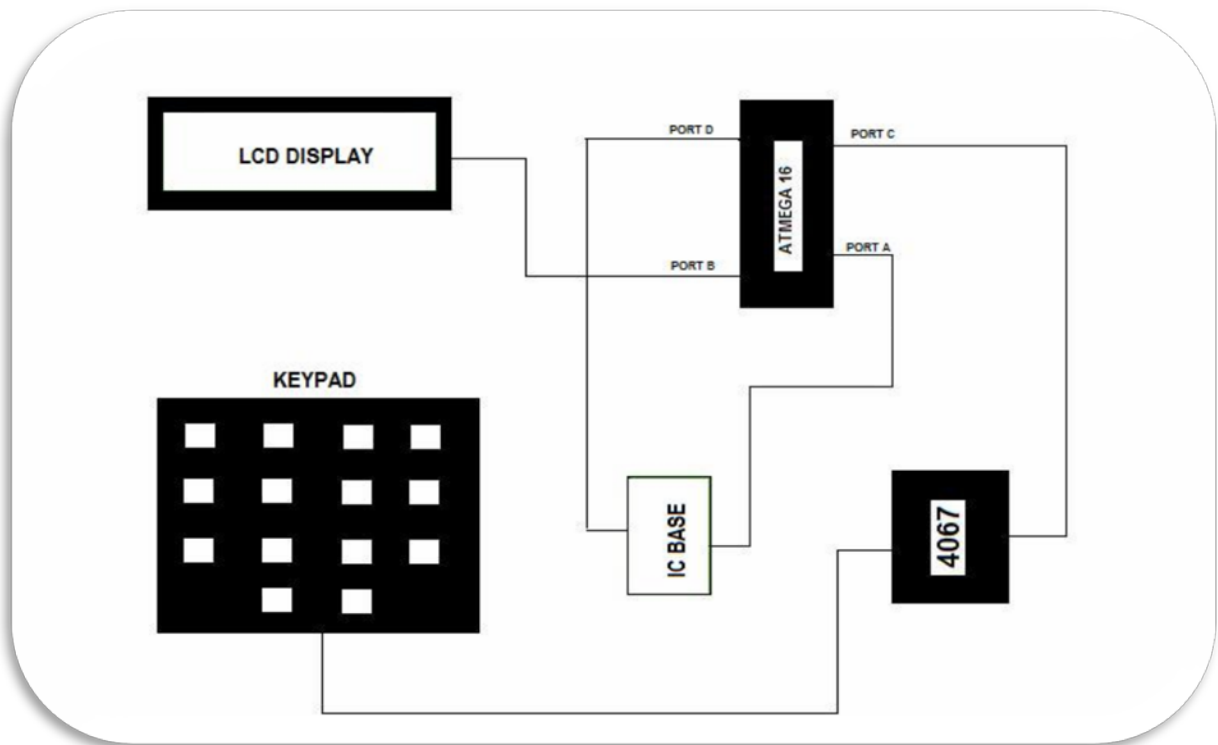
Future work

1) The project can be extended to work for more 16 pin ICs by changing some hardware and coding.

2) It can also be extended to work for analog ICs.

Conclusion

1)This IC Recognizing and Testing module is an enhanced version of the old IC tester.

2) Further extension of this module is possible with a slight modification in code and hardware.

Acknowledgement

Reference

http://students.iitk.ac.in/eclub