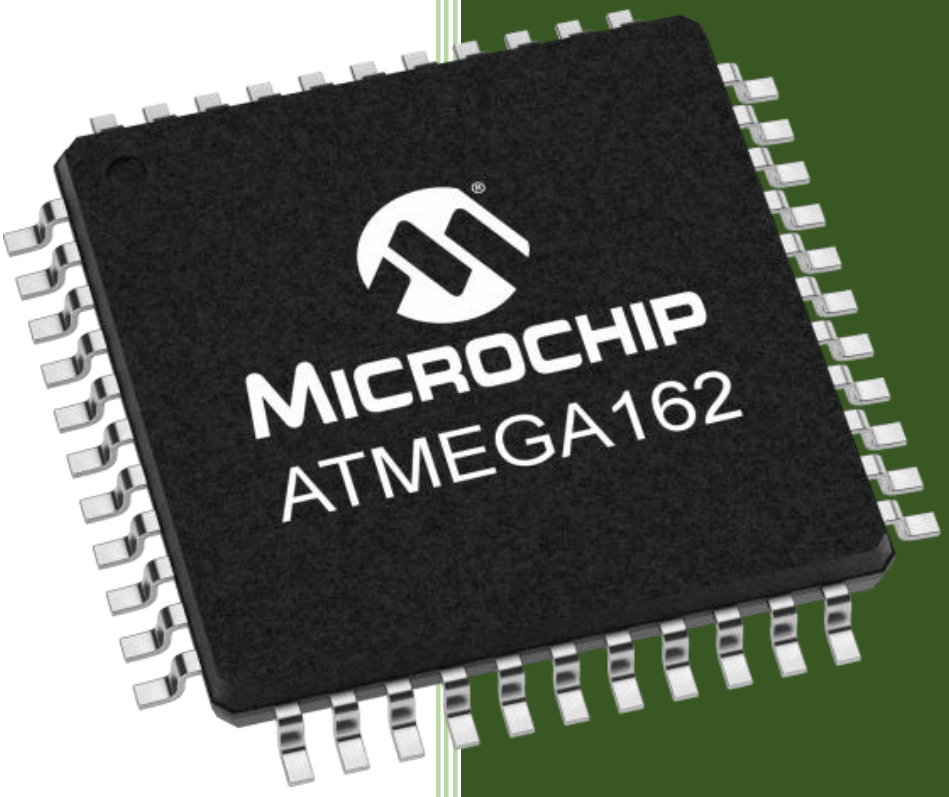
CS-301 MBSD

Complex Engineering Project



CS-18118 MISHA AKRAM

CS-18123 IQRA IRFAN

Password Based Security System Using Atmega162 AVR kit & Keypad

The circuit of this project is very simple which contains Atmega162, keypad module, 7-segment Display, push button and LED.AVR kit controls the complete processes like taking a password from the keypad module, comparing passwords and sending status to the 7-segment display. The keypad is used for taking the password. The LED is used for indications.7-segment is used for displaying status of lock being opened or closed.

Working of Password Based Door Lock Security System

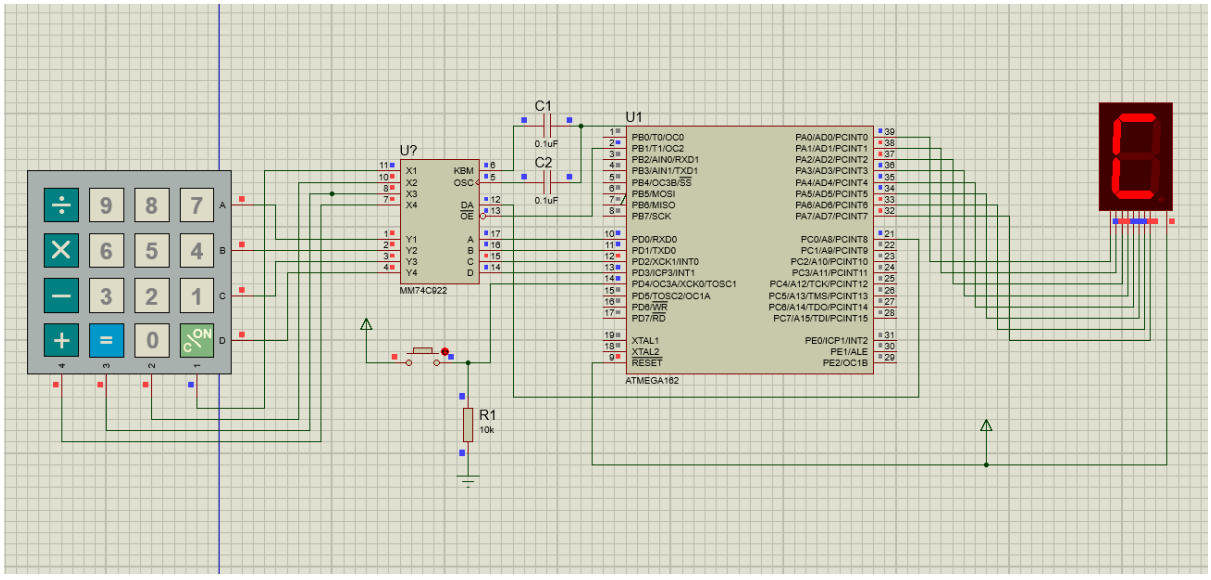
In this project, we have defined the default password “1234” in the microcontroller. The password can be changed via coding. Initially as the password is locked the 7-segment displays a ‘C’ (for closed lock) indicating that the system is locked, when we enter a password, it will match it with the password stored in the Atmega162. If password matches the already saved password, display 'O' (for open lock), then it will display an ’O’ indicating that the system is unlocked. Password can only be entered only when a 'C' is displayed on the display, a push button is used to close the lock again, when the lock is opened indicated by an 'O' in the seven segment display, thus making a 'C' appear on the display again.

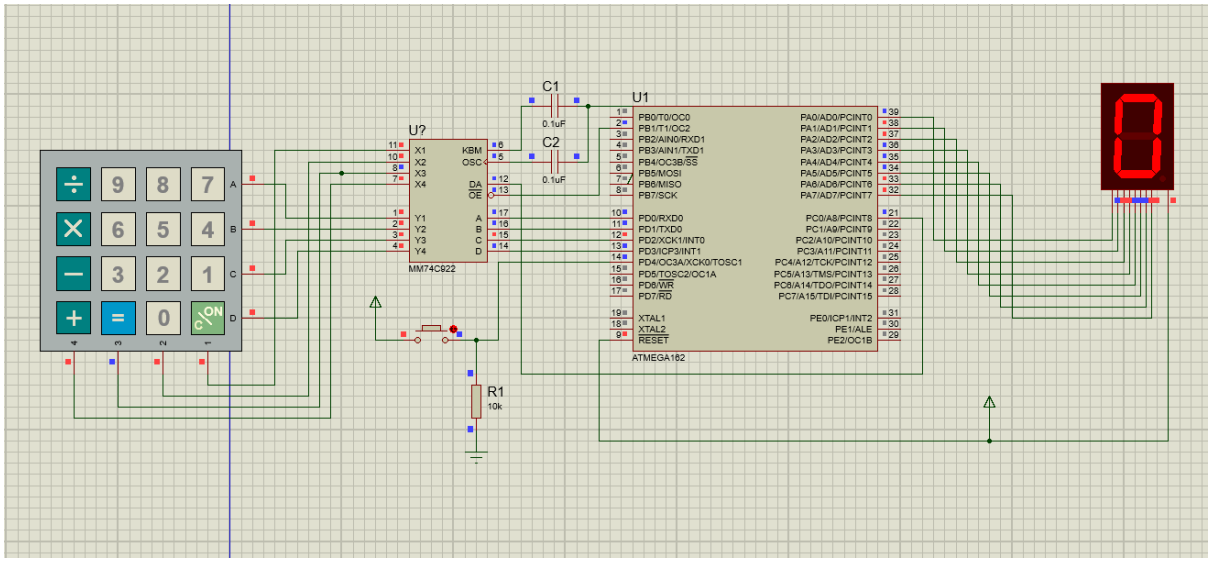
Code:

```
#include <avr/io.h>
#define F_CPU 1000000UL
#include<util/delay.h>
#include <stdlib.h>
#include <string.h>
#include <stdio.h>
#include <util/delay.h>
int GetKeyPressed(void);
int checkPassword(char a[],char b[],int size);
int main(void)
{
	char
digit[20]={'7','8','9','A','4','5','6','B','1','2','3','C','*','0','#','D','\0'};
	DDRD=0x00;
	DDRA=0xFF;
	DDRC=0x00;
	DDRB=(1<<PINB1);
	int key;
	char password[4]={'1','2','3','4'}; // saved password
	char check[4]; // check password
	int index=0; // password index
	char open=0b11000000; // 7-segment display 'O'
	char close=0b11000110;// 7-segment display 'C'
	PORTA=close;

	while(1)
	{
		key= GetKeyPressed();
		// any key is pressed
		if(key !=16)
		{ //password key is correct and it matches
			if (digit[key]==password[index] && index!=4){
				check[index]=password[index];
				index++;
			}
			//reset password
			else if(digit[key]=='*'){
				index=0;
			}
			//incorrect input is entered
			else if (digit[key]!=password[index-1] && index!=4){
```

```
                        index=0;
                        memset(check,0,4);
                }
        }
        if (index==4 && checkPassword(password,check,4)==0){
                PORTA=open;
        }
        if((PIND & 0x10)==0x10){
                index=0;
        }
        else{
                PORTA=close;
        }
    }
}
int GetKeyPressed(void)
{
    char x;
    PORTB=0x00;
    int data;
    x=PINC;
    if(x==0x01)
    {
        data=(PIND&0x0F);
        return data;
    }
    return 16;
}

//function to compare password keys
int checkPassword(char a[],char b[],int size)   {
    int i;
    for(i=0;i<size;i++){
        if(a[i]!=b[i])
        return 1;
    }
    return 0;
}
```

SNAPSHOTS:




C1
0.1uF
C2
0.1uF
U1
U?
MM74C922
ATMEGA162
R1
10k