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SUBJECT Microcontroller system and Interfacing

Q2:(a) Write short notes on the following with examples.

(a) What is pull-up - - - - - diagram.

Ans:- Pull-up resistors are resistors used in logic circuits to ensure a well-defineed logical level at a pin under all conditions. It is neither in a high or low logic state.

USE PULL-UP RESESTORS:-

When the GPIO voltage level is low than it is in high or high impedence state then the pull up anel pull down resistor are used to ensure GPIO which is always in a valid state. Usually the GPIO is arrangeed an a microcontroll

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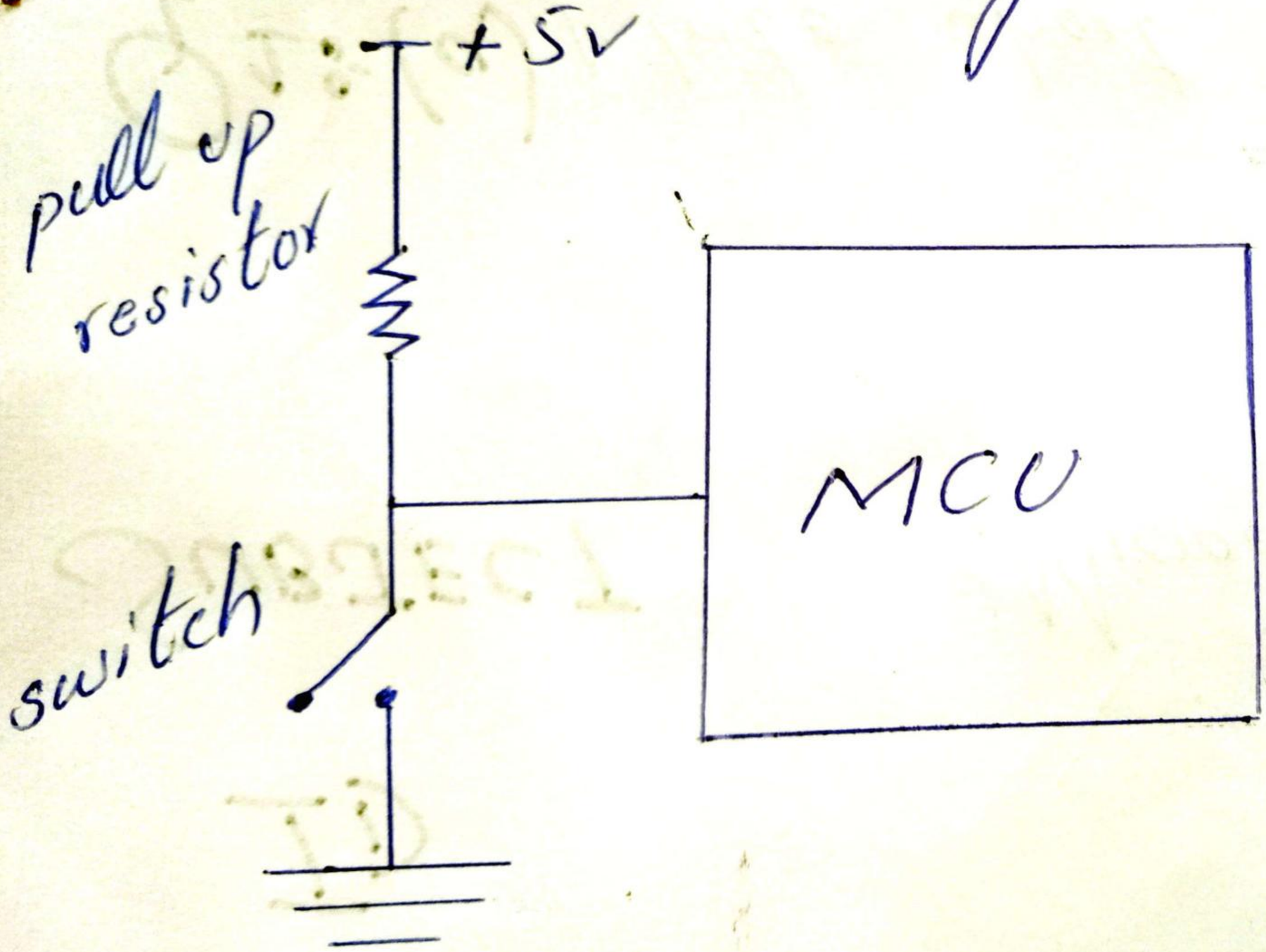
CIRCUIT DIAGRAM:-

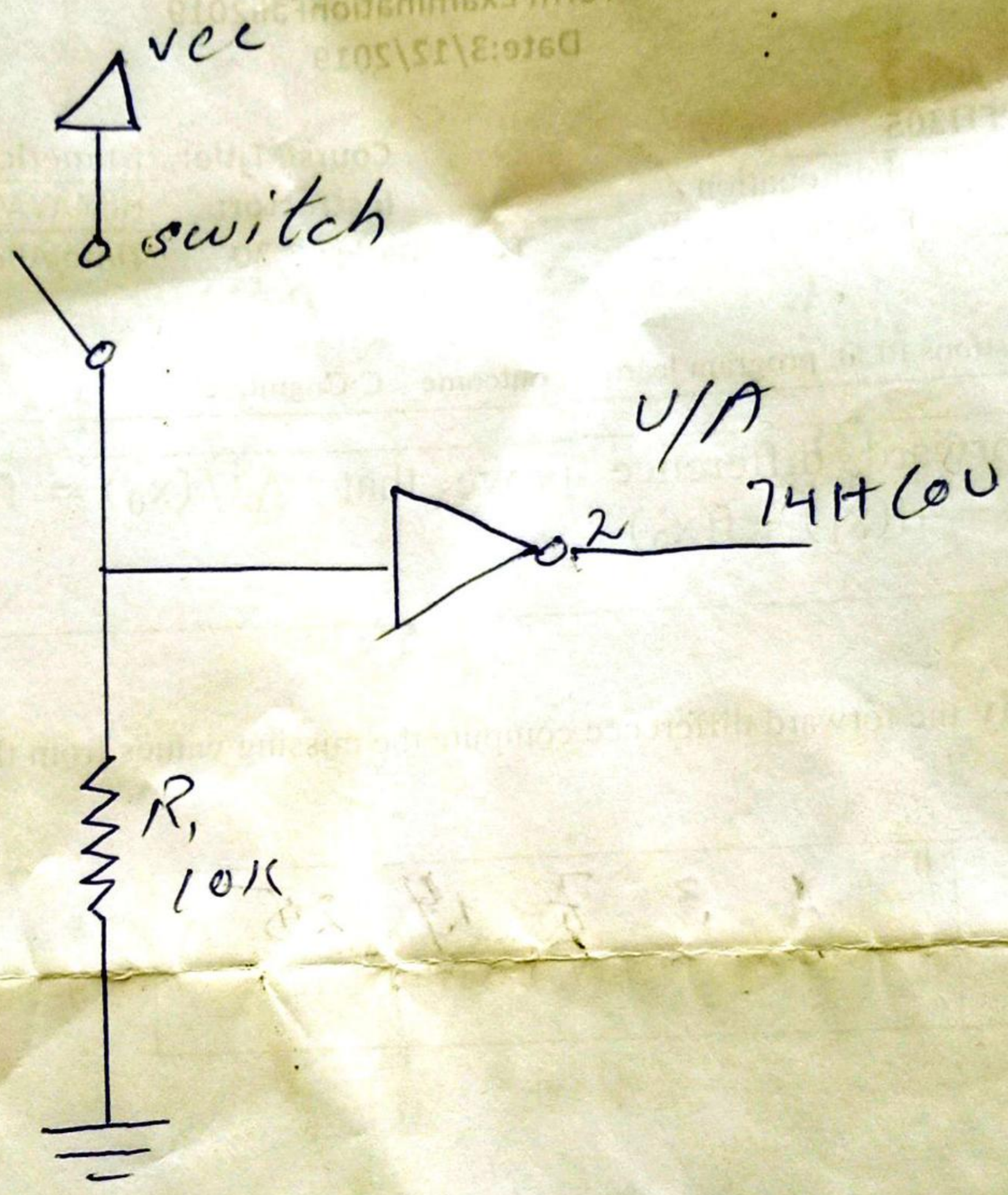


Q 1a(6) What is pulldown - - - - - diagram

Ans:- pulldown resistor is a resistor used to ensure a known state for a signal. It is typically used in combination with components such as switches and transistors, which physically interrupt the connection of subsequent components to ground or to Vcc.

USE Pull-down resistor with 8051:-

A switch is connected between the VCC anel the microcontroller pin when the switch is closeel in the circuit the input of the microcontroller is logic. But when the switch is open in a circuit. the pull down resistor pulls down the inpcut voltage to the ground.



c) How many hardware timers are present in 8052?

Ans:- Three hardware timers are present in 8052.

d) How many input/output ports are used in 89c51 microcontroller.

Ans:- There are four port P0, P1, P2 anel P3 in 89c51 microcontroller.

In these P1, P2, P3 are 8 bit bi directional ports. Bi-directional means they can be used as both input and output pins.

e) What is the - - - - microprocessor?

Ans:- Microprocessor consists of only a central Processing Unit, whereas Micro Controller ~~consist~~ contain a CPU Memory I/O all integrateel into one chip.

Microprocessor uses an external bus to interface to RAM, ROM, and other peripherals on the other hanel, Microcontroller uses an internal controlling bus.

Q.1 (6) Convert the following to their respective bases.

a) $89501_{10} = ?_8$

8	89501
8	11187 → 5
8	1398 → 3
8	174 → 6
8	21 → 6
	2 → 5

$(89501)_{10} \longrightarrow (256635)_8$

b) $64101_{10} = ?_2$

2	64101
2	32050 → 1
2	16025 → 0
2	8012 → 1
2	4006 → 0
2	2003 → 0
2	1001 → 1
2	500 → 1
2	250 → 0
2	125 → 0
2	62 → 1
2	31 → 0
2	15 → 1
2	7 → 1
2	3 → 1
2	1 → 1

$(64101)_{10} \rightarrow (1111101001100101)_2$

c) $9AB3_{16} = ?_2$

9	A	B	3
↓	↓	↓	↓
1001	1010	1011	0011

$(9AB3)_{16} \longrightarrow (1001101010110011)_2$

d) $1110100100111_2 = ?_8$

001	110	100	100	111
↓	↓	↓	↓	↓
1	6	4	4	7

$(1110100100111)_2 \longrightarrow (16447)_8$

e) $101100001101 1_2 = ?_{16}$

0001	0110	0001	1011
↓	↓	↓	↓
1	6	1	B

$(1011000011011)_2$ $(161B)_{16}$

Q2(a) Code the following to their respective

Q2(a) Code the following scenario.

you are - - - - diagrame.

Ans:- #include <reg 51.h>

Sbit green led = P1^1

Sbit red led = P2^2

void delay int (n);

Sbit switch =0;

int x ,y;

void main ()

{

if (switch ==0) on state

green led =1;

red led =0;

} If else (switch ==1) off state

```
{
  green led =0;
  red led = 1;
}
  else
{
  green led =0;
  red led =0;
}
```

Q2(b)

```
#include <LiquidCrystal.h>
LiquidCrystal lcd(12, 11, 5, 4, 3, 2);
int IR = 5;
int IR_2 = 4;
int counter = 0;
int currentState = 0;
int previousState_1 = 0;
int previousstate_2 = 0;
int IR_1_op;
int IR_2_op;
void setup()
{
  Serial.begin(9600);
  pinMode(IR_1, INPUT);
  pinMode(IR_2, INPUT);
```

lcd.begin (16,2);
}
void loop ()
{
lcd.setCursor (0,0);
lcd.print ("NO. OF CARS:");
lcd.setCursor (0,1);
lcd.print ("CAR");
IR_1_op = digitalRead (IR-1);
IR-2_op = digitalRead (IR_2);
Serial println (digitalRead (IR_2));
if
{ (IR_1-op == HIGH and IR_2 op == LOW
currentState = 1;
}
else
{
currentState = 0;
}
if (currentState != previousState_1)

```
{ if (current State == 0)
{
counter = counter + 1;
lcd.setCursor (13, 0);
lcd.print (counter);
lcd.setCursor (-1, 1);
lcd.print ("ENTER");
}
}
previous State _1 = current State;
delay (250);
Serial.print (counter);
if (IR_1-op == LOW && IR_2 op == HIGH
{
current State = 1;
}
else
{
current State = 0;
}
if (current state != previous state_2)
{
if (current state == 1)
{
counter = counter - 1;
lcd.setCursor (13, 0);
lcd.print (counter);
lcd.setCursor (-1, 1);
lcd.print ("LEAVE")
}
```

```
    previous_state_2 = current_state;
    delay(250);
    Serial.print(counter);
}
```

Q3(a) Identify errors in

```
#include <reg51.h>
  sbit led = P2^8;
  void delay (unsigned int x)
{
   unsigned int y, z;
   for (y=0; y =<x; y++)
   for (z=0 ; z<=1275; z++)
}
  void main ()
{
    while (1)
{
    led=0
    Delay (350);
    led =1;
    Delay (350);
}
}
```