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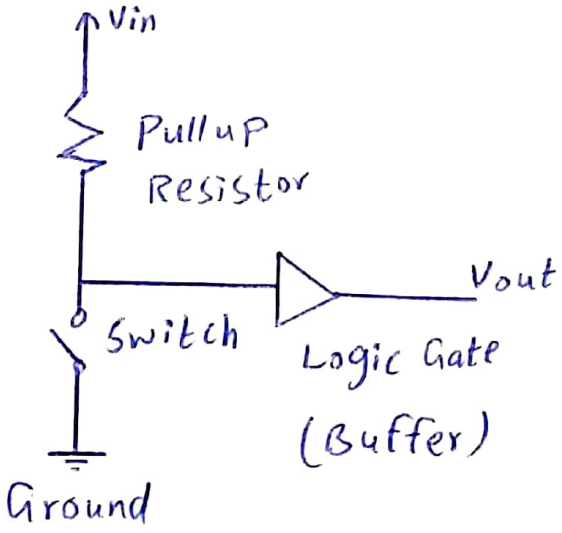
Q (1) (a)

(a) Ans:- Pull up Resistor:-

Diagram:-



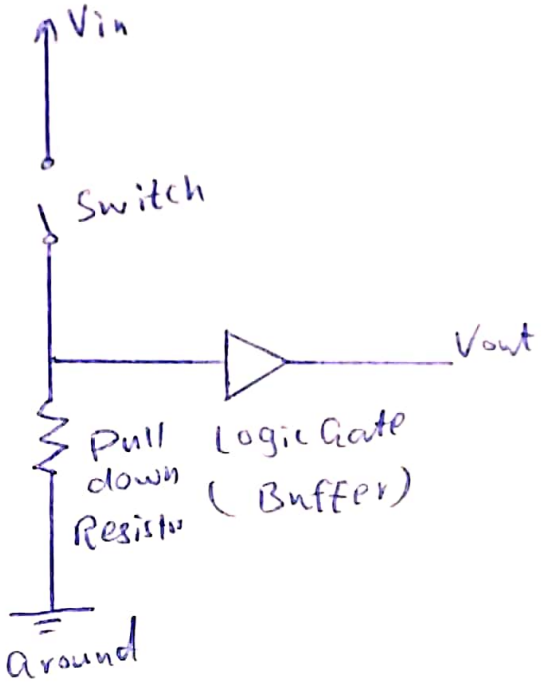
* Pull-up resistors are fixed value resistor used between the connection of a voltage supply and a particular pin in a digital logic circuit. More commonly Paired with switches, its purpose is to ensure the voltage between Ground and V_{cc} is actively controlled when the switch is open.

* Pull-up resistors are used in logic circuit to ensure a well-defined logical level out a pin under all conditions.

As a reminder, digital logic circuit have three logic states: high, low and floating (or high impedance)

(b) Ans:- Pull-down resistor:-

Diagram:-



A pull-down resistor connects unused input pins (OR and NOR gates) to ground (0V) to keep the given input low. The resistance value for a pull-up resistor is not usually that critical but must maintain the input pin voltage above V_{IH}.

* Use a Pull-down Resistor:-

When the button is pressed, the input pin is pulled low. The value of resistor R_1 controls how much current you want to flow from Vcc, through the button, and then to ground. When the button is not pressed, the input pin is pulled high. The value of the pull-up resistor controls the voltage on the input pin.

(c) Ans:- The 8052 has an additional Timer T2. All these counters count up on negative going edges at their inputs. Timer 2 is a 16-bit Timer/Counter which is present only in the 8052.

(d) Ans:- There are 4 I/O Ports each of 8-bit, which can be configured as input or output.

(i.e) the Pin can be configured as 1 for input and 0 for output as per the logic state.

(e) Ans:- Microprocessor consists of only a Central Processing ~~Unit~~ unit, whereas Micro controller contains a CPU, Memory, I/O all integrated into one chip.

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

Q 1:-

(b)

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

8	89501
8	11187 - 5
8	1398 — 3
8	174 - 6
8	21 — 6
8	2 — 5

256635

(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
	1 — 1

$(1111101001100101)_2$

(d) $(1110100100111)_2 = ?_8$

001 110 100 100 111

1 6 4 4 7

Binary	Octal
000	0
001	1
010	2
011	3
100	4
101	5
110	6
111	7

$(16447)_8$

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

Binary	Hexadecimal
0000	0
0001	1
0010	2
0011	3
0100	4
0101	5
0110	6
0111	7
1000	8
1001	9
1010	A
1011	B
1100	C

$(1001101010110011)_2$

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

0001 0110 0001 1011

1 6 1 B

Binary	Hexadecimal
0000	0
0001	1
0010	2
0011	3
0100	4
0101	5
0110	6
0111	7
1000	8
1001	9
1010	A
1011	B

$(161B)_{16}$

Q 2

(a)

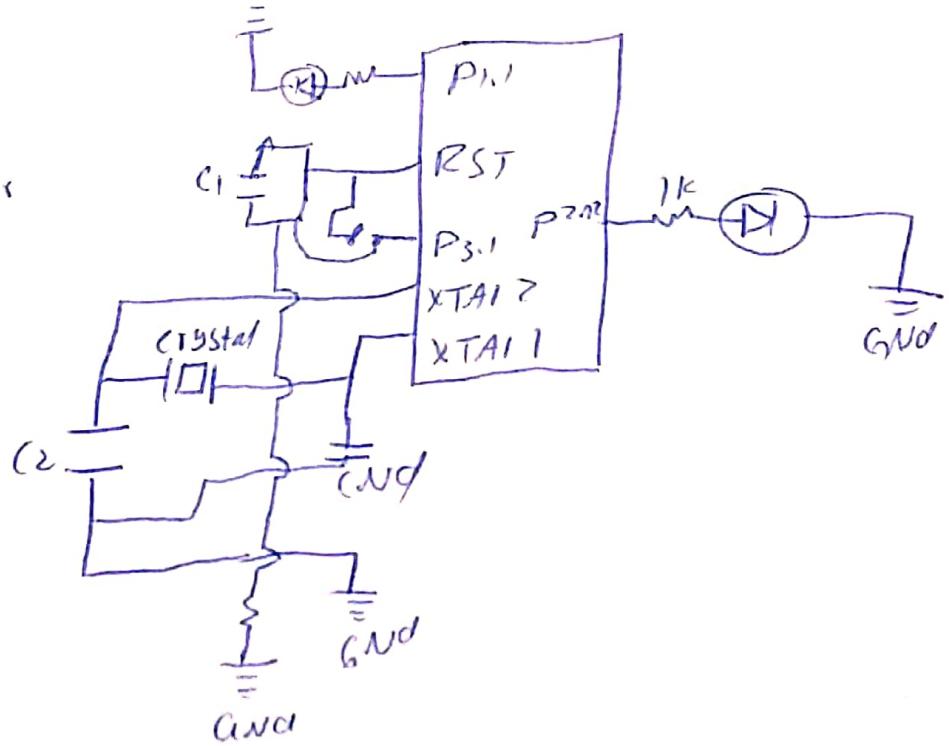
```
#include<reg51.h>
sbit green led = P1^1
sbit red led = P2^2
 void delay int (n);
sbit switch = P3^1
 sbit switch = 0;
   int x, y;

 void main()

{
if (switch==0) ON state
     green led = 1;
      red led = 0;
}
```

```
Else if (switch == 1) OFF state
{
    green Led = 0;
    red Led = 1;
}
  else
{
    green Led = 0;
    red Led = 0;
}
```

Diagram:



Q 2

(b)
```
# include <LiquidCrytal.h>
LiquidCrytal lcd (12, 11, 5, 4, 3, 2);
  int IR_1 = 5; // exit
  int IR_2 = 4; // enter
  int counter = 0;
  int currentstate = 0;
  int previousstate_1 = 0;
 int previous state_2 = 0;
  int IR_1_oP;
  int IR_2_oP;
  void setup() {
Serial.begin (9600);
 pinMode (IR_1, INPUT);
 Pin Mode (IR_2, INPUT);
 lcd.begin (16, 2);
  }
```

```
void loop(){

lcd.setCursor(0,0);
lcd.print("No. oF Cars");
lcd.print ("CAR");
IR_1_op = digitalRead(IR_1);
IR_2_oP =          //      IR_2);

Serial.print ( digitalRead ( IR_2));

if (IR_1_oP == High && IR_2_o == Low)
 {   currentstate = 1;
 }
  else{
   current state = 0;
   }
   if (current stato != previous stato_1)
```

```
{
  if (currentstate == 1)
  {
      counter = counter +1;
      lcd. setCursor (13,0);
      lcd. print (counter);
      lcd. setCursor(4,1);
      lcd. print ("ENTER");
  }
  }
Previousstate_1 = currentState;
      delay(250);
    Serial. println(counter);
if (IR_1.op == Low && IR_2.op == High)
```

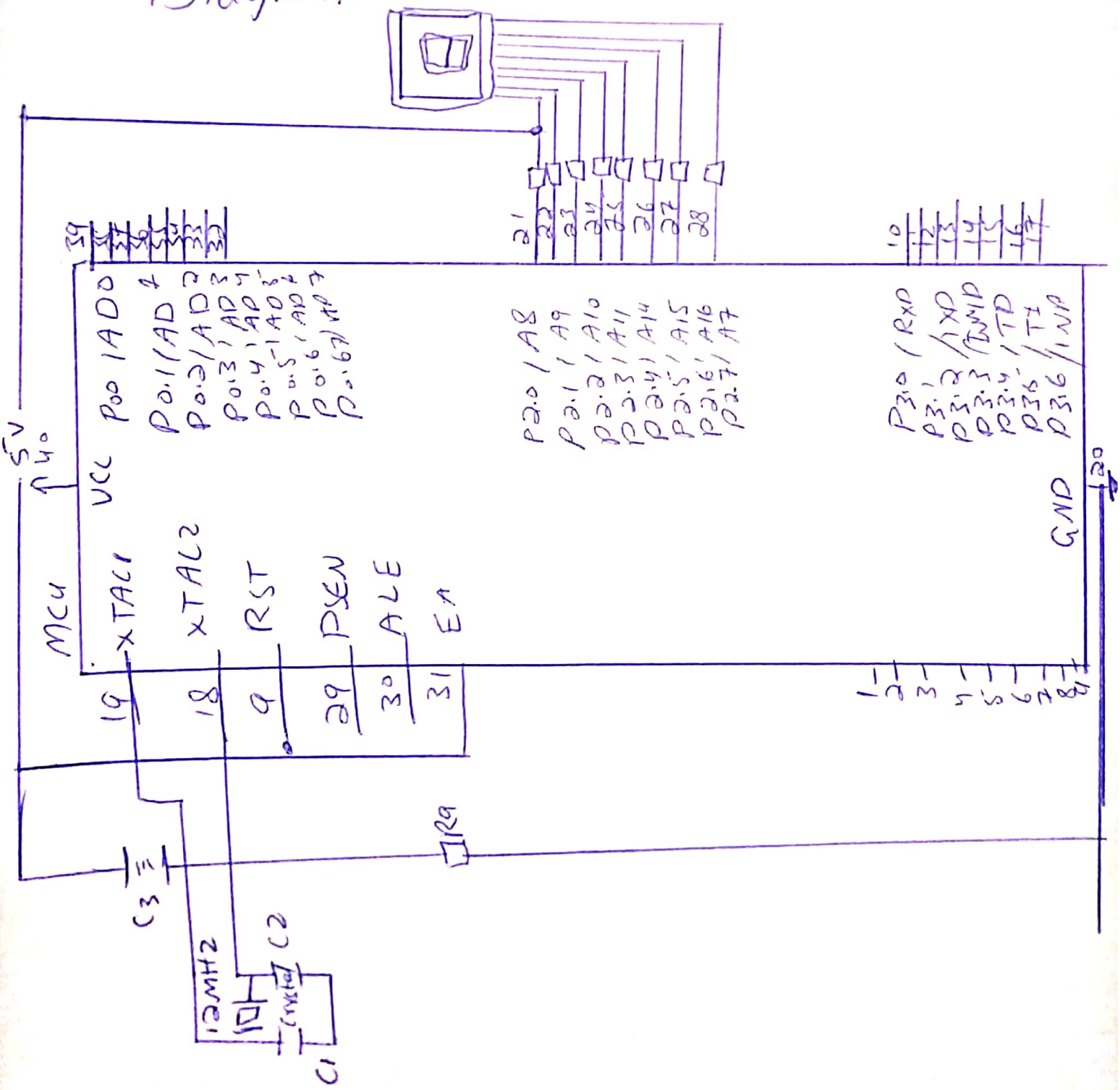
```
{
   current state =1;
}
  else
  {
     current state = 0;
  }
   if (current state != previous state -1)

{  if (current state == 1)

{
    counter = counter -1;
    lcd. set Cursor (13,0);
    lcd. print (counter);
    lcd. set cursor (4,1);
     lcd. Print ("LEAVE");
   }
}
```

```
Previous state_2 = current state;
    delay(250);
    Serial.Println(counter);
}
```

Diagram:-



Q3 (a) Identify errors in the following code if any

```
#include <reg50.h>
    Sbit = P2^10;
    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);
      }
```