Part B

Department: CSE Program: BSc in CSE

Course no: CSE 3215 Course Title: Microcontroller Based System Design

Examination: final Semester (Session): fall 2019

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6/11/2020

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CSE 3215

Rajib

Ans: to the Ques no 1(a)

Last 3 digit of my ID is 077.

So,

$P = 77\%47 = 30$

$P+1 = 31$

$P+2 = 32$

$P+3 = 33$

$P+4 = 34$

$P+5 = 35$

$P+6 = 36$

and $Q = (77\%10) + 20$

$= 27$

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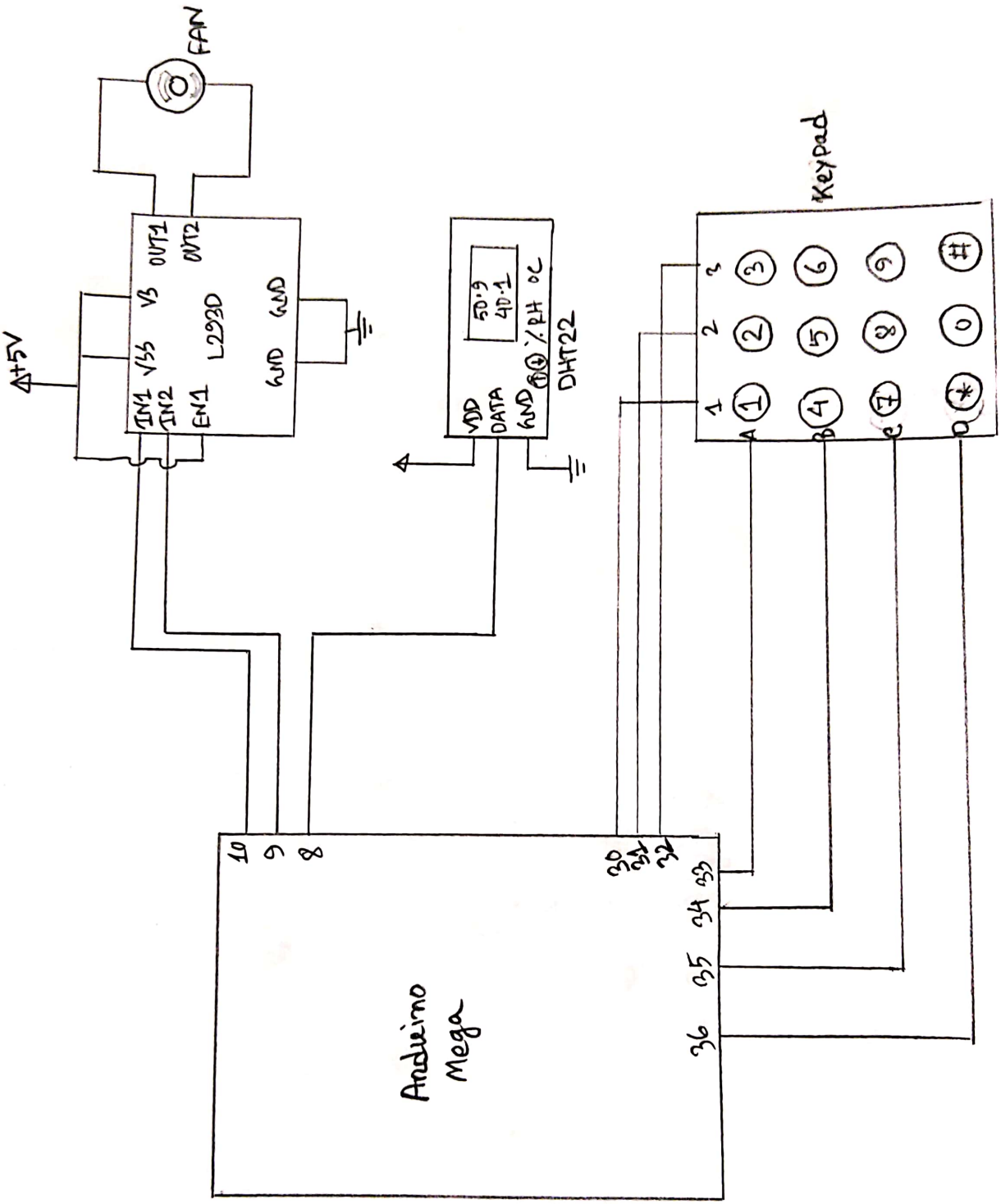
Rajk



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Raju

Code for the given scenario

```
#include<LiquidCrystal.h>
#include<Keypad.h>
#include "DHT.h"
#define DHTPIN 8
#define DHTTYPE DHT22

double Q = 27.0;

DHT dht(DHTPIN, DHTTYPE)

String pin = "";

const byte ROWS = 4;
const byte COLS = 3;

char hexakeys[ROWS][COLS] = { {'1', '2', '3'},
                              {'4', '5', '6'},
                              {'7', '8', '9'},
                              {'*', '0', '#'} };

byte rowPins[ROWS] = {33, 34, 35, 36};
byte colPins[COLS] = {30, 31, 32};

Keypad customKeypad = Keypad(makeKeypad(hexaKeys),
rowPins, colPins, ROWS, COLS);

int fanForward = 10;
int fanReverse = 9;
```

```
bool stant = false;

void setup(){
   Serial.begin(9600);
   pinMode(fanforward, OUTPUT);
   pinMode (fanReverse, OUTPUT);

    dht.begin();
}

void loop(){

   char c = customKeypad.getKey();
   if (c|| stant)
   {  pin += c;
      if (pin.length() == 4)
      {
         if (pin == "#124")
         {  stant= true;
          }
         else
         {  pin="";
          }

      }
```

```
    if (start)
    {
      double Temp = dht.readTemperature();
      int Temp1 = Temp * 10;

      if (isnan(Temp))
      {
        return;
      }

      int pwmValue = map(Temp1, -400, 800, 0, 255);

      if (Temp>=0)
      {
        analogWrite(fanForward, pwmValue);
        analogWrite(fanReverse, 0);
      }
      else if (Temp<0)
      {
        analogWrite(fanReverse, pwmValue);
        analogWrite(fanForward, 0);
      }
    }
}
```

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Raj

Ans: to the Ques no 1(b)

The function 'getKey' is used get-key value during a 4x4 keyboard interfacing. getkey() function reports the ASCII value of a key being pressed on released.

Let, a Keypad object keyboard.

char c = keyboard.getkey();

c stores the ASCII value of the key being pressed.

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Raju

Ans: to the Ques no 2(a)

Code for the given scenario:

```
#include <LiquidCrystal.h>
const int rs = 48, en=49, d4= 50, d5= 51, d6=52, d7=53;
LiquidCrystal lcd (rs, en, d4, d5, d6, d7);

int pumpForward =9;
int pumpReverse = 8;

int ~~ee~~ echopin , pingPin;
double ~~long~~ distanceInCM = 0;

void setup()
{
  echoPin = A7;
  pingPin = A6;

  pinMode (pingPin, OUTPUT);
  pinMode (echoPin, INPUT);

  pinMode (pumpforward, OUTPUT);
  pinMode (pumpReverse, OUTPUT);

   lcd.begin (16,2);
   lcd.clear();
   lcd.setCursor (0,0);
   lcd.print ("Initializing....");
}
```

```
void loop()
{
  pumpFunction();
}
void pumpfunction()
{
    delay (5000);
    digitalWrite (pingPin, LOW);
    delayMicroseconds (2);

    digitalWrite(pingPin , HIGH);
    delayMicroseconds (10);

    digitalWrite(pingPin, LOW);

    long duration = pulseIn (EchoPin, HIGH);

    distanceInCM = microsecondsToCentimeters (duration);

   if (distanceInCM <= 4.0)
    { digitalWrite (pumpFonward, LOW);
      digitalWrite (pumpReverse, LOW);
    }
   if (distanceInCM >= 15.0)
   { digitalWrite (pumpFonward, HIGH);
     digitalWrite (pumpReverse, LOW);
   }
```

```
    long tankfilled = 25 - distanceInCM;
    lcd.setCursor(0,0);
    lcd.clear();
    lcd.print("Tank filled: " + String(tankfilled) + " CM");
}

double microsecondsToCentimeters(long microseconds)
{
    return microseconds/29.0/2.0;
}
```

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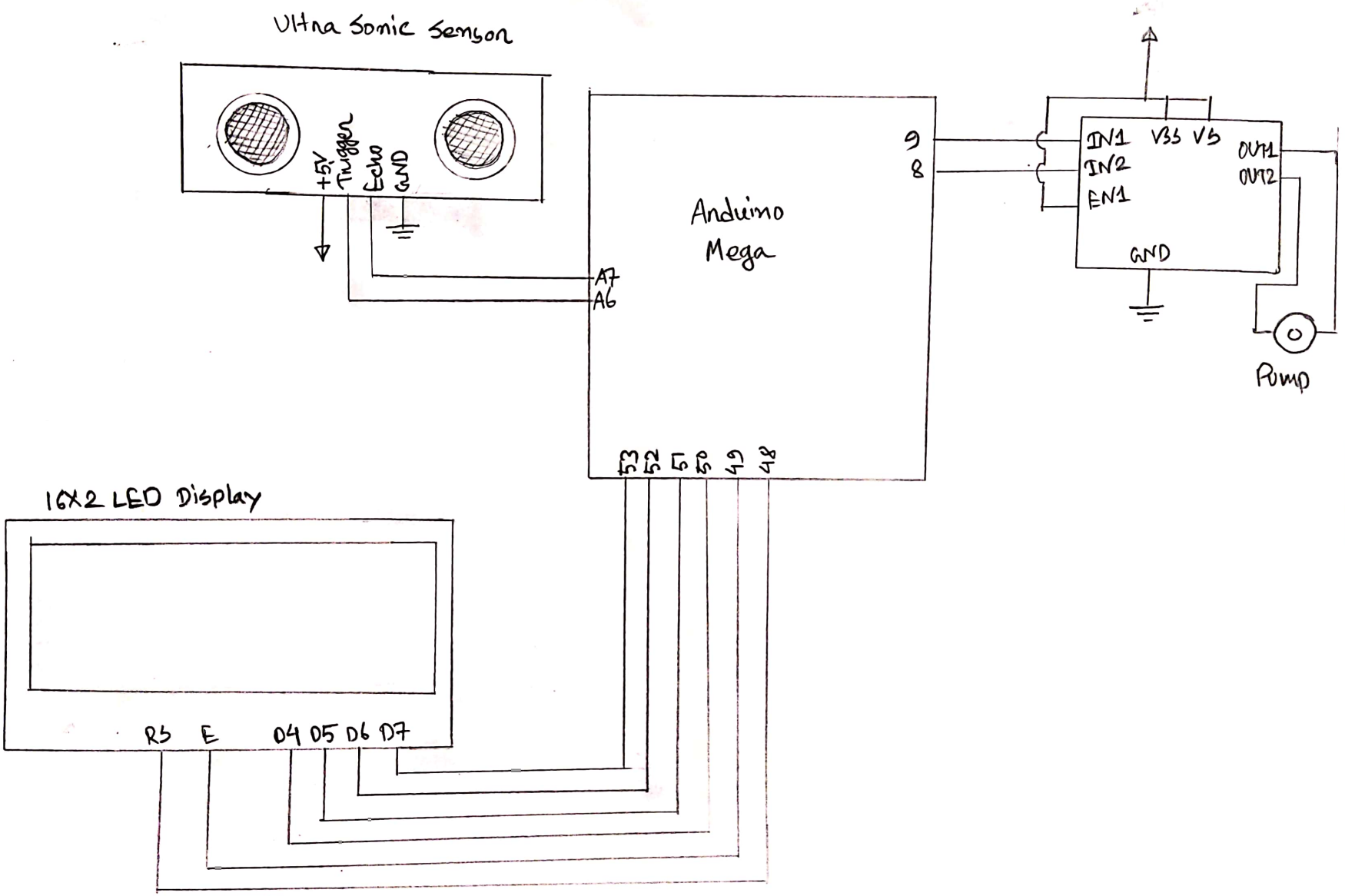

Rajith

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Raju

Ans: to the Ques no 2(b)

Teamwork plays a crucial role in group project like MSD project. Projects are usually hard to complete without taking help from other group members. Coming up with an idea then implementing the system is always challenging. With proper teamwork these challenges can be overcome easily. While writting code for my MSD project I ~~did~~ made some mistake which seemed connect to me. My team members helped to find those mistake and we were not stucked with that because my team mate came up with a connect solution as well. One of the best things about team work is we can learn from each other. Teamwork develops communication skill, which is very important for

cs students like us.

from the above discussions I would say teamwork was beneficial for my final MSD project.