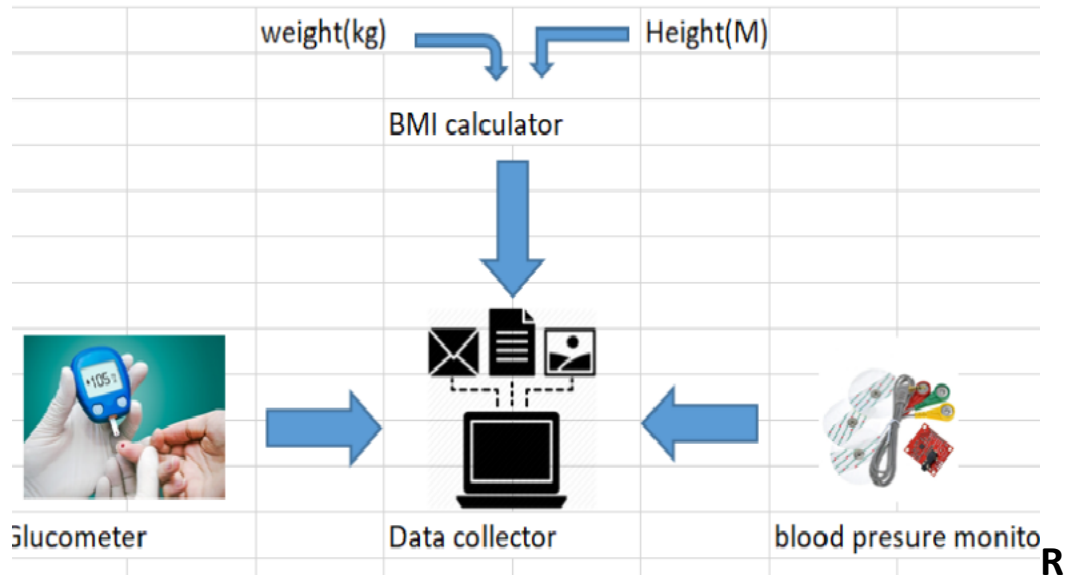


PHASE-3

AI Based Diabetes Prediction System:



IN THIS PART SECTION IS DATA PREPROCESSING:

A software application or platform that utilizes artificial intelligence (AI) and machine learning techniques to analyze medical and demographic data of individuals and predict the likelihood of them developing diabetes in the future. This system provides early risk assessment and personalized preventive measures to help individuals manage and reduce their risk of diabetes. Using for basic embedded systems in Arduino uno board simple implementation of input information getting device.

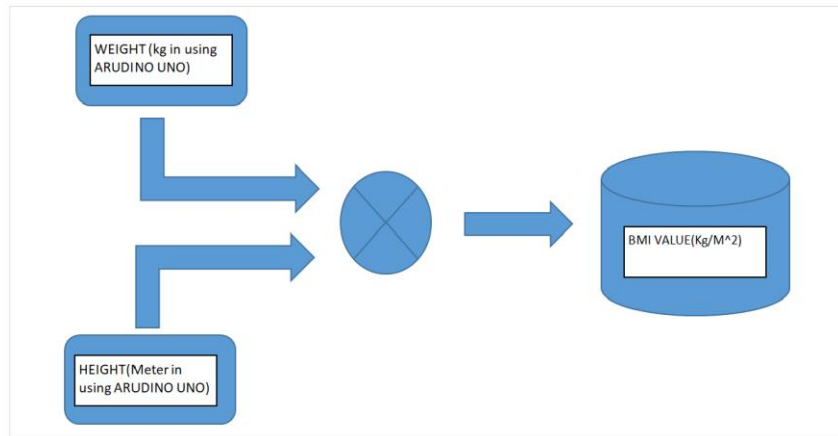
ARDUINO UNO



"Uno" means one in Italian and was chosen to mark the release of Arduino Software (IDE) 1.0. The UNO board and version 1.0 of

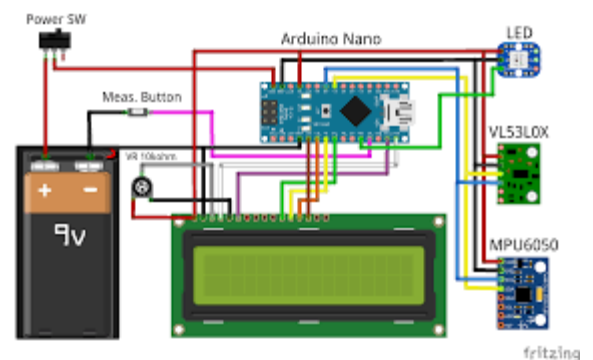
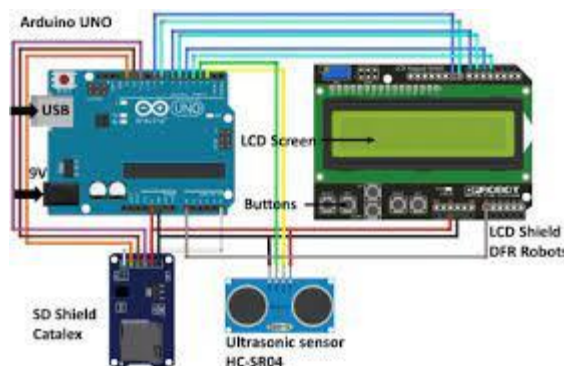
Arduino Software (IDE) were the reference versions of Arduino, now evolved to newer releases.

DATA INPUT:



HEIGHT MEASUREMENT PART:

The system of this tool has an input in the form of an ultrasonic sensor HC-SR04. The input received is in the form of sensor measurement data, which will be processed by the Arduino Uno microcontroller. At the output, there is a Liquid Crystal Display (LCD) to display the measurement results obtained.



HEIGHT MEASUREMENT IN AURDINO UNO FOR EMBEDDED C-LANGUAGE PROGRAM

```
//Include LCD library
#include <LiquidCrystal_I2C.h>
#include <HCSR04.h>

// initialize the library with the numbers of the interface pins
LiquidCrystal_I2C lcd(0x27,16,2);
UltraSonicDistanceSensor distanceSensor(A0,A1);

float distance;

float boxHeight = 185.0;

int buzzerPin= 8;

void setup() {
    Serial.begin(9600);
    lcd.init();
    lcd.backlight();
    pinMode(buzzerPin, OUTPUT);
    printInstructions();
}

void loop() {
    distance = distanceSensor.measureDistanceCm();
```

```
Serial.println(distance);
delay(1000);
if (distance < 65 ) {
  printHeight();
  delay(1000);
  tone(buzzerPin, 1000);
  delay(1000);
  noTone(buzzerPin);
  delay(5000);
} else {
  printInstructions();
}
}

void printInstructions() {
  lcd.clear();
  lcd.setCursor(0,0);
  lcd.print("Stand under the");
  lcd.setCursor(0,1);
  lcd.print("box!");
}

void printHeight() {
  int heightInCm = boxHeight - distance;
  int heightInInches = heightInCm/2.54;
  lcd.clear();
  lcd.setCursor(0,0);
```

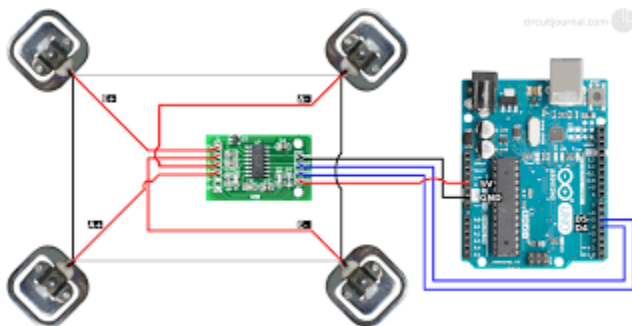
```

lcd.print("Height:");
lcd.setCursor(8,0);
lcd.print(heightInInches);
lcd.setCursor(11,0);
lcd.print("IN");
lcd.setCursor(0,1);
//lcd.print(distance);
}

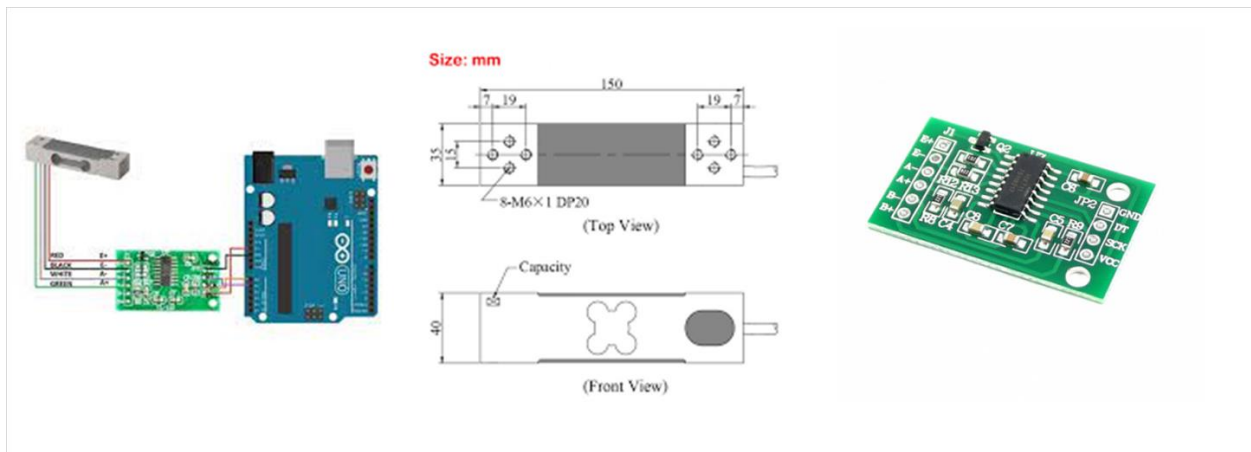
```

WEIGHT MEASUREMENT PART:

This Electronic Arduino Weight Sensor is able to detect 1kg weight. It based on HX711, a precision 24-bit analog-to-digital converter designed for weight scale and industrial control applications to interface directly with a bridge sensor.



WEIGHT MEASUREMENT IN ARDUINO UNO FOR EMBEDDED C-LANGUAGE PROGRAM



```
#include <LiquidCrystal.h>

const int rs = 12, en = 11, d4 = 4, d5 = 5, d6 = 6, d7 = 7;

LiquidCrystal lcd(rs, en, d4, d5, d6, d7);

#define DT A2

#define SCK A3

#define sw 3

long sample=0;

float val=0;

long count=0;

unsigned long readCount(void)
{
    unsigned long Count;
    unsigned char i;
    pinMode(DT, OUTPUT);
    digitalWrite(DT,HIGH);
    digitalWrite(SCK,LOW);
    Count=0;
    pinMode(DT, INPUT);
    while(digitalRead(DT));
    for (i=0;i<24;i++)
    {
        digitalWrite(SCK,HIGH);
        Count=Count<<1;
        digitalWrite(SCK,LOW);
```

```

    if(digitalRead(DT))
        Count++;
    }
    digitalWrite(SCK,HIGH);
    Count=Count^0x800000;
    digitalWrite(SCK,LOW);
    return(Count);}

void setup()
{
    pinMode(SCK, OUTPUT);
    pinMode(sw, INPUT_PULLUP);
    lcd.begin(16, 2);
    lcd.print("  Weight ");
    lcd.setCursor(0,1);
    lcd.print(" Measurement ");
    delay(1000);
    lcd.clear();
    calibrate();}

void loop()
{
    count= readCount();
    int w=((count-sample)/val)-2*((count-sample)/val));
    lcd.setCursor(0,0);
    lcd.print("Measured Weight");

```

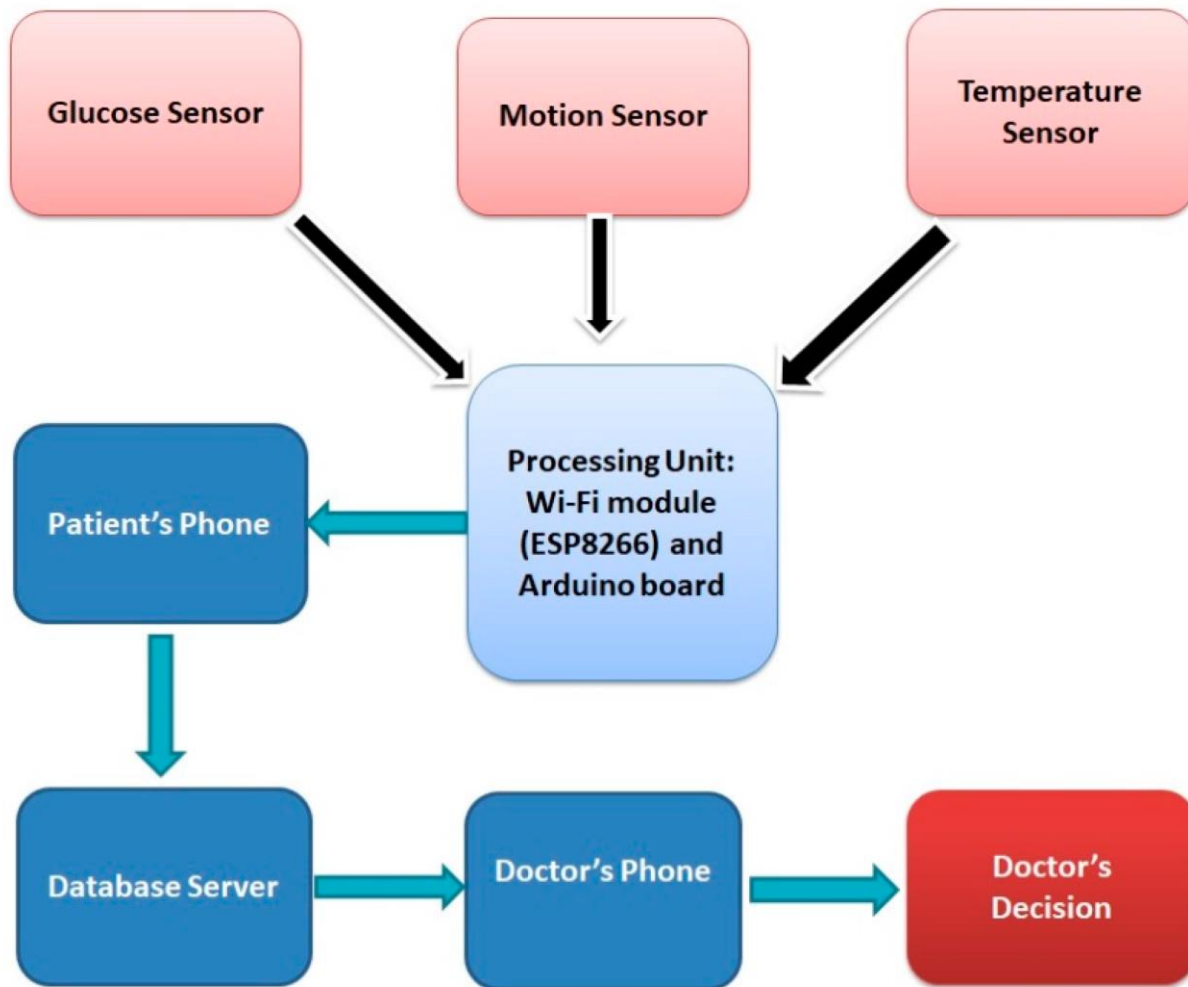
```
lcd.setCursor(0,1);  
lcd.print(w);  
lcd.print("g      ");  
if(digitalRead(sw)==0)  
{  
    val=0;  
    sample=0;  
    w=0;  
    count=0;  
    calibrate();  
}  
void calibrate()  
{  
    lcd.clear();  
    lcd.print("Calibrating...");  
    lcd.setCursor(0,1);  
    lcd.print("Please Wait...");  
    for(int i=0;i<100;i++)  
    {  
        count=readCount();  
        sample+=count;  
    }  
    sample/=100;  
    lcd.clear();
```



```
lcd.print("Put 100g & wait");  
count=0;  
while(count<1000)  
{  
    count=readCount();  
    count=sample-count;  
}  
lcd.clear();  
lcd.print("Please Wait....");  
delay(2000);  
for(int i=0;i<100;i++)  
{  
    count=readCount();  
    val+=sample-count;  
}  
val=val/200000.0;  
val=val/200000.0;    // put here your calibrating weight  
lcd.clear();}
```

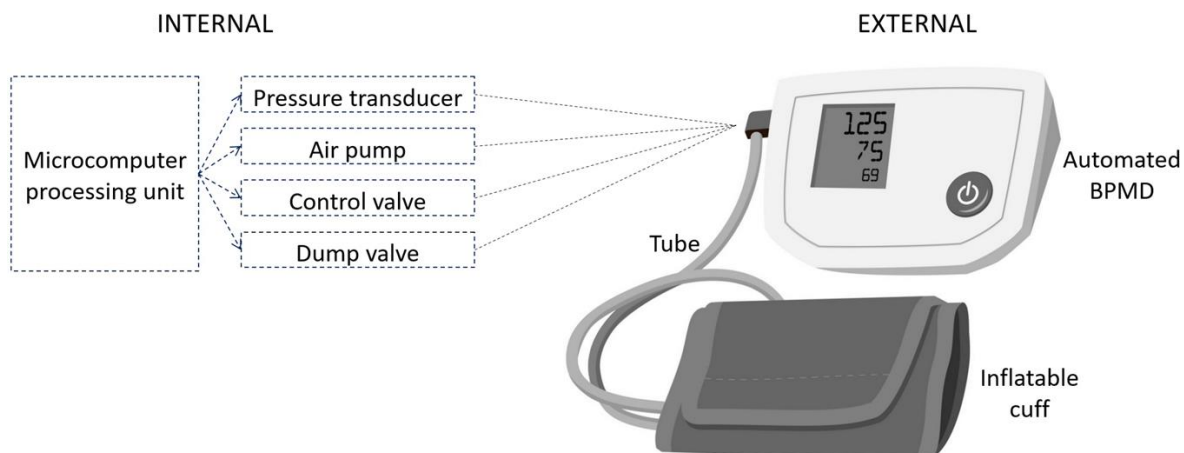
GLUCOSE MONITOR

A small device called a glucose meter or glucometer measures how much sugar is in the blood sample. The drop of blood you get with a finger prick is often enough to use on a test strip. A finger prick can be done with a special needle (lancet) or with a spring-loaded device that quickly pricks the fingertip.



DIGITAL BLOOD PRESURE MONITOR

A digital blood pressure monitor will not be as accurate if your body is moving when you are using it. Also, an irregular heart rate will make the reading less accurate. However, digital monitors are the best choice for most people.



Continue part-2.....