//#include <TTS.h>

#include <LiquidCrystal.h>

LiquidCrystal lcd(8,7,6,5,4,3);

//TTS text2speech;

int thumb=A4;

int index=A3;

int middle=A2;

int ring=A1;

int little=A0;

bool flag = true;

bool steadyValue = false;

unsigned long time\_old = 0;

int j = 0;

unsigned int thumb\_threshold = 0;

unsigned int index\_threshold = 0;

unsigned int middle\_threshold = 0;

unsigned int ring\_threshold = 0;

unsigned int little\_threshold = 0;

int decVal;

char lookupTable[]={97,98,99,100,101,102,103,104,105,106,107,108,109,110,111,112,113,114,115,116,117,118,119,120,121,122,121,121,46,121,120,32};

int digiStore[5];

int temp[5];

char words[100];

char string[10];

void calibrate()

{

lcd.begin(16,2);

lcd.setCursor(0,0);

lcd.print("GESTURE TO " );

lcd.setCursor(0,1);

lcd.print("SPEECH CONVERTER" );

delay(2000);

lcd.clear();

lcd.setCursor(0,0);

lcd.print("Bend fingers");

delay(2000);

lcd.clear();

lcd.print("Starting Calibration ....");

lcd.clear();

lcd.print("Bend fingers");

delay(5000);

int t\_low=analogRead(thumb);

int i\_low=analogRead(index);

int m\_low=analogRead(middle);

int r\_low=analogRead(ring);

int l\_low=analogRead(little);

lcd.clear();

lcd.setCursor(0,0);

lcd.print("Un-bend fingers");

delay(5000);

int t\_high=analogRead(thumb);

int i\_high=analogRead(index);

int m\_high=analogRead(middle);

int r\_high=analogRead(ring);

int l\_high=analogRead(little);

thumb\_threshold = (t\_low + t\_high)/2;

index\_threshold = (i\_low + i\_high)/2;

middle\_threshold = (m\_low + m\_high)/2;

ring\_threshold = (r\_low + r\_high)/2;

little\_threshold = (l\_low + l\_high)/2;

delay(1000);

// Serial.println("Calibrated values are - ");

//Serial.println(thumb\_threshold);

//Serial.println(index\_threshold);

//Serial.println(middle\_threshold);

//Serial.println(ring\_threshold);

Serial.print("HELLO WELCOME ");

delay(1000);

Serial.print("TO TALKING GLOVE");

lcd.clear();

}

void setup() {

// put your setup code here, to run once:

Serial.begin(9600);

pinMode(thumb, INPUT);

pinMode(index, INPUT);

pinMode(middle, INPUT);

pinMode(ring, INPUT);

pinMode(little, INPUT);

calibrate();

}

void loop() {

// put your main code here, to run repeatedly:

// char sentence[50];

delay(1000);

int t=analogRead(thumb);

if(t>=thumb\_threshold){

digiStore[0]=1;

}

else{

digiStore[0]=0;

};

int i=analogRead(index);

if(i>=index\_threshold){

digiStore[1]=1;

}

else{

digiStore[1]=0;

};

int m=analogRead(middle);

if(m>=middle\_threshold){

digiStore[2]=1;

}

else{

digiStore[2]=0;

};

int r=analogRead(ring);

if(r>=ring\_threshold){

digiStore[3]=1;

}

else{

digiStore[3]=0;

};

int l=analogRead(little);

if(l>=little\_threshold){

digiStore[4]=1;

}

else{

digiStore[4]=0;

};

if(flag)

{

for(int k = 0; k<5; k++)

{

temp[k] = digiStore[k];

}

flag = false;

time\_old = millis();

}

if(!flag)

{

if(millis() - time\_old > 1100)

{

if(temp[0] == digiStore[0] && temp[1] == digiStore[1] && temp[2] == digiStore[2] && temp[3] == digiStore[3] && temp[4] == digiStore[4])

steadyValue = true;

else

steadyValue = false;

if(steadyValue)

{

decVal=16\*digiStore[0]+8\*digiStore[1]+4\*digiStore[2]+2\*digiStore[3]+1\*digiStore[4];

//Serial.println(decVal);

if(j!= 0 && words[j-1] == 32 && decVal == 31)

{

}

else

{

words[j]=lookupTable[decVal];

// Serial.println(words[j]);

lcd.print(words[j]);

j++;

if(decVal == 31)

{

for(int k = 0; ;k++)

{

if(words[k]!= 32)

Serial.print(words[k]);

else

{

Serial.println("");

break;

}

}

}

if(decVal == 28)

{

for(int k = 0; ;k++)

{

if(words[k]!= 46)

Serial.print(words[k]);

else

{

Serial.print(words[k]);

words[k+1] = '\0';

Serial.println("");

strcpy(string,words);

//text2speech.sayText(string);

j = 0;

break;

}

}

}

}

}

time\_old = millis();

steadyValue = false;

flag = true;

}

}

}