Internet of Things --- Lab 1 Exercise 2

1. Lesson 15

Code used :

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\* Author: Elecrow Engle

\* Date:7/12/2017

\* IDE V1.8.2

\* Email:engle@elecrow.com

\* Function:

\*/

int ASeg = 9;

int BSeg = 13;

int CSeg = 4;

int DSeg = 6;

int ESeg = 7;

int FSeg = 10;

int GSeg = 3;

int a1 = 8;

int a2 = 11;

int a3 = 12;

int a4 = 2;

// set variable

long n = 0;

int x = 100;

int del = 54; // fine adjustment for clock

void setup(){

pinMode(a1, OUTPUT);

pinMode(a2, OUTPUT);

pinMode(a3, OUTPUT);

pinMode(a4, OUTPUT);

pinMode(ASeg, OUTPUT);

pinMode(BSeg, OUTPUT);

pinMode(CSeg, OUTPUT);

pinMode(DSeg, OUTPUT);

pinMode(ESeg, OUTPUT);

pinMode(FSeg, OUTPUT);

pinMode(GSeg, OUTPUT);

}

void loop(){

clearLEDS(); // Eliminating ghost

pickDigit(1); // Display position 1

pickNumber((n/x/1000)%10); // Display number

delayMicroseconds(del); // Time adjustment

clearLEDS();

pickDigit(2);

pickNumber((n/x/100)%10);

delayMicroseconds(del);

clearLEDS();

pickDigit(3);

pickNumber((n/x/10)%10);

delayMicroseconds(del);

clearLEDS();

pickDigit(4);

pickNumber(n/x%10);

delayMicroseconds(del);

n++;

}

// Select display position

void pickDigit(int x) {

digitalWrite(a1, LOW);

digitalWrite(a2, LOW);

digitalWrite(a3, LOW);

digitalWrite(a4, LOW);

switch(x){

case 1:

digitalWrite(a1, HIGH);

break;

case 2:

digitalWrite(a2, HIGH);

break;

case 3:

digitalWrite(a3, HIGH);

break;

case 4:

digitalWrite(a4, HIGH);

break;

}

}

// select display number

void pickNumber(int x) {

switch(x) {

case 1: one(); break;

case 2: two(); break;

case 3: three(); break;

case 4: four(); break;

case 5: five(); break;

case 6: six(); break;

case 7: seven(); break;

case 8: eight(); break;

case 9: nine(); break;

default: zero(); break;

}

}

// clear the screen

void clearLEDS(){

digitalWrite(ASeg, HIGH);

digitalWrite(BSeg, HIGH);

digitalWrite(CSeg, HIGH);

digitalWrite(DSeg, HIGH);

digitalWrite(ESeg, HIGH);

digitalWrite(FSeg, HIGH);

digitalWrite(GSeg, HIGH);

}

//Display function ‘0-9’

void zero() {

digitalWrite(ASeg, LOW);

digitalWrite(BSeg, LOW);

digitalWrite(CSeg, LOW);

digitalWrite(DSeg, LOW);

digitalWrite(ESeg, LOW);

digitalWrite(FSeg, LOW);

digitalWrite(GSeg, HIGH);

}

void one() {

digitalWrite(ASeg, HIGH);

digitalWrite(BSeg, LOW);

digitalWrite(CSeg, LOW);

digitalWrite(DSeg, HIGH);

digitalWrite(ESeg, HIGH);

digitalWrite(FSeg, HIGH);

digitalWrite(GSeg, HIGH);

}

void two() {

digitalWrite(ASeg, LOW);

digitalWrite(BSeg, LOW);

digitalWrite(CSeg, HIGH);

digitalWrite(DSeg, LOW);

digitalWrite(ESeg, LOW);

digitalWrite(FSeg, HIGH);

digitalWrite(GSeg, LOW);

}

void three() {

digitalWrite(ASeg, LOW);

digitalWrite(BSeg, LOW);

digitalWrite(CSeg, LOW);

digitalWrite(DSeg, LOW);

digitalWrite(ESeg, HIGH);

digitalWrite(FSeg, HIGH);

digitalWrite(GSeg, LOW);

}

void four() {

digitalWrite(ASeg, HIGH);

digitalWrite(BSeg, LOW);

digitalWrite(CSeg, LOW);

digitalWrite(DSeg, HIGH);

digitalWrite(ESeg, HIGH);

digitalWrite(FSeg, LOW);

digitalWrite(GSeg, LOW);

}

void five() {

digitalWrite(ASeg, LOW);

digitalWrite(BSeg, HIGH);

digitalWrite(CSeg, LOW);

digitalWrite(DSeg, LOW);

digitalWrite(ESeg, HIGH);

digitalWrite(FSeg, LOW);

digitalWrite(GSeg, LOW);

}

void six() {

digitalWrite(ASeg, LOW);

digitalWrite(BSeg, HIGH);

digitalWrite(CSeg, LOW);

digitalWrite(DSeg, LOW);

digitalWrite(ESeg, LOW);

digitalWrite(FSeg, LOW);

digitalWrite(GSeg, LOW);

}

void seven() {

digitalWrite(ASeg, LOW);

digitalWrite(BSeg, LOW);

digitalWrite(CSeg, LOW);

digitalWrite(DSeg, HIGH);

digitalWrite(ESeg, HIGH);

digitalWrite(FSeg, HIGH);

digitalWrite(GSeg, HIGH);

}

void eight() {

digitalWrite(ASeg, LOW);

digitalWrite(BSeg, LOW);

digitalWrite(CSeg, LOW);

digitalWrite(DSeg, LOW);

digitalWrite(ESeg, LOW);

digitalWrite(FSeg, LOW);

digitalWrite(GSeg, LOW);

}

void nine() {

digitalWrite(ASeg, LOW);

digitalWrite(BSeg, LOW);

digitalWrite(CSeg, LOW);

digitalWrite(DSeg, LOW);

digitalWrite(ESeg, HIGH);

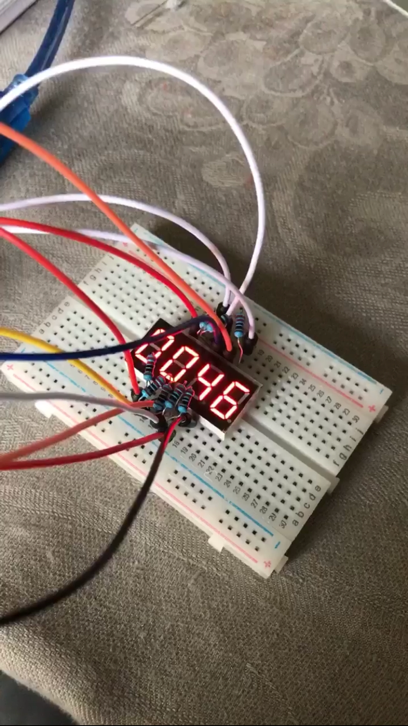
digitalWrite(FSeg, LOW);

digitalWrite(GSeg, LOW);

}

Result :

A counter started on the led screen ( screenshot of a video)



1. Display date

We used the code 4 digit LED segment display that we modified so that the led matrix displays the desired date

/\*

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\* Function:

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int ASeg = 9;

int BSeg = 13;

int CSeg = 4;

int DSeg = 6;

int ESeg = 7;

int FSeg = 10;

int GSeg = 3;

int DP = 5;

int a1 = 8;

int a2 = 11;

int a3 = 12;

int a4 = 2;

// set variable

long n = 0;

int x = 100;

int del = 54; // fine adjustment for clock

void setup(){

pinMode(a1, OUTPUT);

pinMode(a2, OUTPUT);

pinMode(a3, OUTPUT);

pinMode(a4, OUTPUT);

pinMode(ASeg, OUTPUT);

pinMode(BSeg, OUTPUT);

pinMode(CSeg, OUTPUT);

pinMode(DSeg, OUTPUT);

pinMode(ESeg, OUTPUT);

pinMode(FSeg, OUTPUT);

pinMode(GSeg, OUTPUT);

// pinMode(D1, OUTPUT);

}

void loop(){

digitalWrite(ASeg, HIGH);

digitalWrite(FSeg, LOW);

digitalWrite(a2, LOW);

digitalWrite(a3, LOW);

//1

digitalWrite(ASeg, LOW);

digitalWrite(BSeg, LOW);

digitalWrite(CSeg, LOW);

digitalWrite(DSeg, HIGH);

digitalWrite(ESeg, LOW);

digitalWrite(FSeg, LOW);

digitalWrite(GSeg, LOW);

delay(1); // wait for a second

digitalWrite(ASeg, LOW);

digitalWrite(FSeg, HIGH);

digitalWrite(a2, LOW);

digitalWrite(a3, LOW);

//1

digitalWrite(ASeg, LOW);

digitalWrite(BSeg, LOW);

digitalWrite(CSeg, LOW);

digitalWrite(DSeg, HIGH);

digitalWrite(ESeg, LOW);

digitalWrite(FSeg, LOW);

digitalWrite(GSeg, LOW);

delay(1); // wait for a second

digitalWrite(ASeg, LOW);

digitalWrite(FSeg, LOW);

digitalWrite(a2, HIGH);

digitalWrite(a3, LOW);

//1

digitalWrite(ASeg, LOW);

digitalWrite(BSeg, LOW);

digitalWrite(CSeg, LOW);

digitalWrite(DSeg, HIGH);

digitalWrite(ESeg, LOW);

digitalWrite(FSeg, LOW);

digitalWrite(GSeg, LOW);

delay(1); // wait for a second

digitalWrite(ASeg, LOW);

digitalWrite(FSeg, LOW);

digitalWrite(a2, LOW);

digitalWrite(a3, HIGH);

//1

digitalWrite(ASeg, LOW);

digitalWrite(BSeg, LOW);

digitalWrite(CSeg, LOW);

digitalWrite(DSeg, HIGH);

digitalWrite(ESeg, LOW);

digitalWrite(FSeg, LOW);

digitalWrite(GSeg, LOW);

delay(1); // wait for a second

}

Despite our several attempts, several modifications of the code as well as of the assembly, we did not succeed in display the date (11.11 for 11th November)

