

LAMPIRAN A

Program pada Arduino

A-1

```

static int output[] = {0,1,2,3};
static int segs_encoding[][4] = {
{0,0,0,0},
{0,0,0,1},
{0,0,1,0},
{0,0,1,1},
{0,1,0,0},
{0,1,0,1},
{0,1,1,0},
{0,1,1,1},
{1,0,0,0},
{1,0,0,1}
};

void show(int base, int num) {
for (int i = 0; i < 4; ++i) {
if(segs_encoding[num][i] == 1) {
digitalWrite(base + 3 - i , HIGH);
}
else {
digitalWrite(base + 3 - i , LOW);
}
}
}

void show_decimal(int num) {
show(0, num);
}

#include <Keypad.h>
const byte ROWS = 3;
const byte COLS = 3;
char keys[ROWS][COLS] = {
{'1','2','3'},
{'4','5','6'},
{'7','8','9'}
};

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byte rowPins[ROWS] = {6, 5, 4};
byte colPins[COLS] = {9, 8, 7};
Keypad keypad = Keypad( makeKeymap(keys), rowPins, colPins, ROWS, COLS );
int rand1,rand2,statestart,stateujicoba,a,c,d,e,i;
int mkaki1 = 10,mkaki2 = 11,mkaki3 = 12,mkaki4 = 13;
int m2kaki1 = 14,m2kaki2 = 15,m2kaki3 = 16,m2kaki4 = 17;
int ujicoba = 18,start = 19;
int val = 0,b = 0,dly = 50;
void setup() {
randomSeed(analogRead(5));
pinMode(mkaki1, OUTPUT);
pinMode(mkaki2, OUTPUT);
pinMode(mkaki3, OUTPUT);
pinMode(mkaki4, OUTPUT);
pinMode(m2kaki1, OUTPUT);
pinMode(m2kaki2, OUTPUT);
pinMode(m2kaki3, OUTPUT);
pinMode(m2kaki4, OUTPUT);
for (c = 0; c < 4; ++c)
pinMode(c, OUTPUT);
pinMode(start, INPUT);
digitalWrite(start, HIGH);
pinMode(ujicoba, INPUT);
digitalWrite(ujicoba, HIGH);
}
void loop() {
statestart = digitalRead(start);
stateujicoba = digitalRead(ujicoba);
if(stateujicoba == LOW){
for(a = 0; a < 9; a++){
rand1 = random(3);
rand2 = random(3);
if(rand1 == 0 && rand2 == 0){
motor1();

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motor12();
delay(3000);
motor3();
motor32();
}
if(rand1 == 0 && rand2 == 1){
motor1();
motor22();
delay(3000);
motor3();
motor22();
}
if(rand1 == 0 && rand2 == 2){
motor1();
motor32();
delay(3000);
motor3();
motor12();
}
if(rand1 == 1 && rand2 == 0){
motor2();
motor12();
delay(3000);
motor2();
motor32();
}
if(rand1 == 1 && rand2 == 1){
motor2();
motor22();
delay(3000);
motor2();
motor22();
}
if(rand1 == 1 && rand2 == 2){
```

```

motor2();
motor32();
delay(3000);
motor2();
motor12();
}
if(rand1 == 2 && rand2 == 0){
motor3();
motor12();
delay(3000);
motor1();
motor32();
}
if(rand1 == 2 && rand2 == 1){
motor3();
motor22();
delay(3000);
motor1();
motor22();
}
if(rand1 == 2 && rand2 == 2){
motor3();
motor32();
delay(3000);
motor1();
motor12();
}
}
}
if(statestart == LOW){
static int i = 0;
show_decimal(0);
for(a = 0; a < 9; a++){
rand1 = random(3);

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rand2 = random(3);
if(rand1 == 0 && rand2 == 0 && val == 0){
motor1();
motor12();
++e;
val = 1;
b=0;
while(val == 1 && b < 300){
char key = keypad.getKey();
if( key == '1'){
++i;
b=300;
val=0;
show_decimal(i);
if (e == 9){
i = 0;
e = 0;
}
}
b++;
delay(10);
}
motor3();
motor32();
val = 0;
}
if(rand1 == 0 && rand2 == 1 && val == 0){
motor1();
motor22();
++e;
val = 1;
b=0;
while(val == 1 && b < 300){
char key = keypad.getKey();

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if( key == '2'){
  ++i;
  b=300;
  val=0;
  show_decimal(i);
  if (e == 9){
    i = 0;
    e = 0;
  }
  }
  b++;
  delay(10);
  }
  motor3();
  motor22();
  val = 0;
  }
  if(rand1 == 0 && rand2 == 2 && val == 0){
  motor1();
  motor32();
  ++e;
  val = 1;
  b=0;
  while(val == 1 && b < 300){
  char key = keypad.getKey();
  if( key == '3'){
  ++i;
  b=300;
  val=0;
  show_decimal(i);
  if (e == 9){
    i = 0;
    e = 0;
  }
  }
  }
  }

```

```

}
b++;
delay(10);
}
motor3();
motor12();
val = 0;
}
if(rand1 == 1 && rand2 == 0 && val == 0){
motor2();
motor12();
++e;
val = 1;
b=0;
while(val == 1 && b < 300){
char key = keypad.getKey();
if( key == '4'){
++i;
b=300;
val=0;
show_decimal(i);
if (e == 9){
i = 0;
e = 0;
}
}
b++;
delay(10);
}
motor2();
motor32();
val = 0;
}
if(rand1 == 1 && rand2 == 1 && val == 0){

```



```

motor2();
motor22();
++e;
val = 1;
b=0;
while(val == 1 && b < 300){
char key = keypad.getKey();
if( key == '5'){
++i;
b=300;
val=0;
show_decimal(i);
if (e == 9){
i = 0;
e = 0;
}
}
b++;
delay(10);
}
motor2();
motor22();
val = 0;
}
if(rand1 == 1 && rand2 == 2 && val == 0){
motor2();
motor32();
++e;
val = 1;
b=0;
while(val == 1 && b < 300){
char key = keypad.getKey();
if( key == '6'){
++i;

```

```

b=300;
val=0;
show_decimal(i);
if (e == 9){
i = 0;
e = 0;
}
}
b++;
delay(10);
}
motor2();
motor12();
val = 0;
}
if(rand1 == 2 && rand2 == 0 && val == 0){
motor3();
motor12();
++e;
val = 1;
b=0;
while(val == 1 && b < 300){
char key = keypad.getKey();
if( key == '7'){
++i;
b=300;
val=0;
show_decimal(i);
if (e == 9){
i = 0;
e = 0;
}
}
b++;

```

```

delay(10);
}
motor1();
motor32();
val = 0;
}
if(rand1 == 2 && rand2 == 1 && val == 0){
motor3();
motor22();
++e;
val = 1;
b=0;
while(val == 1 && b < 300){
char key = keypad.getKey();
if( key == '8'){
++i;
b=300;
val=0;
show_decimal(i);
if (e == 9){
i = 0;
e = 0;
}
}
b++;
delay(10);
}
motor1();
motor22();
val = 0;
}
if(rand1 == 2 && rand2 == 2 && val == 0){
motor3();
motor32();

```

```

++e;
val = 1;
b=0;
while(val == 1 && b < 300){
char key = keypad.getKey();
if( key == '9'){
++i;
b=300;
val=0;
show_decimal(i);
if (e == 9){
i = 0;
e = 0;
}
}
b++;
delay(10);
}
motor1();
motor12();
val = 0;
}
}
}
}

```

```

void motor1(){
for(d = 0; d < 3; d++){
digitalWrite(mkaki1, LOW);
digitalWrite(mkaki2, LOW);
digitalWrite(mkaki3, HIGH);
digitalWrite(mkaki4, LOW);
delay(dly);
digitalWrite(mkaki1, LOW);

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digitalWrite(mkaki2, LOW);
digitalWrite(mkaki3, LOW);
digitalWrite(mkaki4, HIGH);
delay(dly);
digitalWrite(mkaki1, HIGH);
digitalWrite(mkaki2, LOW);
digitalWrite(mkaki3, LOW);
digitalWrite(mkaki4, LOW);
delay(dly);
digitalWrite(mkaki1, LOW);
digitalWrite(mkaki2, HIGH);
digitalWrite(mkaki3, LOW);
digitalWrite(mkaki4, LOW);
delay(dly);
}
}
void motor2(){
for(d = 0; d < 6; d++){
digitalWrite(mkaki1, LOW);
digitalWrite(mkaki2, LOW);
digitalWrite(mkaki3, HIGH);
digitalWrite(mkaki4, LOW);
delay(dly);
digitalWrite(mkaki1, LOW);
digitalWrite(mkaki2, LOW);
digitalWrite(mkaki3, LOW);
digitalWrite(mkaki4, HIGH);
delay(dly);
digitalWrite(mkaki1, HIGH);
digitalWrite(mkaki2, LOW);
digitalWrite(mkaki3, LOW);
digitalWrite(mkaki4, LOW);
delay(dly);
digitalWrite(mkaki1, LOW);

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```

digitalWrite(mkaki2, HIGH);
digitalWrite(mkaki3, LOW);
digitalWrite(mkaki4, LOW);
delay(dly);
}
}

void motor3(){
for(d = 0; d < 9; d++){
digitalWrite(mkaki1, LOW);
digitalWrite(mkaki2, LOW);
digitalWrite(mkaki3, HIGH);
digitalWrite(mkaki4, LOW);
delay(dly);
digitalWrite(mkaki1, LOW);
digitalWrite(mkaki2, LOW);
digitalWrite(mkaki3, LOW);
digitalWrite(mkaki4, HIGH);
delay(dly);
digitalWrite(mkaki1, HIGH);
digitalWrite(mkaki2, LOW);
digitalWrite(mkaki3, LOW);
digitalWrite(mkaki4, LOW);
delay(dly);
digitalWrite(mkaki1, LOW);
digitalWrite(mkaki2, HIGH);
digitalWrite(mkaki3, LOW);
digitalWrite(mkaki4, LOW);
delay(dly);
}
}

void motor12(){
for(d = 0; d < 6; d++){
digitalWrite(m2kaki1, HIGH);
digitalWrite(m2kaki2, LOW);

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```

digitalWrite(m2kaki3, LOW);
digitalWrite(m2kaki4, LOW);
delay(dly);
digitalWrite(m2kaki1, LOW);
digitalWrite(m2kaki2, LOW);
digitalWrite(m2kaki3, HIGH);
digitalWrite(m2kaki4, LOW);
delay(dly);
digitalWrite(m2kaki1, LOW);
digitalWrite(m2kaki2, HIGH);
digitalWrite(m2kaki3, LOW);
digitalWrite(m2kaki4, LOW);
delay(dly);
digitalWrite(m2kaki1, LOW);
digitalWrite(m2kaki2, LOW);
digitalWrite(m2kaki3, LOW);
digitalWrite(m2kaki4, HIGH);
delay(dly);
}
}
void motor22(){
for(d = 0; d < 12; d++){
digitalWrite(m2kaki1, HIGH);
digitalWrite(m2kaki2, LOW);
digitalWrite(m2kaki3, LOW);
digitalWrite(m2kaki4, LOW);
delay(dly);
digitalWrite(m2kaki1, LOW);
digitalWrite(m2kaki2, LOW);
digitalWrite(m2kaki3, HIGH);
digitalWrite(m2kaki4, LOW);
delay(dly);
digitalWrite(m2kaki1, LOW);
digitalWrite(m2kaki2, HIGH);

```

```

digitalWrite(m2kaki3, LOW);
digitalWrite(m2kaki4, LOW);
delay(dly);
digitalWrite(m2kaki1, LOW);
digitalWrite(m2kaki2, LOW);
digitalWrite(m2kaki3, LOW);
digitalWrite(m2kaki4, HIGH);
delay(dly);
}
}
void motor32(){
for(d = 0; d < 18; d++){
digitalWrite(m2kaki1, HIGH);
digitalWrite(m2kaki2, LOW);
digitalWrite(m2kaki3, LOW);
digitalWrite(m2kaki4, LOW);
delay(dly);
digitalWrite(m2kaki1, LOW);
digitalWrite(m2kaki2, LOW);
digitalWrite(m2kaki3, HIGH);
digitalWrite(m2kaki4, LOW);
delay(dly);
digitalWrite(m2kaki1, LOW);
digitalWrite(m2kaki2, HIGH);
digitalWrite(m2kaki3, LOW);
digitalWrite(m2kaki4, LOW);
delay(dly);
digitalWrite(m2kaki1, LOW);
digitalWrite(m2kaki2, LOW);
digitalWrite(m2kaki3, LOW);
digitalWrite(m2kaki4, HIGH);
delay(dly);
}
}

```