第一題

#define NOTE\_C3  131

#define NOTE\_CS3 139

#define NOTE\_D3  147

#define NOTE\_DS3 156

#define NOTE\_E3  165

#define NOTE\_F3  175

#define NOTE\_FS3 185

#define NOTE\_G3  196

#define NOTE\_GS3 208

#define NOTE\_A3  220

#define NOTE\_AS3 233

#define NOTE\_B3  247

#define NOTE\_C4  262

#define NOTE\_CS4 277

#define NOTE\_D4  294

#define NOTE\_DS4 311

#define NOTE\_E4  330

#define NOTE\_F4  349

#define NOTE\_FS4 370

#define NOTE\_G4  392

#define NOTE\_GS4 415

#define NOTE\_A4  440

#define NOTE\_AS4 466

#define NOTE\_B4  494

#define WHOLE 1 //全分符

#define HALF 0.5 //半分符

#define QUARTER 0.25

#define EIGHTH 0.125

#define SIXTEENTH 0.0625

#define pin 8

#define beat 500

void setup()

{

 pinMode(8,OUTPUT);

}

void xx(int a,int b,int c)

{

 tone(a,b,c);

 delay(b);

 noTone(c);

}

void loop()

{

 xx(pin,NOTE\_G4,beat);

 xx(pin,NOTE\_E4,beat);

 xx(pin,NOTE\_C4,beat);

 xx(pin,NOTE\_G3,beat);

 xx(pin,NOTE\_F3,beat);

 xx(pin,NOTE\_E4,beat);

 xx(pin,NOTE\_D4,beat);

 xx(pin,NOTE\_F3,beat);

 xx(pin,NOTE\_E4,beat);

 xx(pin,NOTE\_D4,beat);

 xx(pin,NOTE\_E3,beat);

 xx(pin,NOTE\_D4,beat);

 xx(pin,NOTE\_C4,beat);

 xx(pin,NOTE\_G4,beat);

 xx(pin,NOTE\_E4,beat);

 xx(pin,NOTE\_C4,beat);

 xx(pin,NOTE\_G3,beat);

 xx(pin,NOTE\_F3,beat);

 xx(pin,NOTE\_E4,beat);

 xx(pin,NOTE\_D4,beat);

 xx(pin,NOTE\_F3,beat);

 xx(pin,NOTE\_E4,beat);

 xx(pin,NOTE\_D4,beat);

 xx(pin,NOTE\_G3,beat);

 xx(pin,NOTE\_C4,beat);

 xx(pin,NOTE\_C4,beat);

}

第二題

#define NOTE\_C3  131

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#define WHOLE 1 //全分符

#define HALF 0.5 //半分符

#define QUARTER 0.25

#define EIGHTH 0.125

#define SIXTEENTH 0.0625

#define pin 5

#define beat 500

#include<Keypad.h>

const byte ROWS=4;

const byte COLS=4;

char keys[ROWS][COLS]={{'7','8','9','C'},{'4','5','6','D'},{'1','2','3','E'},{'0','A','B','F'}};

byte rowPins[ROWS]={12,13,14,15};

byte colPins[COLS]={8,9,10,11};

Keypad keypad = Keypad(makeKeymap(keys),rowPins,colPins,ROWS,COLS);

void setup()

{

 pinMode(5,OUTPUT);

 Serial.begin(9600);

}

void xx(int a,int b,int c)

{

 tone(a,b,c);

 delay(c);

 noTone(a);

}

void loop()

{

 char key=keypad.getKey();

 if(key!=NO\_KEY)

 {

   if(key=='0')

   {

     xx(pin,NOTE\_C4,500);

   }

   else if(key=='1')

 {

   xx(pin,NOTE\_E3,500);

 }

  else if(key=='2')

 {

   xx(pin,NOTE\_D4,500);

 }

  else if(key=='3')

 {

   xx(pin,NOTE\_F4,500);

 }

  else if(key=='4')

 {

   xx(pin,NOTE\_G4,500);

 }

  else if(key=='5')

 {

   xx(pin,NOTE\_A4,500);

 }

  else if(key=='6')

 {

   xx(pin,NOTE\_C3,500);

 }

  else if(key=='7')

 {

   xx(pin,NOTE\_A4,500);

 }

  else if(key=='8')

 {

   xx(pin,NOTE\_A4,500);

 }

  else if(key=='9')

 {

   xx(pin,NOTE\_G4,500);

 }

 }

}

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char \*morse[]={"01","1000","1010","100",

              "0","0010","110","0000",

               "00","0111","101","0100",

                "11","10","111","0110",

                 "1101","010","000","1"

                  "001","0001","11","1001",

                  "1011","1100"};

const byte Buzzer =10;

char chr,index;

char\*ptr;

void setup()

{

pinMode(Buzzer,OUTPUT);

Serial.begin(9600);

}

void loop() {

 if(Serial.available())

 {

   chr = Serial.read();

   Serial.println(chr);

   if((chr-'A')>=0 && (chr-'Z')<=0)

     index=chr-'A';

     ptr=morse[index];

   while(\*ptr!='\0')

   {

     if(\*ptr=='0')

     {

       tone(Buzzer,440,100);

       delay(100);

       }

       else

       {

         tone(Buzzer,440,300);

         delay(300);

         }

         ptr++;

         delay(100);

   }

    delay(300);

     }

   }