

//ECE 445 Fall 2012

//Group 8

//Created by: Matt DiLiberto, Udit Sharma, Ammar Faiz

#include <LiquidCrystal.h>

// initialize the library with the numbers of the interface pins
LiquidCrystal lcd(8, 13, 9, 4, 5, 6, 7);

int fsrPin1 = 15; //Analog pin input for FSR on ARduino
int fsrValue1 = 0; //FSR values
int fsrPin2 = 14; //Analog pin input for FSR on ARduino
int fsrValue2 = 0; //FSR values
int fsrPin3 = 13; //Analog pin input for FSR on ARduino
int fsrValue3 = 0; //FSR values
int fsrPin4 = 12; //Analog pin input for FSR on ARduino
int fsrValue4 = 0; //FSR values

int fsrPin5 = 11; //Analog pin input for FSR on ARduino
int fsrValue5 = 0; //FSR values
int fsrPin6 = 10; //Analog pin input for FSR on ARduino
int fsrValue6 = 0; //FSR values
int fsrPin7 = 9; //Analog pin input for FSR on ARduino
int fsrValue7 = 0; //FSR values
int fsrPin8 = 8; //Analog pin input for FSR on ARduino
int fsrValue8 = 0; //FSR values

int fsrPin9 = 7; //Analog pin input for FSR on ARduino
int fsrValue9 = 0; //FSR values
int fsrPin10 = 6; //Analog pin input for FSR on ARduino
int fsrValue10 = 0; //FSR values
int fsrPin11 = 5; //Analog pin input for FSR on ARduino
int fsrValue11 = 0; //FSR values
int fsrPin12 = 4; //Analog pin input for FSR on ARduino
int fsrValue12 = 0; //FSR values

int fsrPin13 = 3; //Analog pin input for FSR on ARduino
int fsrValue13 = 0; //FSR values
int fsrPin14 = 2; //Analog pin input for FSR on ARduino
int fsrValue14 = 0; //FSR values
int fsrPin15 = 1; //Analog pin input for FSR on ARduino
int fsrValue15 = 0; //FSR values
int fsrPin16 = 0; //Analog pin input for FSR on ARduino
int fsrValue16 = 0; //FSR values

int ledPin1 = 52;
int ledPin2 = 53;
int ledPin3 = 51;
int ledPin4 = 50;

```
int ledPin5 = 49;  
int ledPin6 = 48;  
int ledPin7 = 47;  
int ledPin8 = 46;
```

```
int ledPin9 = 44;  
int ledPin10 = 45;  
int ledPin11 = 43;  
int ledPin12 = 42;
```

```
int ledPin13 = 41;  
int ledPin14 = 40;  
int ledPin15 = 39;  
int ledPin16 = 38;
```

```
int adc_key_in = 0;  
int lcd_key = 0, lcd_key2 = 0;  
int x=0, i=0, flag = 0;  
int note_var= 0;  
int chord_var= 0;  
int song_var=0;  
int select= 0;  
int temp = 0;  
#define btnRIGHT 0  
#define btnUP 1  
#define btnDOWN 2  
#define btnLEFT 3  
#define btnSELECT 4  
#define btnNONE 5
```

```
int read_LCD_buttons() {  
  adc_key_in = analogRead(0);  
  if (adc_key_in > 1000) return btnNONE;  
  if (adc_key_in < 50) return btnRIGHT;  
  if (adc_key_in < 195) return btnUP;  
  if (adc_key_in < 380) return btnDOWN;  
  if (adc_key_in < 555) return btnLEFT;  
  if (adc_key_in < 790) return btnSELECT;  
  else return btnNONE;  
}
```

```
void setup () {  
  Serial.begin (9600); //Set serial boudrate to 9600  
  lcd.begin(16,2);  
}
```

```
void loop (){
```

```
pinMode(ledPin1, OUTPUT);
pinMode(ledPin2, OUTPUT);
pinMode(ledPin3, OUTPUT);
pinMode(ledPin4, OUTPUT);
pinMode(ledPin5, OUTPUT);
pinMode(ledPin6, OUTPUT);
pinMode(ledPin7, OUTPUT);
pinMode(ledPin8, OUTPUT);
pinMode(ledPin9, OUTPUT);
pinMode(ledPin10, OUTPUT);
pinMode(ledPin11, OUTPUT);
pinMode(ledPin12, OUTPUT);
pinMode(ledPin13, OUTPUT);
pinMode(ledPin14, OUTPUT);
pinMode(ledPin15, OUTPUT);
pinMode(ledPin16, OUTPUT);
```

```
lcd.clear();
/* lcd.setCursor(3,0);
  lcd.print("Welcome to");
  delay(800);
  lcd.setCursor(3,0);
  lcd.print("Team 8's ");
  delay(800);
  lcd.setCursor(3,0);
  lcd.print("Ukulele Tutor");
  delay(800);
  lcd.setCursor(3,0);
  lcd.print(" ");
  lcd.setCursor(3,0);
  lcd.print("By Ammar,");
  delay(800);
  lcd.setCursor(3,0);
  lcd.print(" ");
  lcd.setCursor(3,0);
  lcd.print("Matt,");
  lcd.setCursor(3,0);
  delay(800);
  lcd.print(" ");
  lcd.setCursor(3,0);
  lcd.print("Udit.");
  delay(800);*/
```

```
//Start Tutor
```

```
MainMenu:
```

```
lcd.clear();
lcd.setCursor(0,0);
lcd.print("Select Options:");
lcd.setCursor(0,1);
lcd.print("Left for Chords.");
```

```

delay(2000);
lcd.setCursor(0,2);
lcd.print("      ");
lcd.setCursor(0,2);
lcd.print("Right for Notes.");
delay(2000);
lcd.setCursor(0,3);
lcd.print("      ");
lcd.setCursor(0,2);
lcd.print("Down for Songs.");
//wait for user to select button
do{
  lcd_key = read_LCD_buttons();
}while (adc_key_in > 1000); // (adc_key_in > 1000) replace with this my frand.
Serial.println(adc_key_in);
  // switch(adc_key_in) and then case value of button possibly
if (adc_key_in < 50) { //select note bTNRIGHT
  lcd.setCursor(0,0);
  lcd.print("      ");
  lcd.setCursor(0,1);
  lcd.print("      ");
  lcd.setCursor(2,0);
  lcd.print("Select Note");

do{

  switch (note_var) {
//include default case 0 to have no LED on
    case 0:{
      //A major
      lcd.setCursor(4,1);
      lcd.print("A Major");
      //note_var++;
      delay(500);
    }
    break;

    case 1:{
      //A minor
      lcd.setCursor(4,1);
      lcd.print("A Minor");
      //note_var++;
      delay(500);
    }
    break;

    case 2:{
      //A minor
      lcd.setCursor(4,1);
      lcd.print("B Major");

```

```

        //note_var++;
        delay(500);
    }
    break;

case 3:{
    //Aminor
    lcd.setCursor(4,1);
    lcd.print("B Minor");
    //note_var++;
    delay(500);
}
break;

case 4:{
    //Aminor
    lcd.setCursor(4,1);
    lcd.print("C Major");
    // note_var++;
    delay(500);
}
break;

case 5:{
    //Aminor
    lcd.setCursor(4,1);
    lcd.print("C Minor");
    //note_var++;
    delay(500);
}
break;

case 6:{
    //Aminor
    lcd.setCursor(4,1);
    lcd.print("D Major");
    //note_var++;
    delay(500);
}
break;

case 7:{
    //Aminor
    lcd.setCursor(4,1);
    lcd.print("D Minor");
    //note_var++;
    delay(500);
}
break;

case 8:{

```

```

        //Aminor
        lcd.setCursor(4,1);
        lcd.print("E Major");
        //note_var++;
        delay(500);
    }
    break;

case 9:{
    //Aminor
    lcd.setCursor(4,1);
    lcd.print("E Minor");
    //note_var++;
    delay(500);
}
break;

case 10:{
    //Aminor
    lcd.setCursor(4,1);
    lcd.print("F Major");
    //note_var++;
    delay(500);
}
break;

case 11:{
    //Aminor
    lcd.setCursor(4,1);
    lcd.print("F Minor");
    // note_var++;
    delay(500);
}
break;

case 12:{
    //Aminor
    lcd.setCursor(4,1);
    lcd.print("G Major");
    //note_var++;
    delay(500);
}
break;

case 13:{
    //Aminor
    lcd.setCursor(4,1);
    lcd.print("G Minor");
    // note_var++;
    delay(500);
}
}

```

```
break;
```

```
}
```

```
//if(select==1){
```

```
switch (note_var) {
```

```
//include default case 0 to have no LED on
```

```
case 0:{
```

```
    //Aminor = 1
```

```
    do{
```

```
        digitalWrite(ledPin1, HIGH);
```

```
        fsrValue1 = analogRead(fsrPin1);//reads FSR
```

```
        if (fsrValue1 >= 200){
```

```
            digitalWrite(ledPin1, LOW);
```

```
            Serial.println("Aminor");
```

```
            //note_var++;
```

```
        }} while (fsrValue1 < 200);
```

```
    }
```

```
break;
```

```
case 1:{
```

```
    //Dminor = 2
```

```
    do {
```

```
        digitalWrite(ledPin2, HIGH);
```

```
        fsrValue2 = analogRead(fsrPin2);//reads FSR
```

```
        if (fsrValue2 >= 200){
```

```
            digitalWrite(ledPin2, LOW);
```

```
            Serial.println("Dminor");
```

```
            //note_var++;
```

```
        }} while (fsrValue2 < 200);
```

```
    }
```

```
break;
```

```
case 2:{
```

```
    //Fmajor = 3
```

```
    do {
```

```
        digitalWrite(ledPin3, HIGH);
```

```
        fsrValue3 = analogRead(fsrPin3);//reads FSR
```

```
        if (fsrValue3 >= 200){
```

```
            digitalWrite(ledPin3, LOW);
```

```
            Serial.println(fsrValue3);
```

```
            //note_var++;
```

```
        }} while (fsrValue3 < 200);
```

```
    }
```

```
break;
```

```

case 3:{
    //Bminor = 4
    do{
        digitalWrite(ledPin4, HIGH);
        fsrValue4 = analogRead(fsrPin4);//reads FSR
        if (fsrValue4 >= 200){
            digitalWrite(ledPin4, LOW);
            Serial.println(fsrValue4);
            //note_var++;
        } while (fsrValue4 < 200);
    }
    break;

case 4:{
    //Fmajor = 5
    do{
        digitalWrite(ledPin5, HIGH);
        fsrValue5 = analogRead(fsrPin5);//reads FSR
        if (fsrValue5 >= 200){
            Serial.println(fsrValue5);
            digitalWrite(ledPin5, LOW);
            //note_var++;
        } while (fsrValue5 < 200);
    }
    break;

case 5:{
    //Dmajor = 6
    do{
        digitalWrite(ledPin6, HIGH);
        fsrValue6 = analogRead(fsrPin6);//reads FSR
        if (fsrValue6 >= 200){
            Serial.println(fsrValue6);
            digitalWrite(ledPin6, LOW);
            //note_var++;
        } while (fsrValue6 < 200);
    }
    break;

case 6:{
    //Gminor = 7
    do{
        digitalWrite(ledPin7, HIGH);
        fsrValue7 = analogRead(fsrPin7);//reads FSR
        if (fsrValue7 >= 200){
            Serial.println(fsrValue7);
            digitalWrite(ledPin7, LOW);
            //note_var++;
        } while (fsrValue7 < 200);
    }
}

```



```

break;

case 7:{
    //Bmajor = 8
    do{
        digitalWrite(ledPin8, HIGH);
        fsrValue8 = analogRead(fsrPin8);//reads FSR
        if (fsrValue8 >= 200){
            Serial.println("Bmajor");
            digitalWrite(ledPin8, LOW);
            //note_var++;
        } while (fsrValue8 < 200);
    }
}
break;

case 8:{
    //Bminor = 9
    do{
        lcd_key = read_LCD_buttons();
        digitalWrite(ledPin9, HIGH);
        fsrValue9 = analogRead(fsrPin9);//reads FSR
        if (adc_key_in < 1000){
            Serial.println("Bminor");
            digitalWrite(ledPin9, LOW);
            //note_var++;
        } while (adc_key_in > 1000);
    }
}
break;

case 9:{
    //Eminor = 10
    do{
        Serial.println(fsrValue10);
        digitalWrite(ledPin10, HIGH);
        fsrValue10 = analogRead(fsrPin10);//reads FSR
        if (fsrValue10 >= 200){
            Serial.println("Eminor");
            digitalWrite(ledPin10, LOW);
            //note_var++;
        } while (fsrValue10 < 200);
    }
}
break;

case 10:{
    //Gmajor = 11
    do{
        Serial.println(fsrValue11);
        digitalWrite(ledPin11, HIGH);
        fsrValue11 = analogRead(fsrPin11);//reads FSR
        if (fsrValue11 >= 200){
            Serial.println("Gmajor");

```

```

        digitalWrite(ledPin11, LOW);
        //note_var++;
    }} while (fsrValue11 < 200);
    }
break;

case 11:{
    //Cmajor = 12
    do{
        digitalWrite(ledPin12, HIGH);
        fsrValue12 = analogRead(fsrPin12);//reads FSR
        if (fsrValue12 >= 200){
            Serial.println("Cmajor");
            digitalWrite(ledPin12, LOW);
            //note_var++;
        }} while (fsrValue12 < 200);
    }
break;

case 12:{
    //Bmajor = 13
    do{
        digitalWrite(ledPin13, HIGH);
        fsrValue13 = analogRead(fsrPin13);//reads FSR
        if (fsrValue13 >= 200){
            Serial.println("Bmajor");
            digitalWrite(ledPin13, LOW);
            //note_var++;
        }} while (fsrValue13 < 200);
    }
break;

case 13:{
    //Emajor = 14
    do{
        digitalWrite(ledPin14, HIGH);
        fsrValue14 = analogRead(fsrPin14);//reads FSR
        if (fsrValue14 >= 200){
            Serial.println("Emajor");
            digitalWrite(ledPin14, LOW);
            //note_var++;
        }} while (fsrValue14 < 200);
    }
break;

case 14:{
    //Aminor = 15
    do{
        digitalWrite(ledPin15, HIGH);
        fsrValue15 = analogRead(fsrPin15);//reads FSR
        if (fsrValue15 >= 200){

```

```

        Serial.println("Aminor");
        digitalWrite(ledPin15, LOW);
        //note_var++;
    }} while (fsrValue15 < 200);
    }
    break;

    case 15:{
        //Dminor = 16
        do{
            digitalWrite(ledPin16, HIGH);
            fsrValue16 = analogRead(fsrPin16); //reads FSR
            if (fsrValue16 >= 200){
                Serial.println("Dminor");
                digitalWrite(ledPin16, LOW);
                //note_var++;
            }} while (fsrValue16 < 200);
        }
        break;

    //}
}
do{
    lcd_key = read_LCD_buttons();
}while (adc_key_in > 1000);

if (adc_key_in < 50){
    if(note_var==13)
        note_var= 0;
    else
        note_var++;
}
else if (adc_key_in < 195){
    note_var= 0;
    goto MainMenu;}
else if (adc_key_in < 555){
    if(note_var==0)
        note_var= 13;
    else
        note_var--;
}
else if(adc_key_in < 790)
    select=1;

else
    note_var= note_var;

    }while (note_var< 14);
}
else if (adc_key_in < 380) { //select note bTNRIGHT

```

```

    lcd.setCursor(0,0);
    lcd.print("      ");
    lcd.setCursor(0,1);
    lcd.print("      ");
    lcd.setCursor(2,0);
    lcd.print("Select Song");

do{

    lcd.setCursor(0,1);
    lcd.print("Over The Rainbow");

switch (song_var) {

case 0:{
    //Cmajor = 12

    do{
        digitalWrite(ledPin12, HIGH);
        fsrValue12 = analogRead(fsrPin12);//reads FSR
        if (fsrValue12 >= 200){
            digitalWrite(ledPin12, LOW);
            song_var++;
        } while (fsrValue12 < 200);

    }
    break;

case 1:{
    //Eminor = 8,11,14

    do{
        do{
            do{
                digitalWrite(ledPin8, HIGH);
                digitalWrite(ledPin11, HIGH);
                digitalWrite(ledPin14, HIGH);
                fsrValue8 = analogRead(fsrPin8);//reads FSR
                fsrValue11 = analogRead(fsrPin11);//reads FSR
                fsrValue14 = analogRead(fsrPin14);//reads FSR
                if (fsrValue8 >= 200){
                    if (fsrValue11 >= 200){
                        if (fsrValue14 >= 200){
                            digitalWrite(ledPin8, LOW);
                            digitalWrite(ledPin11, LOW);
                            digitalWrite(ledPin14, LOW);
                            song_var++;
                        }
                    }
                }
            }
        }
    }
}
}
}

```

```

    } while (fsrValue8 < 200);
    } while (fsrValue11 < 200);
    } while (fsrValue14 < 200);

    }
    break;

case 2:{
    //Fmajor = 3,5

    do{
        do{
            digitalWrite(ledPin3, HIGH);
            digitalWrite(ledPin5, HIGH);
            fsrValue3 = analogRead(fsrPin3);//reads FSR
            fsrValue5 = analogRead(fsrPin5);//reads FSR
            if (fsrValue3 >= 200){
                if (fsrValue5 >= 200){
                    digitalWrite(ledPin3, LOW);
                    digitalWrite(ledPin5, LOW);
                    song_var++;
                }
            }
        } while (fsrValue3 < 200);
    } while (fsrValue5 < 200);

    }
    break;

case 3:{
    //Cmajor = 12

    do{
        digitalWrite(ledPin12, HIGH);
        fsrValue12 = analogRead(fsrPin12);//reads FSR
        if (fsrValue12 >= 200){
            digitalWrite(ledPin12, LOW);
            song_var++;
        }
    } while (fsrValue12 < 200);

    }
    break;

case 4:{
    //Fmajor = 3,5

    do{
        do{
            digitalWrite(ledPin3, HIGH);
            digitalWrite(ledPin5, HIGH);
            fsrValue3 = analogRead(fsrPin3);//reads FSR

```

```

    fsrValue5 = analogRead(fsrPin5); //reads FSR
    if (fsrValue3 >= 200){
        if (fsrValue5 >= 200){
            digitalWrite(ledPin3, LOW);
            digitalWrite(ledPin5, LOW);
            song_var++;
        }
    }
} while (fsrValue3 < 200);
} while (fsrValue5 < 200);

}
break;

```

```

case 5:{
    //Cmajor = 12

    do{
        digitalWrite(ledPin12, HIGH);
        fsrValue12 = analogRead(fsrPin12); //reads FSR
        if (fsrValue12 >= 200){
            digitalWrite(ledPin12, LOW);
            song_var++;
        } while (fsrValue12 < 200);
    }
    break;

```

```

case 6:{
    //Gmajor = 6,8,11

    do{
        do{
            do{
                digitalWrite(ledPin6, HIGH);
                digitalWrite(ledPin8, HIGH);
                digitalWrite(ledPin11, HIGH);
                fsrValue6 = analogRead(fsrPin6); //reads FSR
                fsrValue8 = analogRead(fsrPin8); //reads FSR
                fsrValue11 = analogRead(fsrPin11); //reads FSR
                if (fsrValue6 >= 200){
                    if (fsrValue8 >= 200){
                        if (fsrValue11 >= 200){
                            digitalWrite(ledPin6, LOW);
                            digitalWrite(ledPin8, LOW);
                            digitalWrite(ledPin11, LOW);
                            song_var++;
                        }
                    }
                }
            }
        }
    } while (fsrValue6 < 200);

```

```

    } while (fsrValue8 < 200);
    } while (fsrValue11 < 200);

    }
    break;

case 7:{
    //Aminor = 5
    do{
        digitalWrite(ledPin5, HIGH);
        fsrValue5 = analogRead(fsrPin5); //reads FSR
        if (fsrValue5 >= 200){
            digitalWrite(ledPin5, LOW);
            song_var++;
        } while (fsrValue5 < 200);
    }
    break;

case 8:{
    //Fmajor = 3,5

    do{
        do{
            digitalWrite(ledPin3, HIGH);
            digitalWrite(ledPin5, HIGH);
            fsrValue3 = analogRead(fsrPin3); //reads FSR
            fsrValue5 = analogRead(fsrPin5); //reads FSR
            if (fsrValue3 >= 200){
                if (fsrValue5 >= 200){
                    digitalWrite(ledPin3, LOW);
                    digitalWrite(ledPin5, LOW);
                    song_var++;
                }
            }
        } while (fsrValue3 < 200);
    } while (fsrValue5 < 200);

    }
    break;

case 9:{
    //Cmajor = 12

    do{
        digitalWrite(ledPin12, HIGH);
        fsrValue12 = analogRead(fsrPin12); //reads FSR
        if (fsrValue12 >= 200){
            digitalWrite(ledPin12, LOW);
            song_var++;
        } while (fsrValue12 < 200);
    }

```

```

    }
    break;

case 10:{
    //Eminor = 8,11,14

    do{
        do{
            do{
                digitalWrite(ledPin8, HIGH);
                digitalWrite(ledPin11, HIGH);
                digitalWrite(ledPin14, HIGH);
                fsrValue8 = analogRead(fsrPin8);//reads FSR
                fsrValue11 = analogRead(fsrPin11);//reads FSR
                fsrValue14 = analogRead(fsrPin14);//reads FSR
                if (fsrValue8 >= 200){
                    if (fsrValue11 >= 200){
                        if (fsrValue14 >= 200){
                            digitalWrite(ledPin8, LOW);
                            digitalWrite(ledPin11, LOW);
                            digitalWrite(ledPin14, LOW);
                            song_var++;
                        }
                    }
                }
            }
        }
    } while (fsrValue8 < 200);
    } while (fsrValue11 < 200);
    } while (fsrValue14 < 200);

    }
    break;

case 11:{
    //Fmajor = 3,5

    do{
        do{
            digitalWrite(ledPin3, HIGH);
            digitalWrite(ledPin5, HIGH);
            fsrValue3 = analogRead(fsrPin3);//reads FSR
            fsrValue5 = analogRead(fsrPin5);//reads FSR
            if (fsrValue3 >= 200){
                if (fsrValue5 >= 200){
                    digitalWrite(ledPin3, LOW);
                    digitalWrite(ledPin5, LOW);
                    song_var++;
                }
            }
        }
    } while (fsrValue3 < 200);
    } while (fsrValue5 < 200);

```



```

    }
    break;

case 12:{
    //Cmajor = 12

    do{
        digitalWrite(ledPin12, HIGH);
        fsrValue12 = analogRead(fsrPin12);//reads FSR
        if (fsrValue12 >= 200){
            digitalWrite(ledPin12, LOW);
            song_var++;
        } while (fsrValue12 < 200);

    }
    break;

case 13:{
    //Fmajor = 3,5

    do{
        do{
            digitalWrite(ledPin3, HIGH);
            digitalWrite(ledPin5, HIGH);
            fsrValue3 = analogRead(fsrPin3);//reads FSR
            fsrValue5 = analogRead(fsrPin5);//reads FSR
            if (fsrValue3 >= 200){
                if (fsrValue5 >= 200){
                    digitalWrite(ledPin3, LOW);
                    digitalWrite(ledPin5, LOW);
                    song_var++;
                }
            }
        } while (fsrValue3 < 200);
    } while (fsrValue5 < 200);

    }
    break;

case 14:{
    //Cmajor = 12

    do{
        digitalWrite(ledPin12, HIGH);
        fsrValue12 = analogRead(fsrPin12);//reads FSR
        if (fsrValue12 >= 200){
            digitalWrite(ledPin12, LOW);
            song_var++;
        } while (fsrValue12 < 200);

    }

```

```

        break;

case 15:{
    //Gmajor = 6,8,11

    do{
        do{
            do{
                digitalWrite(ledPin6, HIGH);
                digitalWrite(ledPin8, HIGH);
                digitalWrite(ledPin11, HIGH);
                fsrValue6 = analogRead(fsrPin6);//reads FSR
                fsrValue8 = analogRead(fsrPin8);//reads FSR
                fsrValue11 = analogRead(fsrPin11);//reads FSR
                if (fsrValue6 >= 200){
                    if (fsrValue8 >= 200){
                        if (fsrValue11 >= 200){
                            digitalWrite(ledPin6, LOW);
                            digitalWrite(ledPin8, LOW);
                            digitalWrite(ledPin11, LOW);
                            song_var++;
                        }
                    }
                }
            }
        }
    } while (fsrValue6 < 200);
    } while (fsrValue8 < 200);
    } while (fsrValue11 < 200);

    }
    break;

case 16:{
    //Aminor = 5
    do{
        digitalWrite(ledPin5, HIGH);
        fsrValue5 = analogRead(fsrPin5);//reads FSR
        if (fsrValue5 >= 200){
            digitalWrite(ledPin5, LOW);
            song_var++;
        }
    } while (fsrValue5 < 200);
    }
    break;

case 17:{
    //Fmajor = 3,5

    do{
        do{
            digitalWrite(ledPin3, HIGH);
            digitalWrite(ledPin5, HIGH);
            fsrValue3 = analogRead(fsrPin3);//reads FSR

```

```

    fsrValue5 = analogRead(fsrPin5); //reads FSR
    if (fsrValue3 >= 200){
        if (fsrValue5 >= 200){
            digitalWrite(ledPin3, LOW);
            digitalWrite(ledPin5, LOW);
            song_var++;
        }
    }
} while (fsrValue3 < 200);
} while (fsrValue5 < 200);

}
break;

    case 18:{
        //Cmajor = 12

        do{
            digitalWrite(ledPin12, HIGH);
            fsrValue12 = analogRead(fsrPin12); //reads FSR
            if (fsrValue12 >= 200){
                digitalWrite(ledPin12, LOW);
                song_var++;
            } while (fsrValue12 < 200);

        }
        break;

        case 19:{
            //Eminor = 8,11,14

            do{
                do{
                    do{
                        digitalWrite(ledPin8, HIGH);
                        digitalWrite(ledPin11, HIGH);
                        digitalWrite(ledPin14, HIGH);
                        fsrValue8 = analogRead(fsrPin8); //reads FSR
                        fsrValue11 = analogRead(fsrPin11); //reads FSR
                        fsrValue14 = analogRead(fsrPin14); //reads FSR
                        if (fsrValue8 >= 200){
                            if (fsrValue11 >= 200){
                                if (fsrValue14 >= 200){
                                    digitalWrite(ledPin8, LOW);
                                    digitalWrite(ledPin11, LOW);
                                    digitalWrite(ledPin14, LOW);
                                    song_var++;
                                }
                            }
                        }
                    }
                }
            } while (fsrValue8 < 200);

```

```

    } while (fsrValue11 < 200);
    } while (fsrValue14 < 200);

    }
    break;

    case 20:{
        //Aminor = 5
        do{
            digitalWrite(ledPin5, HIGH);
            fsrValue5 = analogRead(fsrPin5);//reads FSR
            if (fsrValue5 >= 200){
                digitalWrite(ledPin5, LOW);
                song_var++;
            } while (fsrValue5 < 200);
        }
        break;

    case 21:{
        //Fmajor = 3,5

        do{
            do{
                digitalWrite(ledPin3, HIGH);
                digitalWrite(ledPin5, HIGH);
                fsrValue3 = analogRead(fsrPin3);//reads FSR
                fsrValue5 = analogRead(fsrPin5);//reads FSR
                if (fsrValue3 >= 200){
                    if (fsrValue5 >= 200){
                        digitalWrite(ledPin3, LOW);
                        digitalWrite(ledPin5, LOW);
                        song_var++;
                    }
                }
            } while (fsrValue3 < 200);
        } while (fsrValue5 < 200);

        }
        break;

        //Cmajor = 12
    case 22:{
        do{
            digitalWrite(ledPin12, HIGH);
            fsrValue12 = analogRead(fsrPin12);//reads FSR
            if (fsrValue12 >= 200){
                digitalWrite(ledPin12, LOW);
                song_var++;
            } while (fsrValue12 < 200);
        }
    }

```

```

    }
    break;

    case 23:{
        //Eminor = 8,11,14

        do{
            do{
                do{
                    digitalWrite(ledPin8, HIGH);
                    digitalWrite(ledPin11, HIGH);
                    digitalWrite(ledPin14, HIGH);
                    fsrValue8 = analogRead(fsrPin8);//reads FSR
                    fsrValue11 = analogRead(fsrPin11);//reads FSR
                    fsrValue14 = analogRead(fsrPin14);//reads FSR
                    if (fsrValue8 >= 200){
                        if (fsrValue11 >= 200){
                            if (fsrValue14 >= 200){
                                digitalWrite(ledPin8, LOW);
                                digitalWrite(ledPin11, LOW);
                                digitalWrite(ledPin14, LOW);
                                song_var++;
                            }
                        }
                    }
                }
            } while (fsrValue8 < 200);
        } while (fsrValue11 < 200);
    } while (fsrValue14 < 200);

    }
    break;

    case 24:{
        //Aminor = 5
        do{
            digitalWrite(ledPin5, HIGH);
            fsrValue5 = analogRead(fsrPin5);//reads FSR
            if (fsrValue5 >= 200){
                digitalWrite(ledPin5, LOW);
                song_var++;
            } while (fsrValue5 < 200);
        }
    }
    break;

    case 25:{
        //Fmajor = 3,5

        do{
            do{
                digitalWrite(ledPin3, HIGH);
                digitalWrite(ledPin5, HIGH);

```

```

    fsrValue3 = analogRead(fsrPin3); //reads FSR
    fsrValue5 = analogRead(fsrPin5); //reads FSR
    if (fsrValue3 >= 200){
        if (fsrValue5 >= 200){
            digitalWrite(ledPin3, LOW);
            digitalWrite(ledPin5, LOW);
            song_var++;
        }
    }
} while (fsrValue3 < 200);
} while (fsrValue5 < 200);

}
break;

}

```

```

    }while (note_var < 14);
}
else if (adc_key_in < 555) { //select note bTNRIGHT
    lcd.setCursor(0,0);
    lcd.print("      ");
    lcd.setCursor(0,1);
    lcd.print("      ");
    lcd.setCursor(2,0);
    lcd.print("Select Chord");

do{
    switch (chord_var) {
//include default case 0 to have no LED on
        case 0:{
            //A major
            lcd.setCursor(4,1);
            lcd.print("A Major");
            //note_var++;
            delay(500);
        }
        break;

        case 1:{
            //A minor
            lcd.setCursor(4,1);
            lcd.print("A Minor");
            //note_var++;
            delay(500);
        }
        break;
    }
}

```

```
case 2:{
    //Aminor
    lcd.setCursor(4,1);
    lcd.print("B Major");
    //note_var++;
    delay(500);
}
break;

case 3:{
    //Aminor
    lcd.setCursor(4,1);
    lcd.print("B Minor");
    //note_var++;
    delay(500);
}
break;

case 4:{
    //Aminor
    lcd.setCursor(4,1);
    lcd.print("C Major");
    // note_var++;
    delay(500);
}
break;

case 5:{
    //Aminor
    lcd.setCursor(4,1);
    lcd.print("C Minor");
    //note_var++;
    delay(500);
}
break;

case 6:{
    //Aminor
    lcd.setCursor(4,1);
    lcd.print("D Major");
    //note_var++;
    delay(500);
}
break;

case 7:{
    //Aminor
    lcd.setCursor(4,1);
    lcd.print("D Minor");
    //note_var++;
    delay(500);
```

```

    }
    break;

case 8:{
    //Aminor
    lcd.setCursor(4,1);
    lcd.print("E Major");
    //note_var++;
    delay(500);
    }
    break;

case 9:{
    //Aminor
    lcd.setCursor(4,1);
    lcd.print("E Minor");
    //note_var++;
    delay(500);
    }
    break;

case 10:{
    //Aminor
    lcd.setCursor(4,1);
    lcd.print("F Major");
    //note_var++;
    delay(500);
    }
    break;

case 11:{
    //Aminor
    lcd.setCursor(4,1);
    lcd.print("F Minor");
    // note_var++;
    delay(500);
    }
    break;

case 12:{
    //Aminor
    lcd.setCursor(4,1);
    lcd.print("G Major");
    //note_var++;
    delay(500);
    }
    break;

case 13:{
    //Aminor
    lcd.setCursor(4,1);

```



```

        lcd.print("G Minor");
        // note_var++;
        delay(500);
    }
    break;

}

//if (select==1){
switch (chord_var) {

    case 0:{
        //A major = 2,5
        do{
            do{
                digitalWrite(ledPin2, HIGH);
                digitalWrite(ledPin5, HIGH);
                fsrValue2 = analogRead(fsrPin2);//reads FSR
                fsrValue5 = analogRead(fsrPin5);//reads FSR
                if (fsrValue2 >= 200){
                    if (fsrValue5 >= 200){
                        temp=1;
                        digitalWrite(ledPin2, LOW);
                        digitalWrite(ledPin5, LOW);
                    }
                }
            }while (fsrValue2 < 200);
        }while (fsrValue5 < 200);

    }
    break;

    case 1:{
        //A minor = 5
        do{
            digitalWrite(ledPin5, HIGH);
            fsrValue5 = analogRead(fsrPin5);//reads FSR
            if (fsrValue5 >= 200){
                digitalWrite(ledPin5, LOW);

            }
        } while (fsrValue5 < 200);
    }
    break;

    case 2:{
        //B major = 7, 8, 10, 13
        do{
            do{
                do{

```

```

        do{
digitalWrite(ledPin7, HIGH);
digitalWrite(ledPin8, HIGH);
digitalWrite(ledPin10, HIGH);
digitalWrite(ledPin13, HIGH);
fsrValue7 = analogRead(fsrPin7);//reads FSR
fsrValue8 = analogRead(fsrPin8);//reads FSR
fsrValue10 = analogRead(fsrPin10);//reads FSR
fsrValue13 = analogRead(fsrPin13);//reads FSR
if (fsrValue7 >= 200){
    if (fsrValue8 >= 200){
        if (fsrValue10 >= 200){
            if (fsrValue13 >= 200){
                Serial.println("Bmajor");
                digitalWrite(ledPin7, LOW);
                digitalWrite(ledPin8, LOW);
                digitalWrite(ledPin10, LOW);
                digitalWrite(ledPin13, LOW);
            }
        }
    }
}
        }while (fsrValue7 < 200);
        }while (fsrValue8 < 200);
        }while (fsrValue10 < 200);
        delay(200);
        }while (fsrValue13 < 200);
    }
break;

case 3:{
    //Bminor = 3,4,6,9
    do{
        do{
            do{
                do{
digitalWrite(ledPin3, HIGH);
digitalWrite(ledPin4, HIGH);
digitalWrite(ledPin6, HIGH);
digitalWrite(ledPin9, HIGH);
fsrValue3 = analogRead(fsrPin3);//reads FSR
fsrValue4 = analogRead(fsrPin4);//reads FSR
fsrValue6 = analogRead(fsrPin6);//reads FSR
fsrValue9 = analogRead(fsrPin9);//reads FSR
if (fsrValue3 >= 200){
    if (fsrValue4 >= 200){
        if (fsrValue6 >= 200){
            if (fsrValue9 >= 200){
                Serial.println("Bmajor");
                digitalWrite(ledPin3, LOW);
                digitalWrite(ledPin4, LOW);

```

```

        digitalWrite(ledPin6, LOW);
        digitalWrite(ledPin9, LOW);
    }
}
}
}
}while(fsrValue3 < 200);
}while(fsrValue4 < 200);
}while(fsrValue6 < 200);
}while(fsrValue9 < 200);
}
break;

case 4:{
    //Cmajor = 12

    do{
        digitalWrite(ledPin12, HIGH);
        fsrValue12 = analogRead(fsrPin12); //reads FSR
        if (fsrValue12 >= 200){
            digitalWrite(ledPin12, LOW);
        } while (fsrValue12 < 200);

    }
    break;

case 5:{
    //Dmajor = 5, 6, 7

    do{
        do{
            do{
                digitalWrite(ledPin5, HIGH); //turns LED on
                digitalWrite(ledPin6, HIGH); //turns LED on
                digitalWrite(ledPin7, HIGH); //turns LED on
                fsrValue5 = analogRead(fsrPin5); //reads FSR
                fsrValue6 = analogRead(fsrPin6); //reads FSR
                fsrValue7 = analogRead(fsrPin7); //reads FSR
                if (fsrValue5 >= 200){
                    if (fsrValue6 >= 200){
                        if (fsrValue7 >= 200){
                            digitalWrite(ledPin5, LOW); //turns LED off
                            digitalWrite(ledPin6, LOW); //turns LED off
                            digitalWrite(ledPin7, LOW); //turns LED off
                        }
                    }
                }
            }
        }
    } while (fsrValue5 < 200);
    } while (fsrValue6 < 200);
    } while (fsrValue7 < 200);
}

```

```

    }
    break;

    case 6:{
        //Dminor = 1,2,3,16
        do{
            do{
                do{
                    digitalWrite(ledPin1, HIGH);
                    digitalWrite(ledPin2, HIGH);
                    digitalWrite(ledPin3, HIGH);
                    digitalWrite(ledPin16, HIGH);
                    fsrValue1 = analogRead(fsrPin1);//reads FSR
                    fsrValue2 = analogRead(fsrPin2);//reads FSR
                    fsrValue3 = analogRead(fsrPin3);//reads FSR
                    fsrValue16 = analogRead(fsrPin16);//reads FSR
                    if (fsrValue1 >= 200){
                        if (fsrValue2 >= 200){
                            if (fsrValue3 >= 200){
                                if (fsrValue16 >= 200){
                                    Serial.println("Bmajor");
                                    digitalWrite(ledPin1, LOW);
                                    digitalWrite(ledPin2, LOW);
                                    digitalWrite(ledPin3, LOW);
                                    digitalWrite(ledPin16, LOW);
                                }
                            }
                        }
                    }
                }
            }
        }while (fsrValue1 < 200);
    }while (fsrValue2 < 200);
}while (fsrValue3 < 200);
}while (fsrValue16 < 200);
}
break;

    case 7:{
        //Emajor = 1, 8, 14

        do{
            do{
                do{
                    digitalWrite(ledPin1, HIGH);
                    digitalWrite(ledPin8, HIGH);
                    digitalWrite(ledPin14, HIGH);
                    fsrValue1 = analogRead(fsrPin1);//reads FSR
                    fsrValue8 = analogRead(fsrPin8);//reads FSR
                    fsrValue14 = analogRead(fsrPin14);//reads FSR

                    if (fsrValue1 >= 200){

```

```

        if (fsrValue8 >= 200){
            if (fsrValue14 >= 200){
                digitalWrite(ledPin1, LOW);
                digitalWrite(ledPin8, LOW);
                digitalWrite(ledPin14, LOW);
            }
        }
    }
}while (fsrValue1 < 200);
}while (fsrValue8 < 200);
}while (fsrValue14 < 200);

}
break;

case 8:{
    //Eminor = 8,11,14

    do{
        do{
            do{
                digitalWrite(ledPin8, HIGH);
                digitalWrite(ledPin11, HIGH);
                digitalWrite(ledPin14, HIGH);
                fsrValue8 = analogRead(fsrPin8);//reads FSR
                fsrValue11 = analogRead(fsrPin11);//reads FSR
                fsrValue14 = analogRead(fsrPin14);//reads FSR
                if (fsrValue8 >= 200){
                    if (fsrValue11 >= 200){
                        if (fsrValue14 >= 200){
                            digitalWrite(ledPin8, LOW);
                            digitalWrite(ledPin11, LOW);
                            digitalWrite(ledPin14, LOW);
                        }
                    }
                }
            }
        }
    } while (fsrValue8 < 200);
    } while (fsrValue11 < 200);
    } while (fsrValue14 < 200);

}
break;

case 9:{
    //Fmajor = 3,5

    do{
        do{
            digitalWrite(ledPin3, HIGH);
            digitalWrite(ledPin5, HIGH);
            fsrValue3 = analogRead(fsrPin3);//reads FSR

```

```

    fsrValue5 = analogRead(fsrPin5); //reads FSR
    if (fsrValue3 >= 200){
        if (fsrValue5 >= 200){
            digitalWrite(ledPin3, LOW);
            digitalWrite(ledPin5, LOW);
        }
    }
} while (fsrValue3 < 200);
} while (fsrValue5 < 200);

}
break;

case 10:{
    //Gmajor = 6,8,11

    do{
        do{
            do{
                digitalWrite(ledPin6, HIGH);
                digitalWrite(ledPin8, HIGH);
                digitalWrite(ledPin11, HIGH);
                fsrValue6 = analogRead(fsrPin6); //reads FSR
                fsrValue8 = analogRead(fsrPin8); //reads FSR
                fsrValue11 = analogRead(fsrPin11); //reads FSR
                if (fsrValue6 >= 200){
                    if (fsrValue8 >= 200){
                        if (fsrValue11 >= 200){
                            digitalWrite(ledPin6, LOW);
                            digitalWrite(ledPin8, LOW);
                            digitalWrite(ledPin11, LOW);
                        }
                    }
                }
            }
        }
    } while (fsrValue6 < 200);
    } while (fsrValue8 < 200);
    } while (fsrValue11 < 200);

}
break;

case 11:{
    //Gminor = 2,4,7,9
    do{
        do{
            do{
                digitalWrite(ledPin2, HIGH);
                digitalWrite(ledPin4, HIGH);
                digitalWrite(ledPin7, HIGH);
                digitalWrite(ledPin9, HIGH);

```

```

        fsrValue2 = analogRead(fsrPin2); //reads FSR
        fsrValue4 = analogRead(fsrPin4); //reads FSR
        fsrValue7 = analogRead(fsrPin7); //reads FSR
        fsrValue9 = analogRead(fsrPin9); //reads FSR
        if (fsrValue2 >= 200){
            if (fsrValue4 >= 200){
                if (fsrValue7 >= 200){
                    if (fsrValue9 >= 200){
                        Serial.println("Bmajor");
                        digitalWrite(ledPin2, LOW);
                        digitalWrite(ledPin4, LOW);
                        digitalWrite(ledPin7, LOW);
                        digitalWrite(ledPin9, LOW);
                    }
                }
            }
        } while (fsrValue2 < 200);
    } while (fsrValue4 < 200);
} while (fsrValue7 < 200);
} while (fsrValue9 < 200);
}
break;

//}
}

do{
    lcd_key = read_LCD_buttons();
}while (adc_key_in > 1000);

if (adc_key_in < 50){
    if(chord_var==13)
        chord_var= 0;
    else
        chord_var++;
}
else if (adc_key_in < 195){
    chord_var= 0;
    goto MainMenu;}
else if (adc_key_in < 555){
    if(chord_var==0)
        chord_var= 13;
    else
        chord_var--;
}
else if(adc_key_in < 790)
    select=1;
else
    chord_var= chord_var;

```

```
    }while (note_var< 14);  
  }  
  
  else  
    delay(100);  
}
```