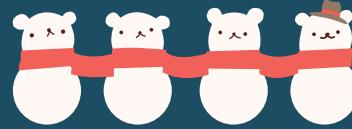


FINAL PROJECT

CHLOE KOO



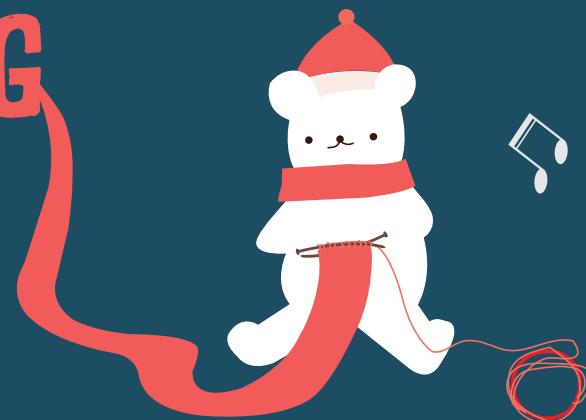
CONCEPT STATEMENT



Processing was used to see the motions as the piano is played. Since it is the holiday season, I chose a Christmas carol, Jingle Bell, for the song. Using Jingle Bell's music note, press the right note on the piano and a motion is played telling a story. The motion does not play if you press the wrong note.

The project focused on children's perspective but there's no limitation on age and it can be used by anyone and everyone.

EVERYONE CAN PLAY PIANO USING PROCESSING



PRECEDENTS/INSPIRATION

I have always been interested in children's book and animation while I used to teach little kids at the church. I also took a Children Literature class in college and I wanted to create something that combined music and fairy tale/children's book for this project.



PROCESS/PROTOTYPES



PIANO PLAYER MIDTERM

TouchOSC + Processing

For the midterm project, I created an iPhone piano player using Touch OSC and Processing. During critique, I was suggested to take this project and develop it further into an advanced piano application.

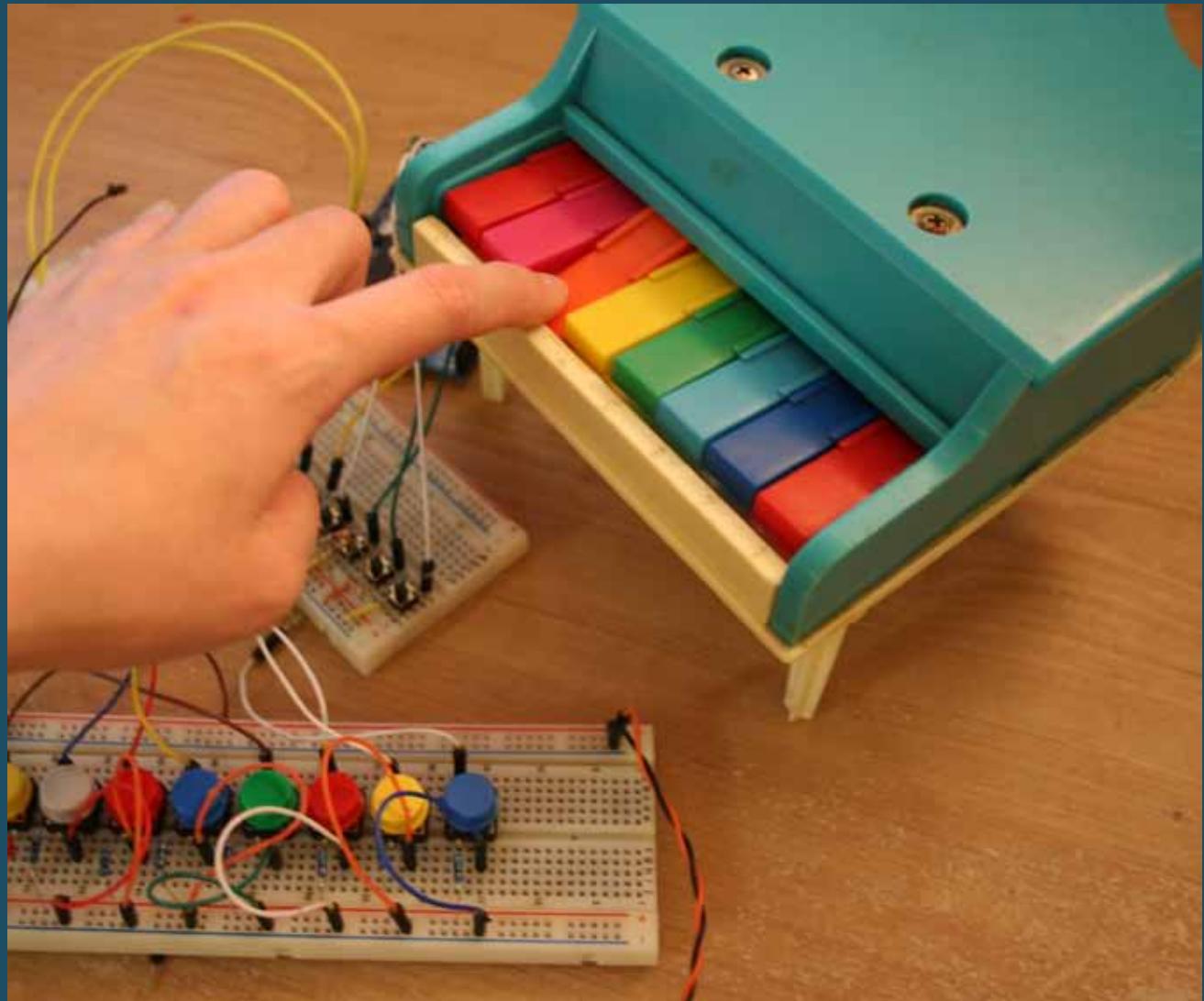




PIANO PLAYER TEST

Arduino + Toy Piano

I incorporated toy piano and used Arduino so that when the piano keyboard is pressed, a sound would play. I did succeed in making it to play a sound but there were many errors during connecting it with Processing.





PIANO PLAYER FINAL

Processing + Motion

At the end, I used Processing and Motion to make the piano player.



PIANO PLAYER PROCESS.01

Processing + Motion

First, I chose a song,
which was Jingle Bell.

www.akboschool.com

Jingle Bell Rock

Bobby Helms

Key=DMajor
♩ = 120

D A

jingle bell jingle bell jingle bell rock

E m A

Jingle bells swing and jingle bells ring snowin' and blowin' up

E m A

bushels of fun now the jingle hop has begun

www.akboschool.com

C3 C3 C3 / B2 B2 B2 / A2 B2 A2 E2
Jingle bell jingle bell, Jingle bell rock

A2 B2 A2 / E2 G2 / A2 B2 A2 F2
Jingle bell chime In jingle bell time

D2 E2 / F2 G2 A2 / G2 / D2 E2 F2 G2
Dancin' and prancin' In Jingle Bell Square

A2 A2 / B2 G2 C3
In the frosty air

C3 C3 D3 C3 A2 C3 D3 C3
What a bright time It's the right time

B2 C3 B2 A2 G2 E2
To rock the night away

C3 C3 D3 C3 / A2 C3 / D3 C3
Jingle bell time Is a swell time

G2 G2 G2 / A2 A2 A2 / B2 G2 G2
To go gliding in A one horse sleigh

C3 C3 C3 / B2 B2 B2 / A2 B2 A2 E2
Giddy up jingle horse Pick up your feet

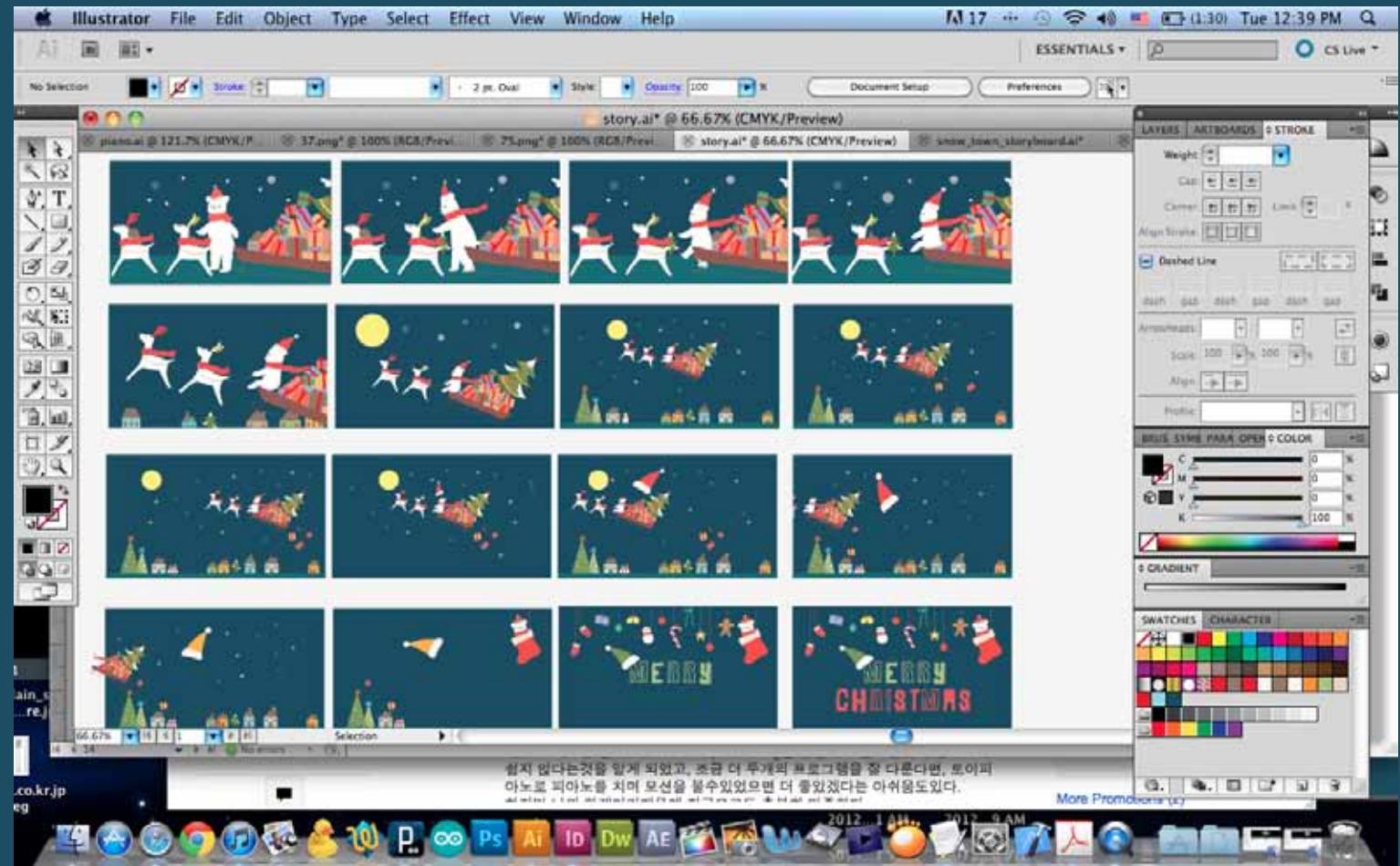
A2 B2 A2 / E2 G2 A2~
gle bell around the clock

A2 A2 C3 C3 / D3 D3 C3 C3 / G2 G2 C3 D3
Mix and a mingle In the jingling feet

C3 C3 C3 / B2 C3 D3 C3~
That's the jingle bell rock

PIANO PLAYER PROCESS.02

Processing + Motion



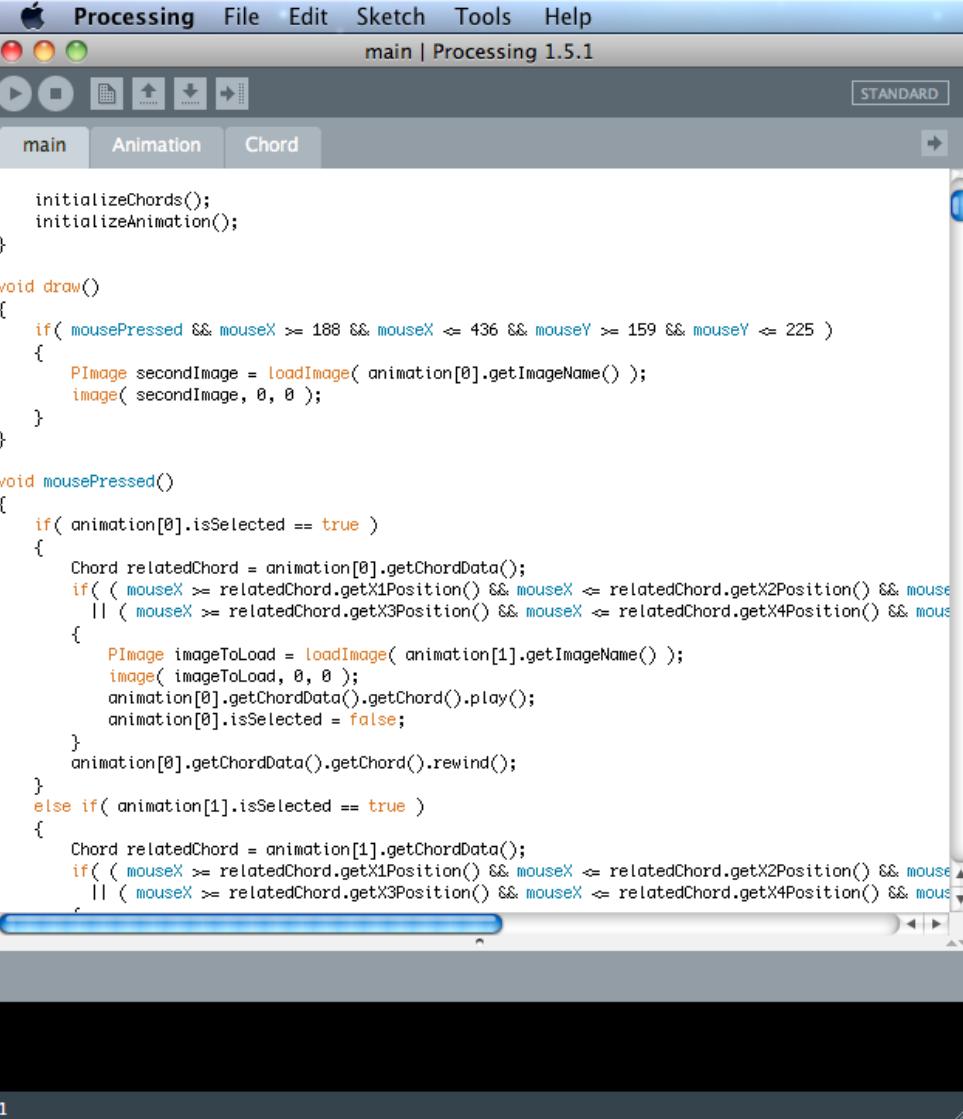
Then secondly, I started producing motions according to the song's musical notes.



PIANO PLAYER PROCESS.03

Processing + Motion

There were 99 of them. Third step was to create a story with the Christmas theme. Once I did, I saved the 99 images. Lastly, I coded using everything from Processing including minim, class and void mousePressed.



The screenshot shows the Processing 1.5.1 IDE interface. The title bar reads "Processing 1.5.1 main | Processing 1.5.1". Below the title bar are standard OS X window controls (red, yellow, green) and a toolbar with icons for play, stop, and file operations. A tab bar at the top has three tabs: "main" (selected), "Animation", and "Chord". The main code area contains the following pseudocode:

```
void setup()
{
    initializeChords();
    initializeAnimation();
}

void draw()
{
    if( mousePressed && mouseX >= 188 && mouseX <= 436 && mouseY >= 159 && mouseY <= 225 )
    {
        PImage secondImage = loadImage( animation[0].getImageName() );
        image( secondImage, 0, 0 );
    }
}

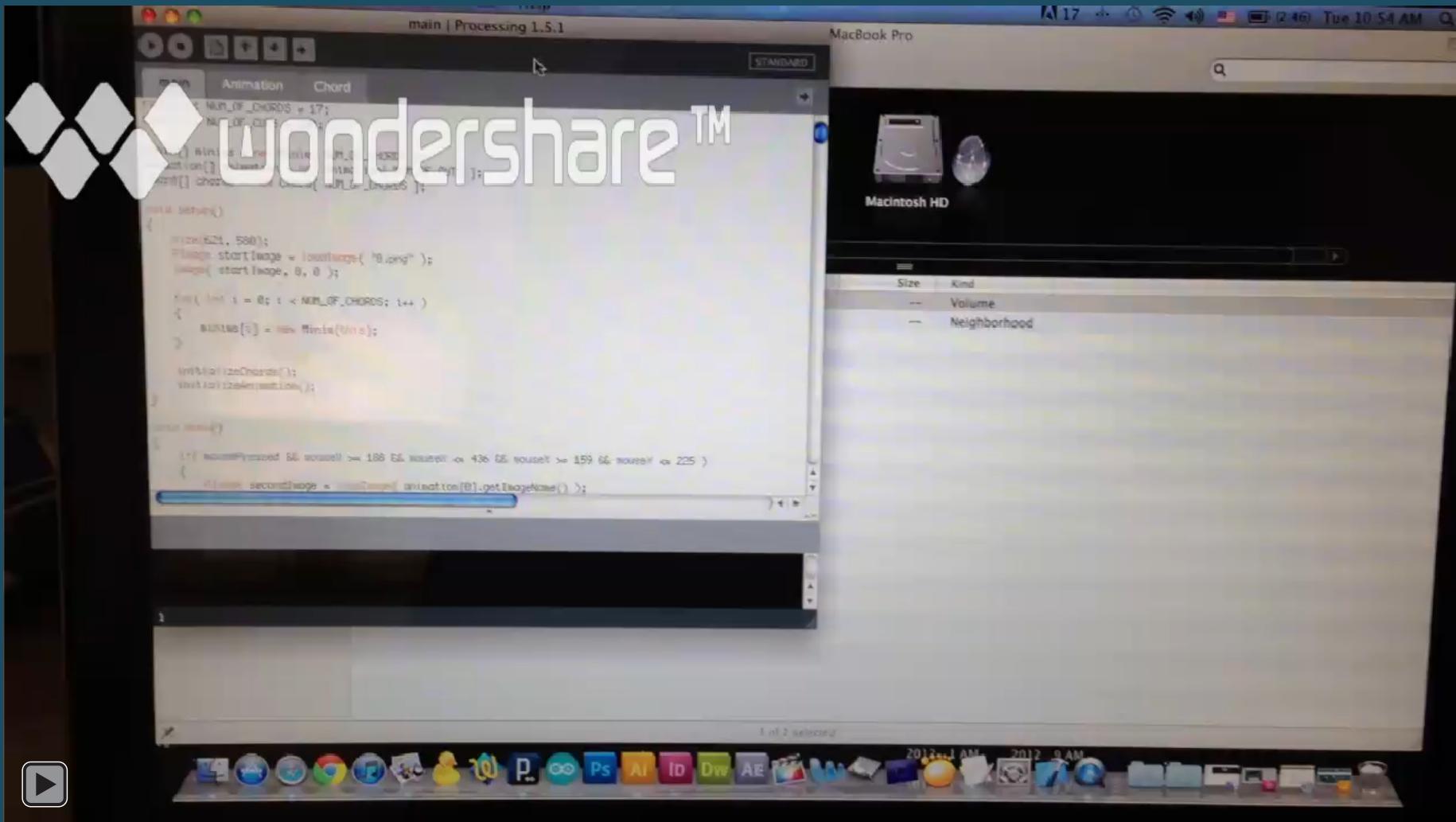
void mousePressed()
{
    if( animation[0].isSelected == true )
    {
        Chord relatedChord = animation[0].getChordData();
        if( ( mouseX >= relatedChord.getX1Position() && mouseX <= relatedChord.getX2Position() && mouseY >= relatedChord.getY1Position() && mouseY <= relatedChord.getY2Position() )
            || ( mouseX >= relatedChord.getX3Position() && mouseX <= relatedChord.getX4Position() && mouseY >= relatedChord.getY3Position() && mouseY <= relatedChord.getY4Position() )
        {
            PImage imageToLoad = loadImage( animation[1].getImageName() );
            image( imageToLoad, 0, 0 );
            animation[0].getChordData().getChord().play();
            animation[0].isSelected = false;
        }
        animation[0].getChordData().getChord().rewind();
    }
    else if( animation[1].isSelected == true )
    {
        Chord relatedChord = animation[1].getChordData();
        if( ( mouseX >= relatedChord.getX1Position() && mouseX <= relatedChord.getX2Position() && mouseY >= relatedChord.getY1Position() && mouseY <= relatedChord.getY2Position() )
            || ( mouseX >= relatedChord.getX3Position() && mouseX <= relatedChord.getX4Position() && mouseY >= relatedChord.getY3Position() && mouseY <= relatedChord.getY4Position() )
        {
            PImage imageToLoad = loadImage( animation[0].getImageName() );
            image( imageToLoad, 0, 0 );
            animation[1].getChordData().getChord().play();
            animation[1].isSelected = false;
        }
        animation[1].getChordData().getChord().rewind();
    }
}
```



PIANO PLAYER FINAL

Processing + Motion

This is fast forwarded 2x. The piano sound is not as pretty as it should but if you can play it right with the musical interval and beat in your mind, it will be better than what you are hearing right now.



WHAT I LEARNED

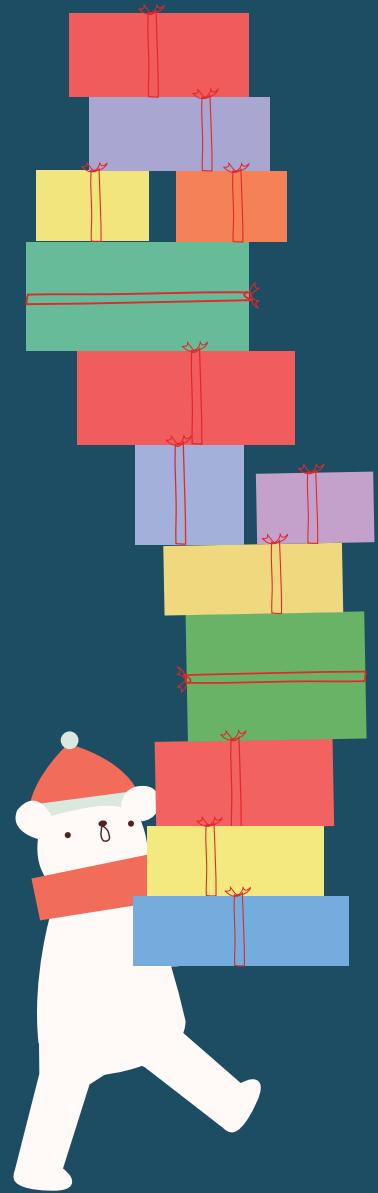


Through this project, I realized that making something with Arduino and Processing together is harder than I expected. If I could control these two programs better, it would have been possible to have the motion play as the piano is being played. It was a bit disappointing I couldn't but I did all I could and I am satisfied with the final result.

I BELIEVE IT WILL BE A GREAT
EDUCATIONAL PROGRAM FOR
CHILDREN USING PIANO.

So far, I only have a Jingle Bell song and a Christmas story but if the idea for this project could be applied to the actual phones and toys, I believe it will be a great educational program for children using piano.





THANK YOU