<!DOCTYPE html>

<html>

<style>

.black\_key { height:100px; background:black; position: absolute; top:650px; left:100px}

white\_key { height:150px; background:white; position: absolute; top:650px; left:100px}

button { width:50px;}

#whiteBoard { height:250px; width:250px;

position: absolute; top:320px; left:250px;

border:5px solid black;

background: linear-gradient(to top right, #fffc99, #ff4733);

}

form { display:inline;

margin:0px;

padding:0px;}

#footer { top:900px;

position: absolute;

background-color: #fffc99;}

#header{ background-color: #ff7c4d;

position: absolute; }

h2 { left:250px;

position: absolute;

top:75px; }

#controls{ top:200px

position: absolute;

left:50px;}

</style>

<body>

<h2>COMP4431 MIDI Keyboard

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</h2>

<div id="controls">

<label for="amplitude">MIDI Amplitude (0-127):</label>

<input type="range" id="amplitude" min="0" max="127" value="100">

<label for="pitch">MIDI Pitch (21-108):</label>

<input type="range" id="pitch" min ="21" max="85" value="60">

<label for="instrument">MIDI Instrument:</label>

<select id="instrument">

<option value="accordion">Accordion</option>

<option value="bagpipe">Bagpipe</option>

<option value="banjo">Banjo</option>

<option value="harmonica">Harmonica</option>

<option value="ocarina">Ocarina</option>

<option value="piccolo">Piccolo</option>

</select>

<label>Music Mode: </label>&nbsp;

<form>

<input type="radio" name="musicMode" value="single" checked>Single Note &nbsp;

<input type="radio" name="musicMode" value="major">Major Chord &nbsp;

<input type="radio" name="musicMode" value="minor">Minor Chord

</form>

</div>

<form>

<!-- First we draw the white keys -->

<button type="button" class="white\_key" data-piano-key-number="0" style="left:50px"></button>

<button type="button" class="white\_key" data-piano-key-number="2" style="left:100px"></button>

<button type="button" class="white\_key" data-piano-key-number="4" style="left:150px"></button>

<button type="button" class="white\_key" data-piano-key-number="5" style="left:200px"></button>

<button type="button" class="white\_key" data-piano-key-number="7" style="left:250px"></button>

<button type="button" class="white\_key" data-piano-key-number="9" style="left:300px"></button>

<button type="button" class="white\_key" data-piano-key-number="11" style="left:350px"></button>

<button type="button" class="white\_key" data-piano-key-number="12" style="left:400px"></button>

<button type="button" class="white\_key" data-piano-key-number="14" style="left:450px"></button>

<button type="button" class="white\_key" data-piano-key-number="16" style="left:500px"></button>

<button type="button" class="white\_key" data-piano-key-number="17" style="left:550px"></button>

<button type="button" class="white\_key" data-piano-key-number="19" style="left:600px"></button>

<button type="button" class="white\_key" data-piano-key-number="21" style="left:650px"></button>

<button type="button" class="white\_key" data-piano-key-number="23" style="left:700px"></button>

<button type="button" class="black\_key" data-piano-key-number="1" style="left:75px"></button>

<button type="button" class="black\_key" data-piano-key-number="3" style="left:125px"></button>

<button type="button" class="black\_key" data-piano-key-number="6" style="left:225px"></button>

<button type="button" class="black\_key" data-piano-key-number="8" style="left:275px"></button>

<button type="button" class="black\_key" data-piano-key-number="10" style="left:325px"></button>

<button type="button" class="black\_key" data-piano-key-number="13" style="left:425px"></button>

<button type="button" class="black\_key" data-piano-key-number="15" style="left:475px"></button>

<button type="button" class="black\_key" data-piano-key-number="18" style="left:575px"></button>

<button type="button" class="black\_key" data-piano-key-number="20" style="left:625px"></button>

<button type="button" class="black\_key" data-piano-key-number="22" style="left:675px"></button>

</form>

<div id="whiteBoard">

</div>

<script>

var this\_pitch;

var lowest\_pitch; // The MIDI pitch number for the first (left) keyboard key

var this\_instrument;

var whiteBoard\_mode = false;

var whiteboard\_last\_note = -99;

var musicMode;

function handlePianoKeyPress(evt) {

var this\_key, this\_amplitude;

// Show a simple message in the console

console.log("Key press event!");

this\_key = $(evt.target).data("pianoKeyNumber");

lowest\_pitch=$("#pitch").val();

lowest\_pitch=parseInt(lowest\_pitch);

// Extract the amplitude value from the slider

this\_amplitude=$("#amplitude").val();

// Convert the string into actual values

this\_amplitude=parseInt(this\_amplitude);

//find pitch of key

this\_pitch = lowest\_pitch + parseInt(this\_key);

console.log("Pitch: ", this\_pitch);

instrumentSelection();

console.log(this\_instrument);

// Use the two numbers to start a MIDI note

musicModeCheck(this\_amplitude);

};

function handlePianoKeyRelease(evt) {

// Show a simple message in the console

console.log("Key release event!");

// Send the note off message to match the pitch of the current note on event

// Handle chord mode

musicModeCheckOFF();

};

var lowest\_valid\_pitch = 21;

var valid\_pitch\_range = 87;

var amplitude\_range= 127;

function handleWhiteboardPress(evt){

whiteBoard\_mode = true;

console.log("White Board press event!");

var x = evt.pageX - $("#whiteBoard").offset().left;

var y = evt.pageY - $("#whiteBoard").offset().top;

if(x<5 || x>255 || y<5 || y>255){

console.log("X: ", x, "Y: ", y, "\n Not in range!");

return;

}

console.log("X: ", x)

x=x-5;

var x\_fraction = x/250;

console.log("Y: ", y);

y=y-5;

var y\_fraction = y/250;

//calcualting the pitch axis

this\_pitch = lowest\_valid\_pitch + (x\_fraction \* valid\_pitch\_range);

this\_pitch= parseInt(this\_pitch);

console.log("Pitch: ", this\_pitch);

whiteboard\_last\_note= this\_pitch;

//calcualting the amplitude axis

var this\_amplitude = y\_fraction \* amplitude\_range;

this\_amplitude = 127- this\_amplitude;

this\_amplitude= parseInt(this\_amplitude);

console.log("Amplitude: ", this\_amplitude);

instrumentSelection();

musicModeCheck(this\_amplitude);

};

function handleWhiteboardRelease(evt){

whiteBoard\_mode =false;

console.log("White Board release event!");

musicModeCheckOFF();

};

function handleWhiteboardMove(evt){

if(whiteBoard\_mode == true){

if(whiteboard\_last\_note != -99)//a note has been played already

musicModeCheckOFF();

var x = evt.pageX - $("#whiteBoard").offset().left;

var y = evt.pageY - $("#whiteBoard").offset().top;

if(x<5 || x>255 || y<5 || y>255){

console.log("X: ", x, "Y: ", y, "\n Not in range!");

handleWhiteboardRelease(evt);

return;

}

console.log("X: ", x)

x=x-5;

var x\_fraction = x/250;

console.log("Y: ", y);

y=y-5;

var y\_fraction = y/250;

//calcualting the pitch axis

this\_pitch = lowest\_valid\_pitch + (x\_fraction \* valid\_pitch\_range);

this\_pitch= parseInt(this\_pitch);

console.log("Pitch: ", this\_pitch);

whiteboard\_last\_note= this\_pitch;

//calcualting the amplitude axis

var this\_amplitude = y\_fraction \* amplitude\_range;

this\_amplitude = 127- this\_amplitude;

this\_amplitude= parseInt(this\_amplitude);

console.log("Amplitude: ", this\_amplitude);

//instrumentSelection();

musicModeCheck(this\_amplitude);

}

};

function instrumentSelection(){

//extract instrument selection

this\_instrument=$("#instrument").val();

if (this\_instrument == "accordion")

MIDI.programChange(0, 21);

else if (this\_instrument == "guitar")

MIDI.programChange(0, 25);

else if (this\_instrument == "bagpipe")

MIDI.programChange(0, 109);

else if (this\_instrument == "banjo")

MIDI.programChange(0, 105);

else if (this\_instrument == "oragn")

MIDI.programChange(0, 19);

else if (this\_instrument == "fiddle")

MIDI.programChange(0, 110);

else if (this\_instrument == "horn")

MIDI.programChange(0, 60);

else if (this\_instrument == "harmonica")

MIDI.programChange(0, 22);

else if (this\_instrument == "ocarina")

MIDI.programChange(0, 79);

else if (this\_instrument == "piccolo")

MIDI.programChange(0, 72);

};

function musicModeCheck(this\_amplitude){

// Handle chord mode

musicMode = $(":radio[name=musicMode]:checked").val() //checks to see which chord mode

if(musicMode == "single"){

MIDI.noteOn(0, this\_pitch, this\_amplitude);

console.log(musicMode);

}

else if(musicMode == "major"){

if(this\_pitch>101){

MIDI.noteOn(0, this\_pitch, this\_amplitude);

MIDI.noteOn(0, this\_pitch-3, this\_amplitude);

MIDI.noteOn(0, this\_pitch-7, this\_amplitude);

}

else{

MIDI.noteOn(0, this\_pitch, this\_amplitude);

MIDI.noteOn(0, this\_pitch+4, this\_amplitude);

MIDI.noteOn(0, this\_pitch+7, this\_amplitude);

}

console.log(musicMode);

}

else if(musicMode == "minor"){

if(this\_pitch>101){

MIDI.noteOn(0, this\_pitch, this\_amplitude);

MIDI.noteOn(0, this\_pitch-4, this\_amplitude);

MIDI.noteOn(0, this\_pitch-7, this\_amplitude);

}

else{

MIDI.noteOn(0, this\_pitch, this\_amplitude);

MIDI.noteOn(0, this\_pitch+3, this\_amplitude);

MIDI.noteOn(0, this\_pitch+7, this\_amplitude);

}

console.log(musicMode);

}

};

function musicModeCheckOFF(){

if(musicMode == "single")

MIDI.noteOff(0, this\_pitch, 0);

else if(musicMode == "major"){

if(this\_pitch>101){

MIDI.noteOff(0, this\_pitch, 0);

MIDI.noteOff(0, this\_pitch-3, 0);

MIDI.noteOff(0, this\_pitch-7, 0);

}

else{

MIDI.noteOff(0, this\_pitch, 0);

MIDI.noteOff(0, this\_pitch+4, 0);

MIDI.noteOff(0, this\_pitch+7, 0);

}

}

else if(musicMode == "minor"){

if(this\_pitch>101){

MIDI.noteOff(0, this\_pitch, 0);

MIDI.noteOff(0, this\_pitch-4, 0);

MIDI.noteOff(0, this\_pitch-7, 0);

}

else{

MIDI.noteOff(0, this\_pitch, 0);

MIDI.noteOff(0, this\_pitch+3, 0);

MIDI.noteOff(0, this\_pitch+7, 0);

$( document ).ready( function() {

MIDI.loadPlugin({

soundfontUrl: "./midi-js/soundfont/",

instrument: "accordion",

onprogress: function(state, progress) {

console.log(state, progress);

},

onsuccess: function() {

// At this point the MIDI system is ready to be used

MIDI.setVolume(0, 127); // Set the general volume level

MIDI.programChange(0, 21); // Use the General MIDI 'accordion' number

// Set up the event handlers for all the buttons

$("button").on("mousedown", handlePianoKeyPress);

$("button").on("mouseup", handlePianoKeyRelease);

$("#whiteBoard").on("mousedown", handleWhiteboardPress);

$("#whiteBoard").on("mouseup", handleWhiteboardRelease);

$("#whiteBoard").on("mousemove", handleWhiteboardMove);