

## Sand Piano Documentation

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**Theme and impact:** The game is a falling sand game, with the added element of audio. It can be a little finicky but it works as intended, and the user can try making different combinations of notes by creating walls and sliding sand down onto the piano. The code is almost entirely new, since we didn't do falling sand as an exercise in class. I think I wanna try to add more features to it but I'd still be willing to show it to a potential employer in its current state.

**User experience:** The app should be easy to figure out, if the user hasn't played a falling sand game before, once they click on the canvas they should get it. The game has 4 controls: material, size, the clear button, and the main interaction which is clicking and dragging on the canvas. The app runs without errors.

**Media:** CSS and HTML pass validation. I have three HTML sections and a header. The CSS is all in styles/main.css and contains an embedded font "Gloria Hallelujah." I use `canvas.save()` and `canvas.restore()` in the `drawRect()` function and almost everything is a rectangle.

**Code:** I believe I followed every coding standard. I have arrow functions but no inline event handlers. I have a `bxhlib.js` and an `index.js`, both wrapped in an IIFE.

**What went right:** The falling sand, drawing walls, and eraser work as intended (a little finicky, more on that later). All user controls work as intended as well. I was nervous about importing in audio because I've never done it before but it seems to work just fine.

**What went wrong:** When drawing walls, the user has to move their mouse kinda slowly or there will be gaps, I think this is fine, but I'd prefer if it didn't happen. Sand also occasionally falls on a key without playing a note, and the game starts to lag sometimes if you're playing for a long time without refreshing.

**Future features:** Fixing the stuff above to improve user experience would be my main goal. After that, I'd like to add a 4th material, water, which would be able to move in 5 directions (down, down-left, down-right, left, and, right) instead of 3 like sand does (only down, down-left, and down-right). This would behave more like water which doesn't make piles like sand does and make for different physical interactions. Also, different "instruments" to choose between would be cool.

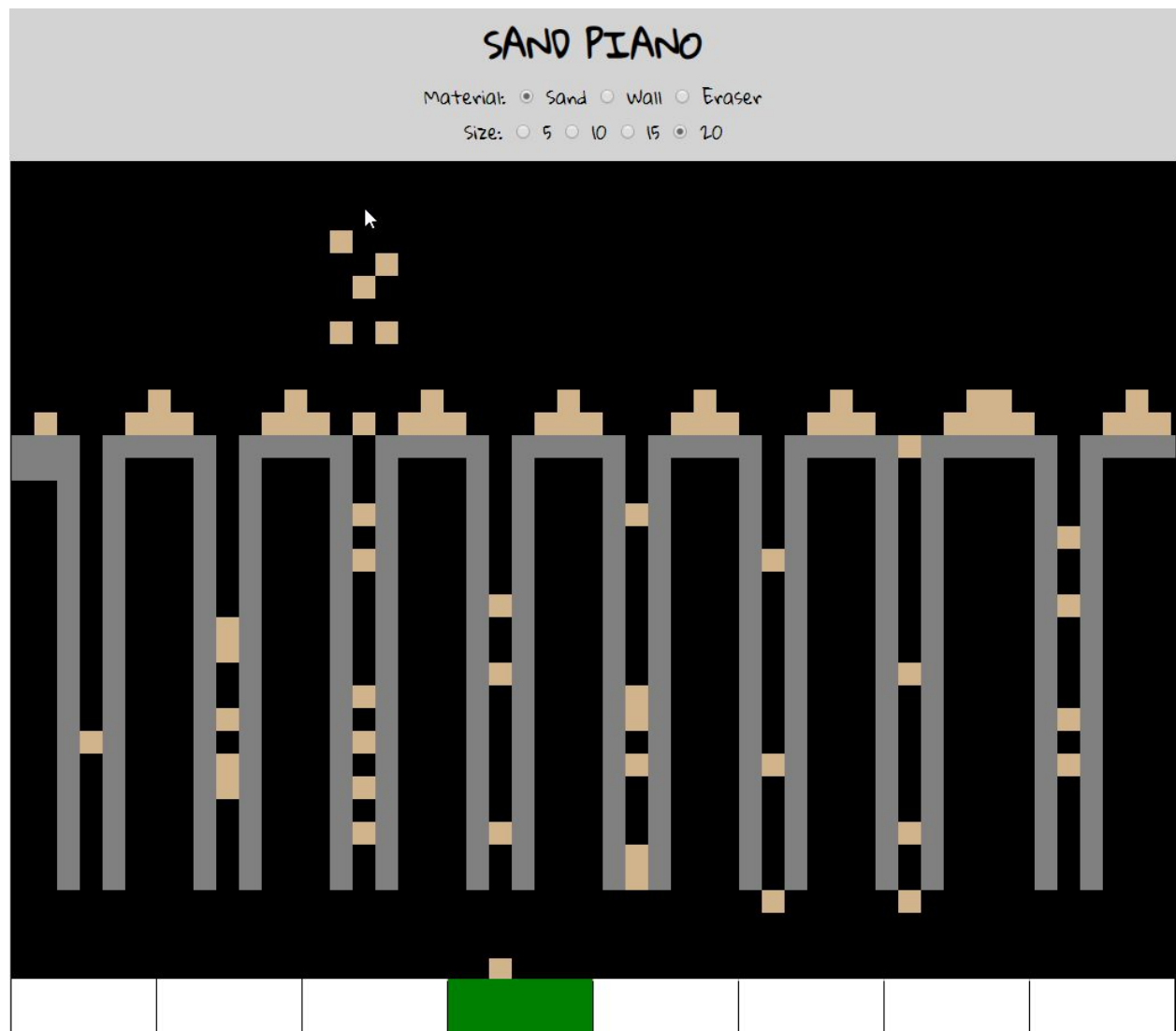
**Non-course resources:**

Piano sound- <https://freesound.org/people/PACWAY/sounds/442980/>  
(the other 7 sounds were this pitched up in audacity)

Code for checking if pixel below is black-  
<https://stackoverflow.com/questions/36891585/check-to-see-if-pixel-is-black-on-html5-canvas>

storeCoordinate-  
<https://stackoverflow.com/questions/7030229/storing-coordinates-in-array-in-javascript>

I'll give myself a 95 because the odds I made a mistake in the code are pretty high, I do it a lot. Otherwise though, I think this project went above and beyond by picking a concept we didn't cover in class, though I still think it could be better before I use it as a portfolio piece.



Demo of a cool thing I did with it