Team Zahlen
Stone Cleven - stcleven
Sean Halloran - sjhalloran

Chromaworks

Fourth of July, all on your phone!

Summary

Chromaworks allows you to enjoy creating your own sky full of fireworks, without any pyrotechnics involved. You have eight fireworks launchers at the bottom of your screen to choose from, simply click or touch on the launcher you want to use. Then, click in the sky where you want to launch to firework to! Once the firework is in the air, just give it another tap, and it will explode into beautiful colors! Every fireworks launcher shoots different colors, so you can fire them back to back to fill the sky with your own custom collage of colors.

Features List

- player can select one of eight colors at bottom of screen with click
- player can shoot a firework at desired location in sky with a second click
- player can detonate the firework with another click once it is fired into the sky
- background changes color when firework reaches destination
- fireworks take a long time to fade away, so that the player can paint the sky with many fireworks to make a colorful image

Play Description

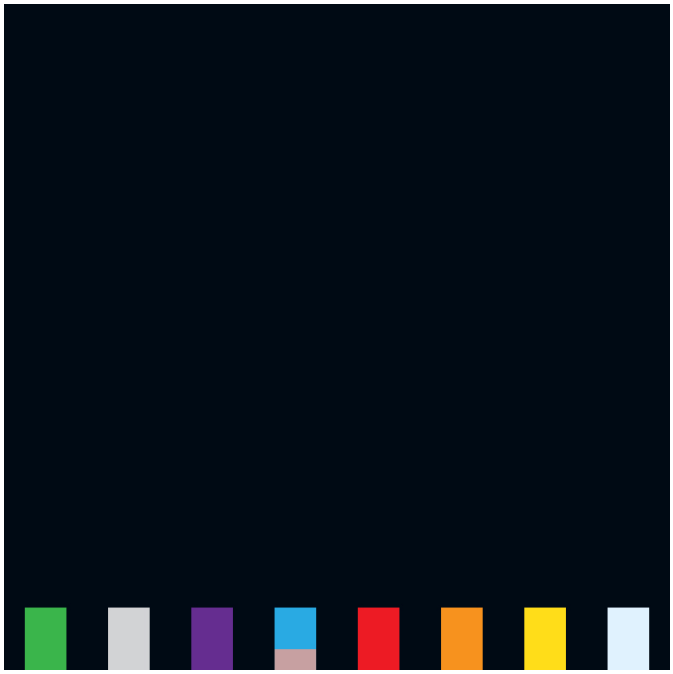

Fig 1. Before shooting fireworks

Figure 1 shows what the toy looks like when it is first presented to the player. There is an empty sky, and a pallet of colors at the bottom of the screen. From here the player must learn how to use the toy with no instructions, so we designed the game to provide heavy amounts of feedback to make this as painless as possible.

First of all, if the player clicks anywhere on this screen, a sound effect will play and something visual will happen. If the player clicks a color at the bottom, that color becomes selected. This is communicated to the player with a sound effect, and a pink stripe moving to the color they clicked on. If the player clicks on any part of the black screen, then a firework shoots out of the selected color at the bottom of the screen towards the location that was clicked, with an accompanying sound effect.

Fig 2. The color choices for fireworks. Blue is selected

The colors at the bottom of the screen are fireworks cannons that each launch a firework of roughly the same base color. Only one cannon can be selected at once, so when one is clicked on, the pink bar (seen at the bottom of the blue cannon in figure two) moves to that cannon.

The selection of colors for each firework is inspired by colors used for real fireworks, as seen in Figure 3.

Fig 3. Real world fireworks colors

source: http://gizmodo.com/5923281/where-the-different-colors-of-fireworks-actually-come-from

Colors for real world fireworks are made possible by chemistry. Figure 3 shows the most common colors for fireworks, and what ingredients produce those colors. Chromaworks starts with these same colors, to produce fireworks that are analogous to real world fireworks.

Each firework will create an explosion of a variety of colors made of several differently colored beads on every launch. Utilizing the RGB color model, different color values will be picked from the range of values shown in the table below.

	Bright Red	Turqoise	Green	Yellow	Purple	Orange	Electric White	Silver Sparkle
Red value range	122–255	55–142	0–128	232–55	86–164	230–255	215–255	190–225
Green value range	18–26	104–255	145–255	208–255	0–94	114–175	231–255	196–227
Blue value range	42–72	178–255	82–132	0–101	92–192	0–90	215–255	173–255

Fig 4. Table of color ranges for each firework by RGB values

The code will make use of RGB triplet format and functions for randomness to find such values.

For example, if the red firework is selected and fired, random values between 122–255 of red, 18–26 of green, and 42–72 of blue will be picked and the colors corresponding to those values will be used for the numerous colored beads of an explosion.

These appropriate RGB values were found manually by trial and error using Adobe Photoshop.

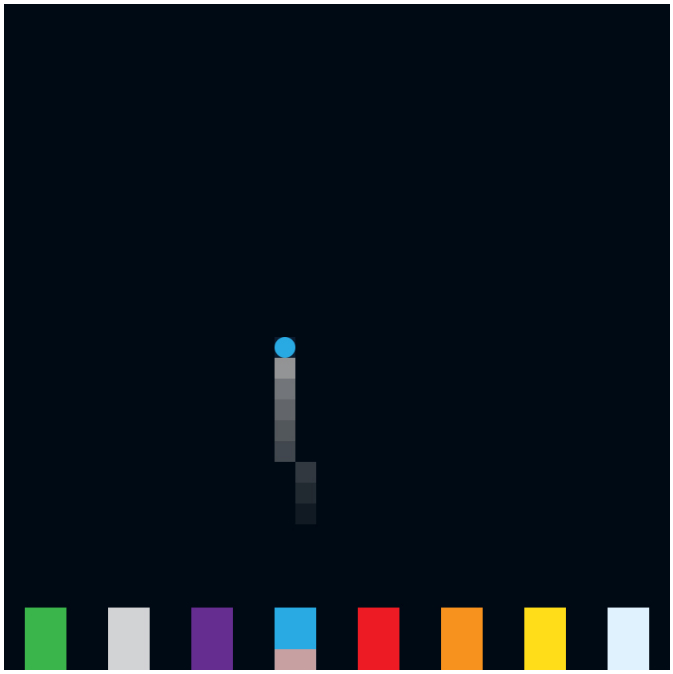

Fig 5. The player has clicked to shoot a firework

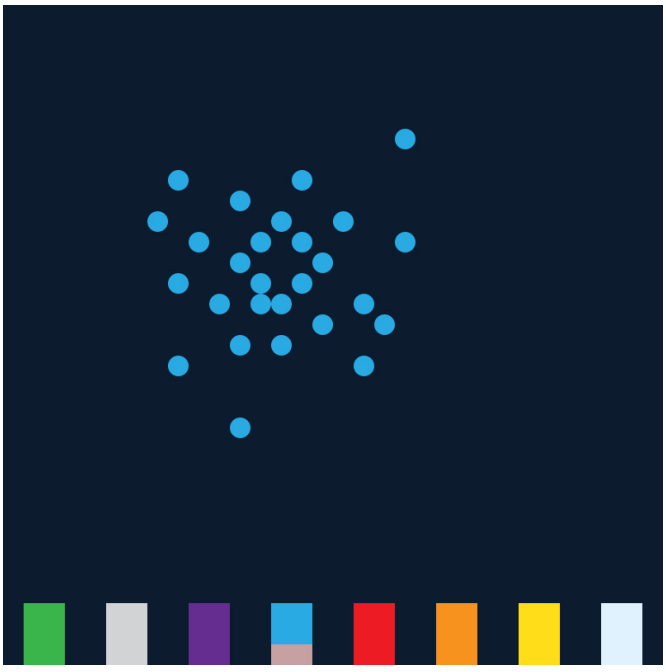

Fig 6. The player has clicked after shooting a firework to detonate it.

When the player clicks the black sky to launch a firework, a firework will launch at that location, as shown in figure five. The firework is of the color of the selected launcher, and leaves a trail of smoke in the form of grey beads that fade away.

When the player clicks while the firework is in the air, it will explode, creating shades of its color as described in figure four. Note the difference in background color between figures five and six. The sky is lit up a little bit by each firework, and it dims as the firework slowly fades away.

Project Progress

This week we ran into a few difficulties in implementation for some of our desired visual effects. Although all of them described above are still possible and will be in our final design, we need to try some things differently.

To change the color of the night sky upon fireworks explosion, we made a grid plane with each color the night sky can possibly be, then set each plane's alpha to transparent. When a red firework goes off, the red sky plane is set to opaque and then to fade. This works for one shot, however we could not set different fades for individual planes, so when we set a fade for the sky, subsequently detonated fireworks had their fades interfered with, since their bead is already fading because the night sky is fading from the last firework explosion.

Some limitations of Perlenspiel also slowed us down. There may be features we did not find that help with these issues, however these are the things that slowed us down or limited us. Sprite moving is very powerful, and hugely time savings. However, there is no way to set an exec function for when a sprite is clicked on, so instead each bead in a sprite must have its exec function set. Some easier way for running code when a sprite is clicked on would be helpful.