Alpha Blending

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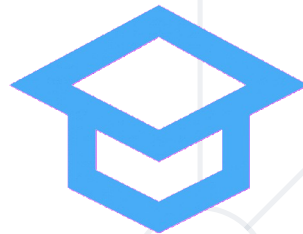
sli.do

#app-dev-cpp

Pixel Structure

- In modern graphics a **Pixel** is often referred to a 24bit/32bit data structure

- An RGB has a **24bit** (3 byte) structure

- An RGBA has a **32bit** (4 byte) structure and does **support opacity** (transparency)

- .png uses 32bit in order to achieve compression and store the opacity levels

- .jpg were only 24 bit, they don't store opacity

```
struct RGBA {
    uint8_t r;
    uint8_t g;
    uint8_t b;
    uint8_t a;
};
```

Alpha Blending (Opacity)

- Alpha blending could **only be a applied** to a GPU primitive (SDL_Texture for example)
- It stores values in range **[0-255]**
- Opacity could be achieved **offline** - stored in the image
- It could be achieve **online** – modifying the opacity value of the GPU primitive
- Both approaches are **widely used**

Offline Alpha Blending

- Image 1 has 50% opacity (=127) stored in the image
- Image 2 has 100% opacity (=255) stored in the image
- The solid asset (100% opacity) is usually **drawn first**
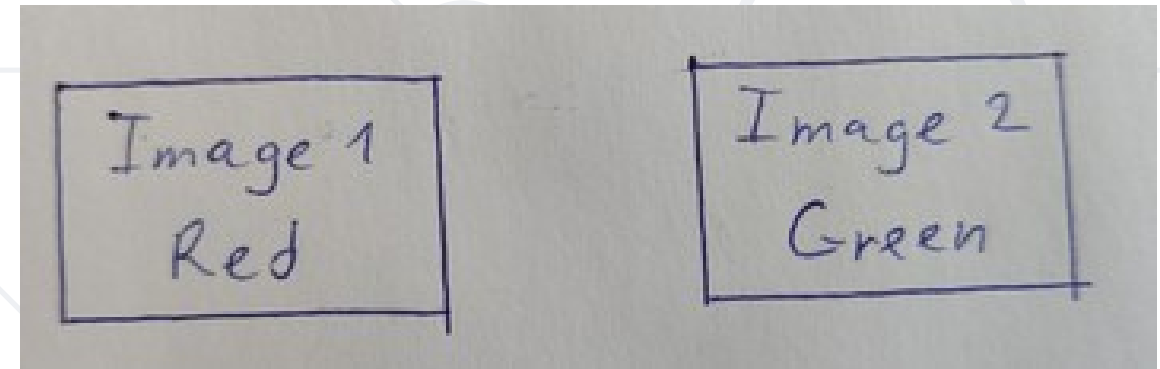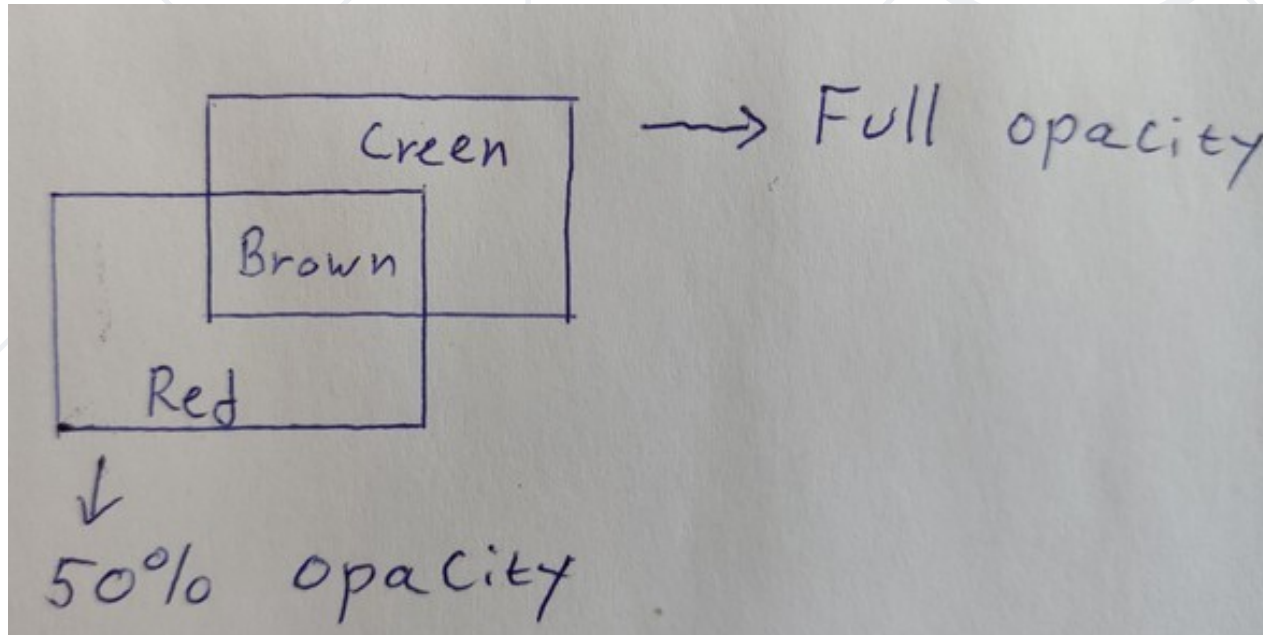
Offline Alpha Blending Usages

- Offline alpha blending is often used to achieve **smooth artifacts**, which doesn't contain **sharp edges**

- It is also used to "extract" given assets from their background
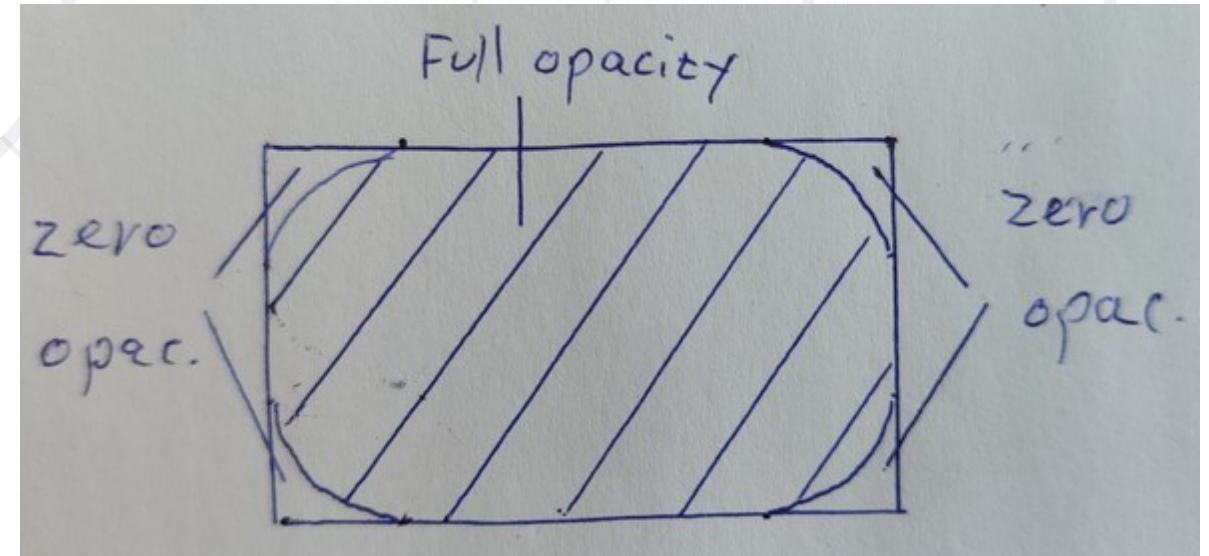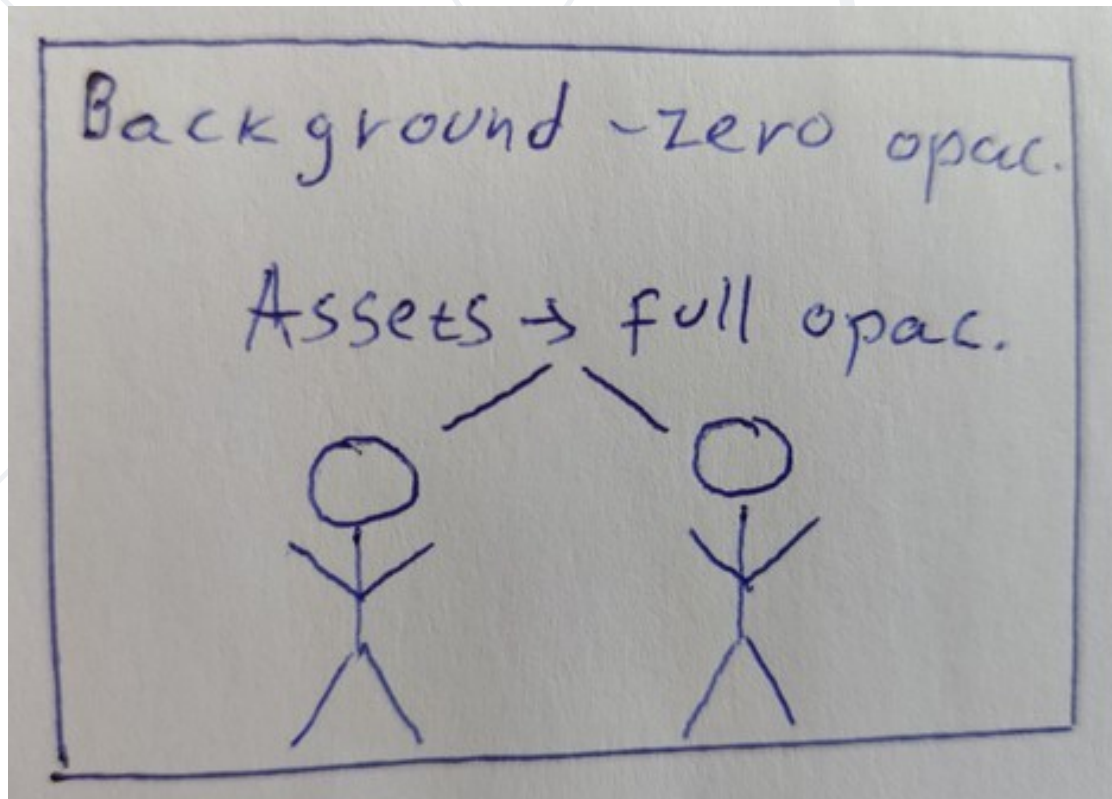
Online Alpha Blending Usages

- Online alpha blending is often used to achieve **animations**
- Imagine a **fading** black screen
- Or a **red overlay** simulating a game character being damaged

Questions?
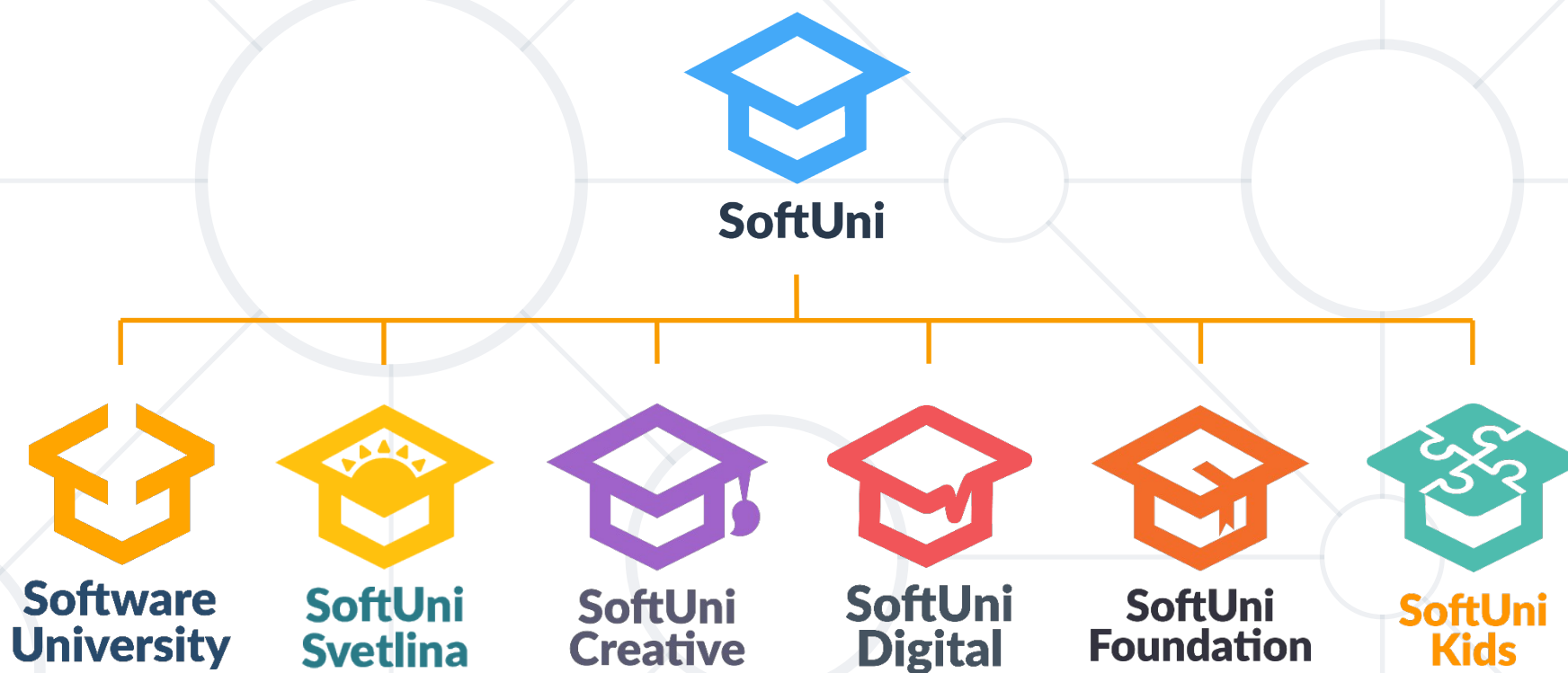
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