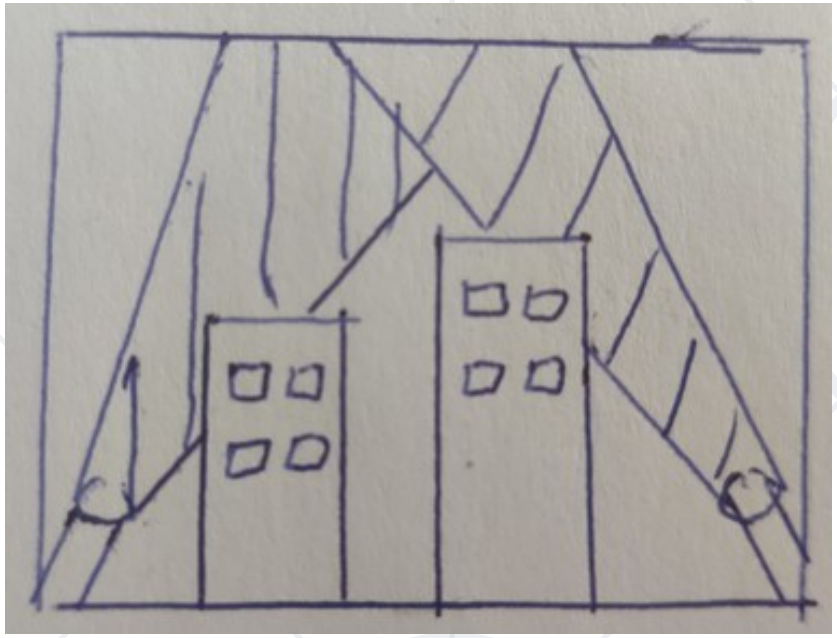
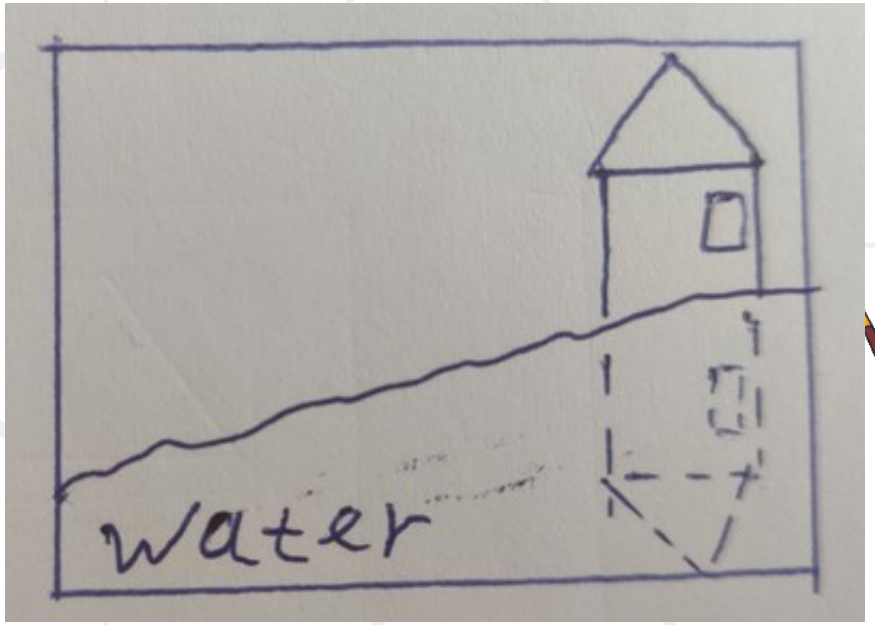
Rotation and Flipping





Zhivko Petrov

A guy that knows C++

Software University

SoftUni

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https://about.softuni.bg

Have a Question?

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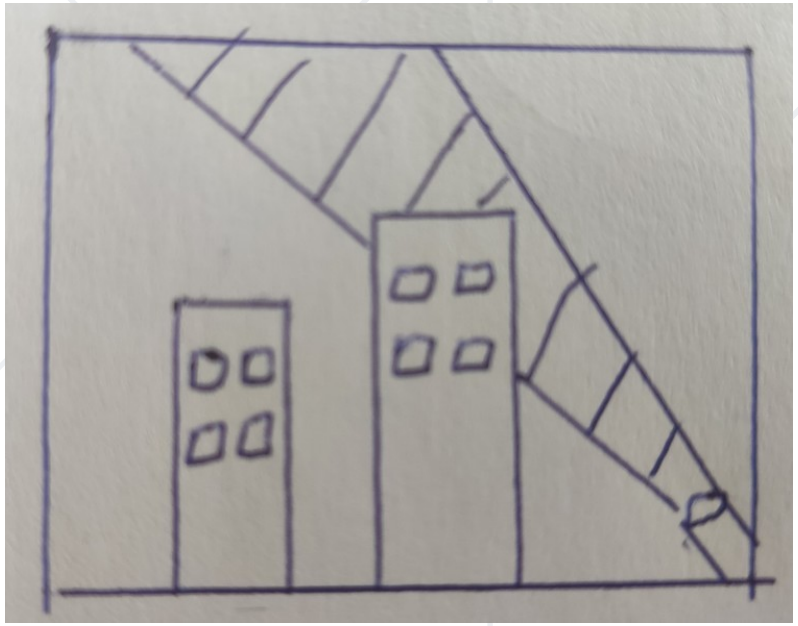
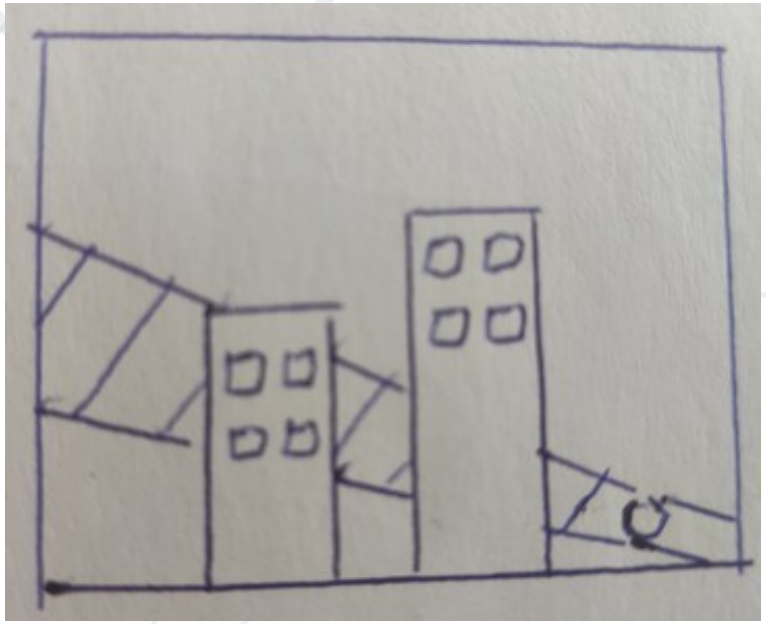
sli.do

#app-dev-cpp

The Plot

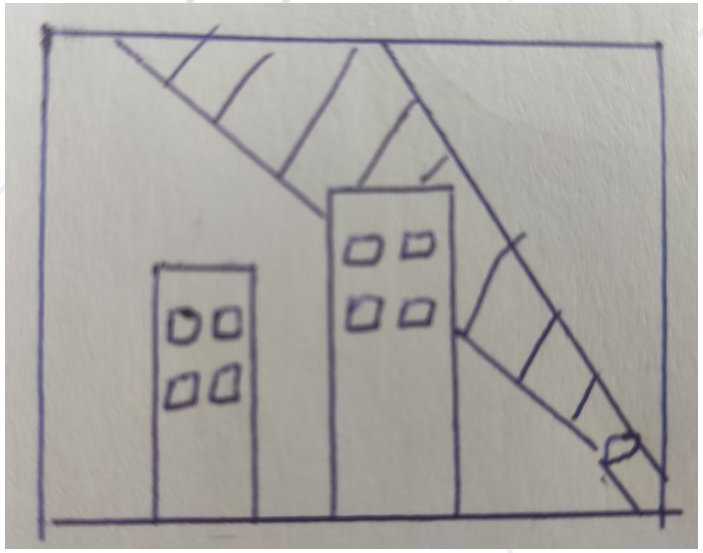
- Imagine you want to implement a **moving background**
- City skyscrapers and projected lights
- The projector **moves** and lights the sky above the skyscrapers

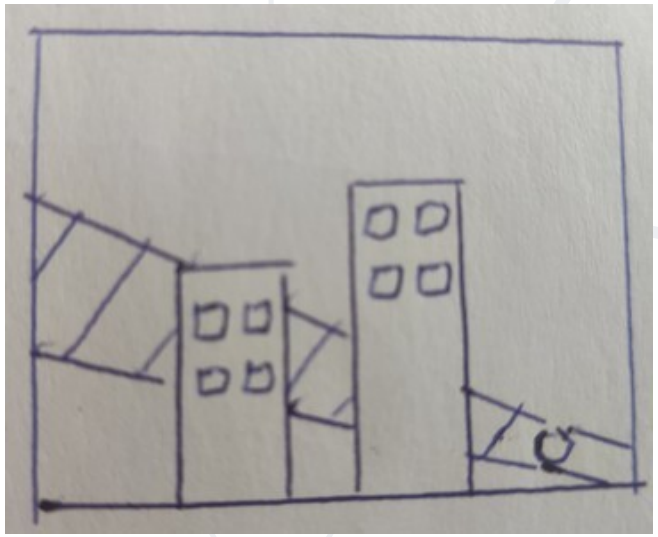




The Problem

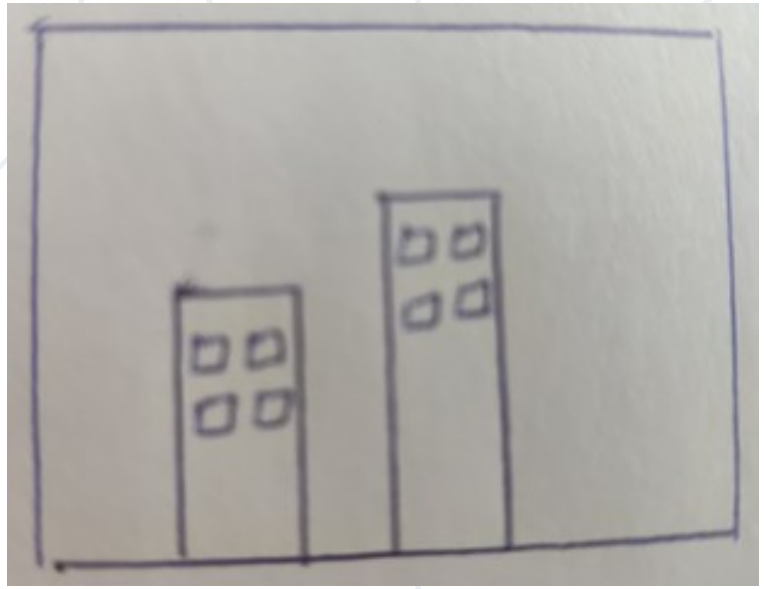
- In order to achieve **smooth animation** we need **serious number of frames**
- 200 **Full Screen** frames
- Your graphical designer should drink 3 fridges of energy drinks
- It would take a huge amount of memory (GB's) to store and load the data

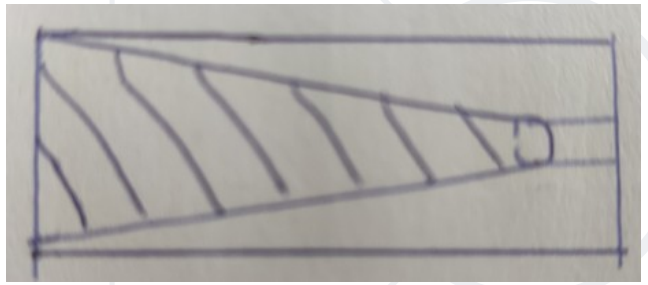




A Solution

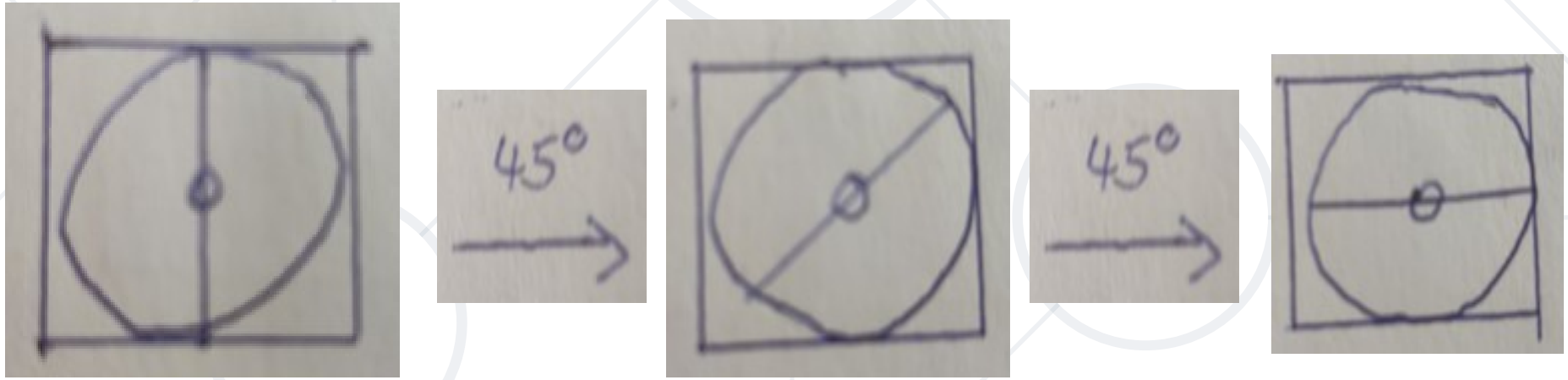
- Have the "**static**" part of the background as a separate asset
- Have the "**dynamic**" part of the background as a separate asset
- **Simulate movement** at run-time by using code
- Place the projector at bottom-right part of the background and **rotate** it





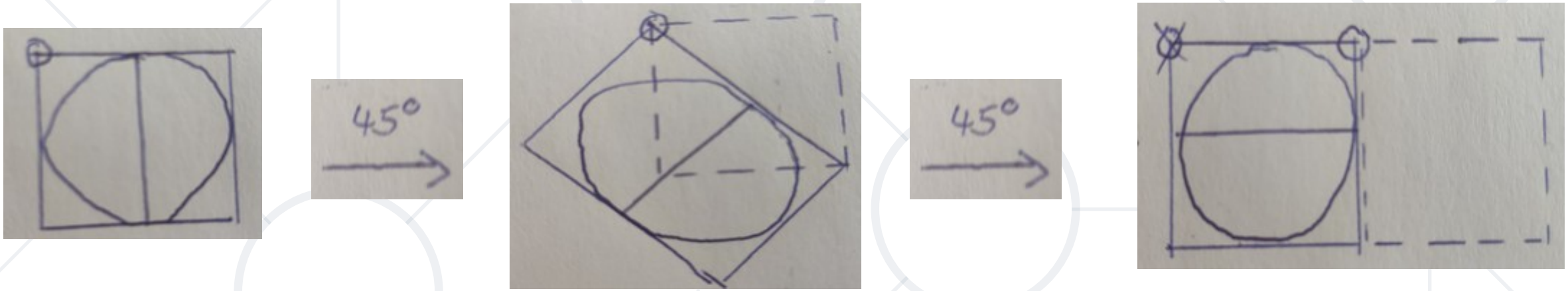
How to achieve rotation?

- Rotation is achieved at run-time by providing a **rotation angle** and **rotation center**
- The most-common approach is to choose the rotation center to be the **actual center of the image**



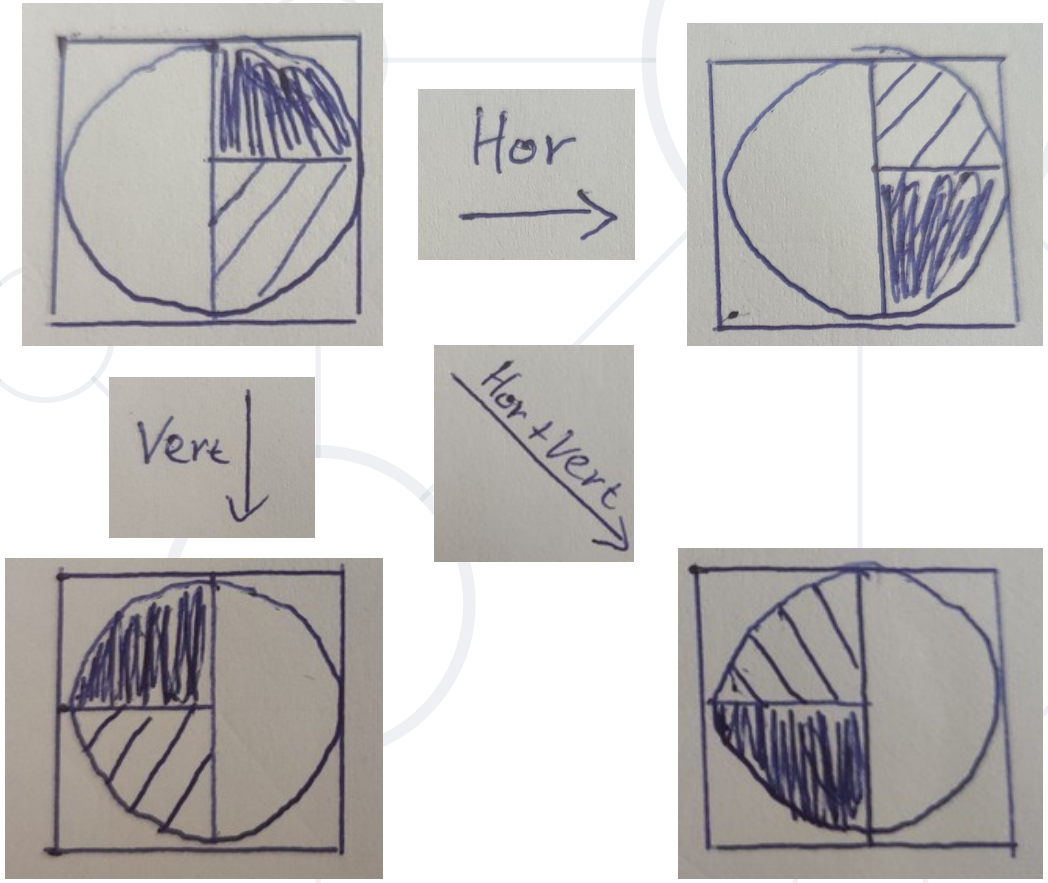
Rotation

- Rotation is achieved at run-time by providing a rotation angle and rotation center
- If top-left corner (0, 0) is chosen for rotation center



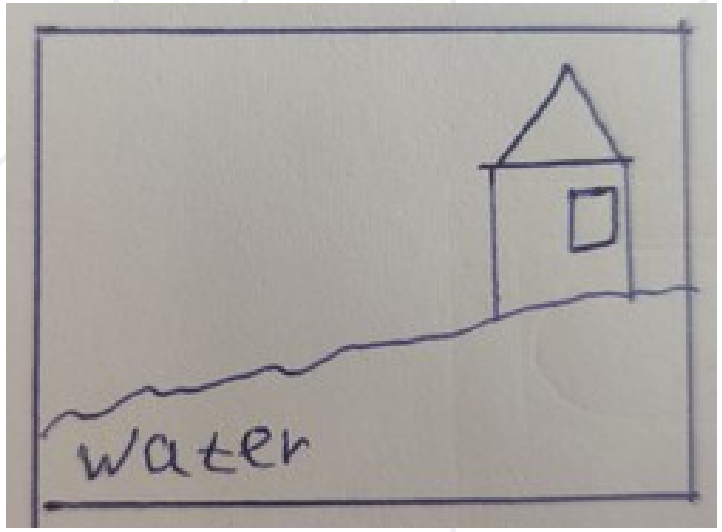
Flipping

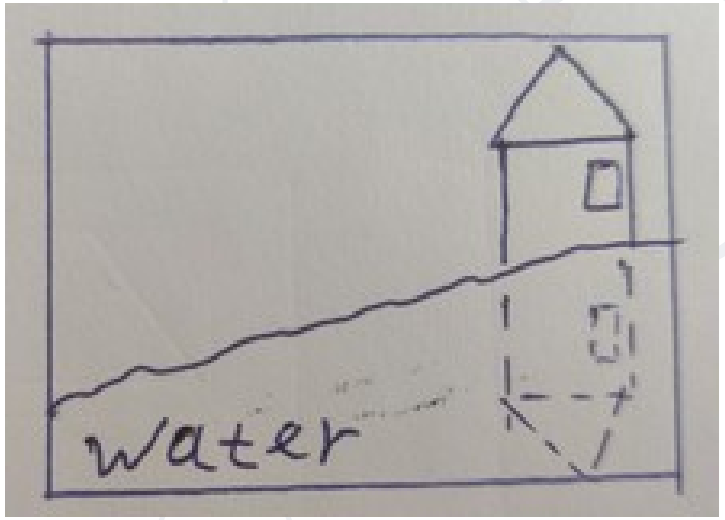
- Flipping is an effect when we aim at achieving **mirroring** of the image
- Flipping has 4 modes – off, horizontal, vertical, horizontal & vertical



When is Flipping used

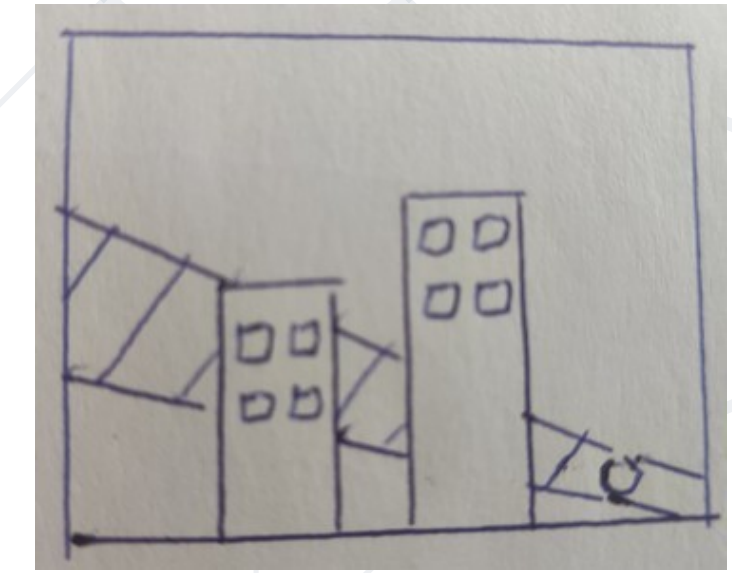
- Flipping is a **super efficient** in achieving it’s goal
- Used when “**mirroring**” effect is wanted
- Imagine a house near a water lake
- Use flipping to project the house reflection in the lake
- Don’t forget to apply opacity in the lake

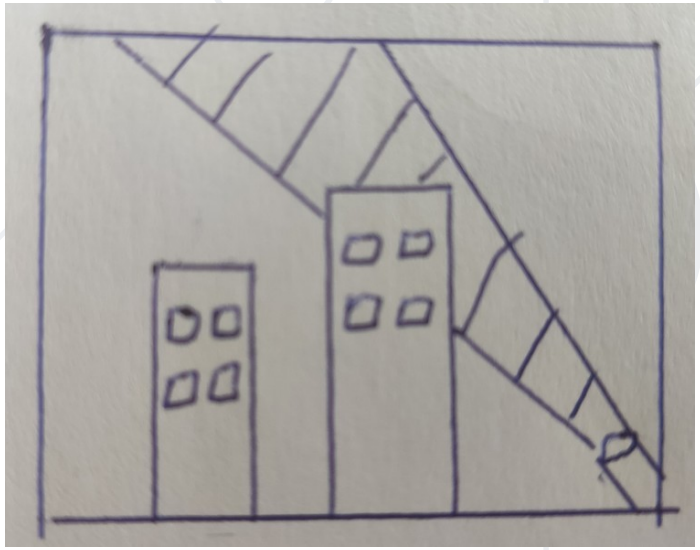


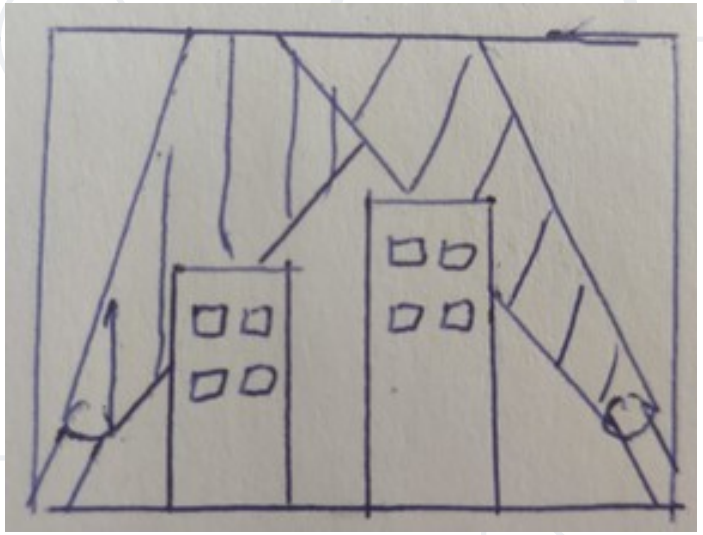


Run-time animations

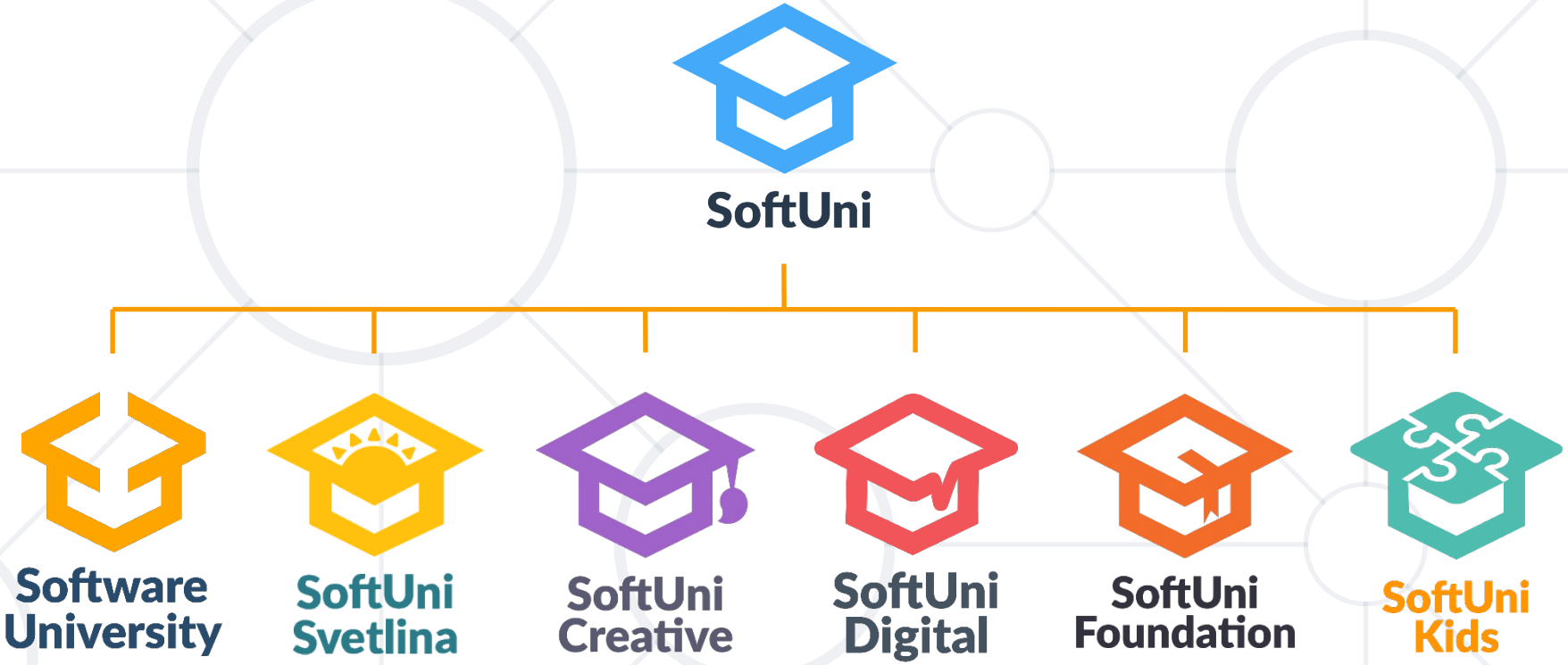
- Remember the skyscraper moving background?
- How to combine everything that we've learned?
- Apply rotation
- Apply flipping and rotation







Questions?



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