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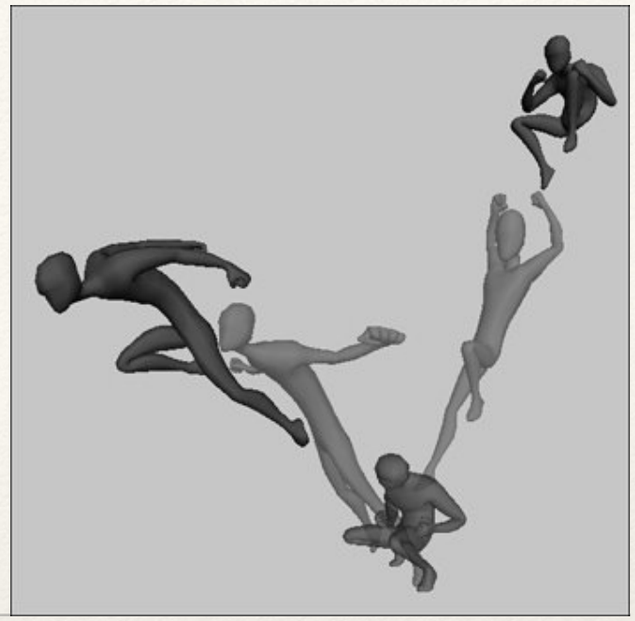
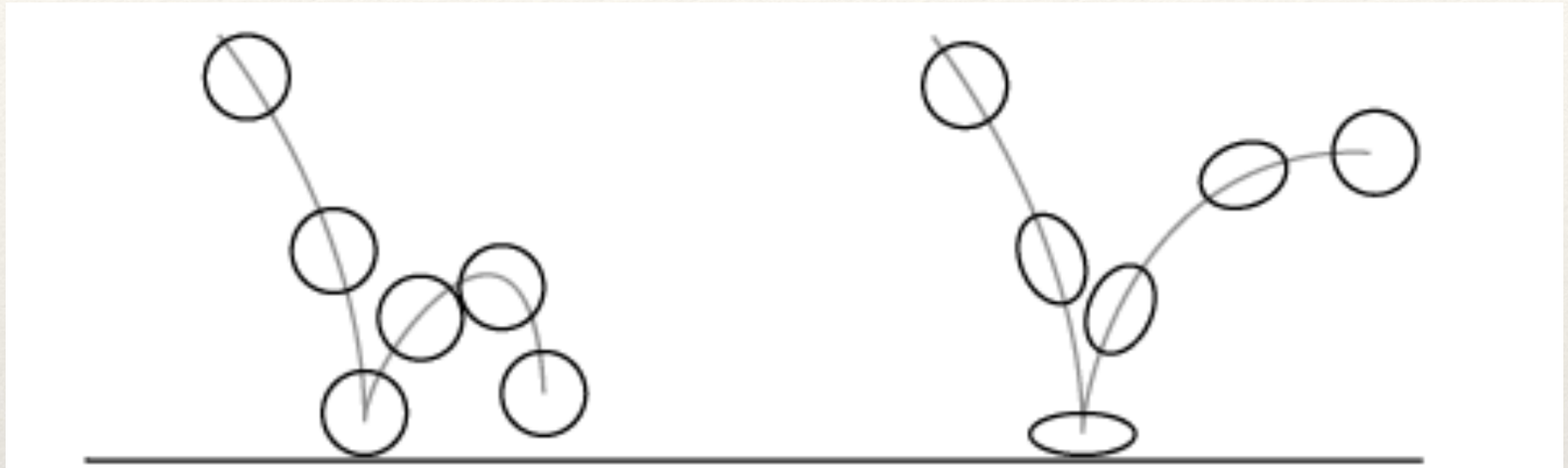


Animation

Elements of Graphics
CS324e

Animations



- Series of images presented in succession
- Gives the impression of continuous motion
- Mathematical interpolations can create animations

Sequence of Images

- Animations can also be pre-rendered
  - Hand-drawn frames
  - Animation-specific programs (e.g. After Effects or Flash)
- Sprites are two-dimensional images that depict a character or object
- Sprites can be animated separate from the surrounding scene

Loading Animations in Processing

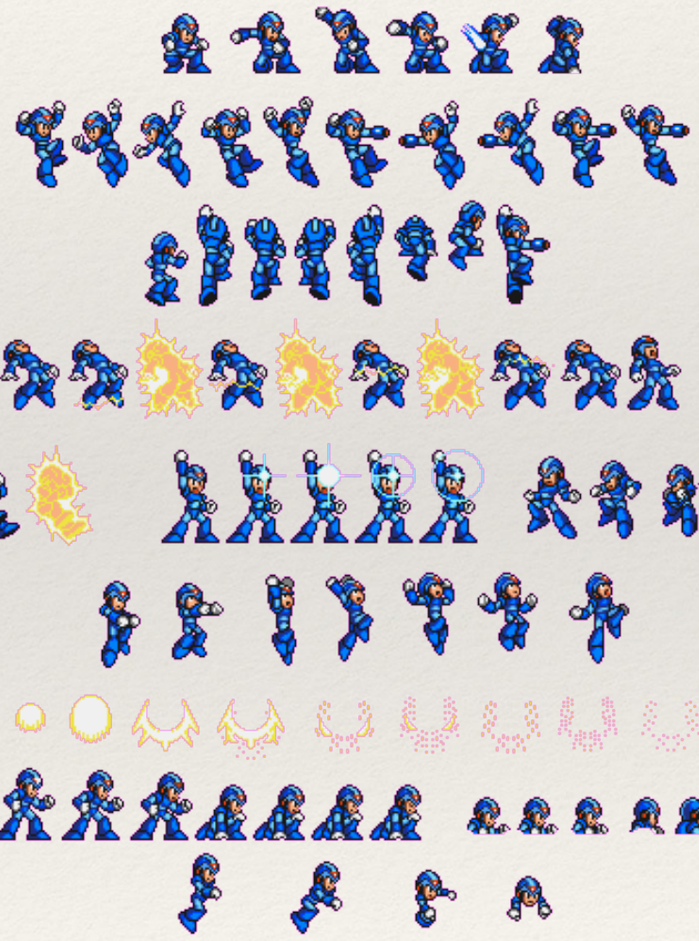
- Same principle as loading a single image into `PImage`
- Use of a frame buffer to hold sequence of `PImages`
  - Store images in animation order inside array
  - Dynamically name loaded images to avoid hard-coding
  - `nf()` formats numbers into Strings (and can provide 0 padding, so order is consistent)

Drawing Animations in Processing

- Array index provides access to next frame in sequence
- Modulo operator allows for infinite frame looping
  - Remainder of one number divided by another
- `frameCount` system variable increments by one every frame

Sprite Example

Sprite Sheets



Accessing Sprite Sheets

- What additional information do we need to know to correctly pull out the individual sprite we want to display on a given frame?

Hands-on: Sprite Animations

- Today's activities:

    1. Collect or create a sequence of images to use as a sprite
    2. Within the `setup()` function of the sketch, load these images into an array. Use the `nf()` function within a for-loop rather than individually loading the images
    3. Within the `draw()` function of the sketch, display the images in sequence at a given location
    4. Use the modulo operator on the `frameCount` and number of frames in the sprite sequence to make the sprite infinitely loop
    5. Experiment with `frameRate()` to change the speed of the animation