

# ANIMATION

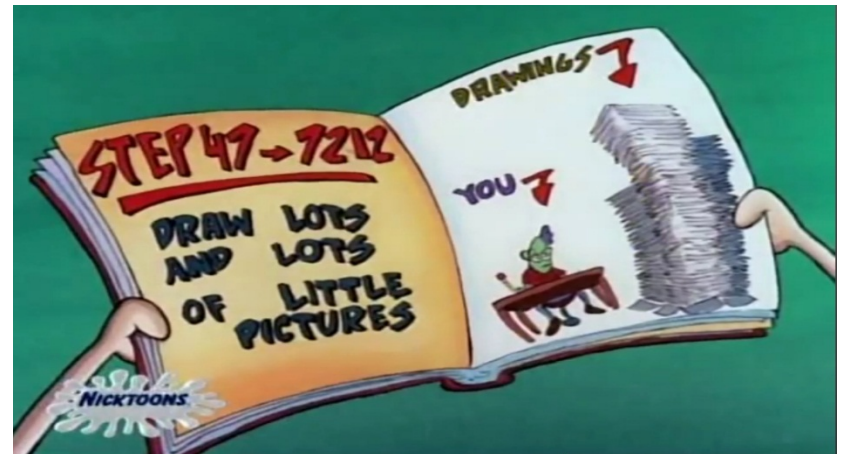
BIG JAVA CH. 20.6

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Done by Edward Goldthorpe  
And William Bismayer

# What is animation

- Rapidly show a set of pictures, one after another
- Your mind fills in the gaps if simulating movement
- Like a really fast slide show or flipbook
- As far as speed, I would start with 10 milliseconds per image, then adjust as necessary



# How to animate on a computer

- Make a drawing
- Copy it into a position different from the first, typically by a small amount
- Delete the original drawing(usually), or refresh the whole thing

# Problem

- In most cases, java will replace the image too fast



# Solutions

- You could use a big for loop every time the image is redrawn
- **for(int i=0; i<100000000; i++){}**
- This is not a good solution, you are making the computer do useless work
  
- Tell code to wait
- **Thread.sleep(10);**
- Input is a long value of milliseconds

# Actual coding process

- 2 classes, a viewer and a panel.
- In the panel
  - Create a new panel and a new thread
  - paint Component method
    - Draw the actual thing, integrating a variable to allow for change
  - Run method
    - pause the thread
    - repaint
    - modify variable
- Finally, in the viewer class add the panel

# Animation and multithreading

- Useful for more advanced animation
- Use different threads for different parts

# Alternative animation

- Create a list of pre-drawn frames
- Iterate through, displaying them one at a time
- Useful for animation that
  - Is very complicated
  - Is not algorithmic
  - Is relatively short