CSE 8A Lecture 15

- Reading for next class: 10.1-10.4

- Today's (and Wednesday's) goals:
  - Recover from Exam #3 (it was challenging!)
    - Review/Bring your graded midterm for 2/27 lecture (returned in lab 2/26)
    - 2nd chance to learn! Exam #4 (on 3/8) will be similar to Exam #3
  - Practice writing and typing in code from scratch
  - Practice tracing code
  - Applying the same algorithm to a picture and a sound
  - Modifying data "in place"

- PSA 8 (basics/loops/decisions) due Monday (3/4)
  - Individual (no partner)

Exam 3

- Was hard, but many of you did great!!

- Stats:
  - Mean: 54% (Median 55%)
  - 20% of the class (62 students) >= 80% (16 points /20 points)

- If you scored 80% or above, NICE JOB! You are doing extremely well and should be very proud of your performance

- If you scored between 60 and 80, not bad. You're doing well. Keep working; you're on a good track.

- If you scored lower than a 60, it's time to PRACTICE
  - Write code (on paper)
  - Practice writing code and typing code by yourself
  - Come see instructors/TAs/Tutors for more help
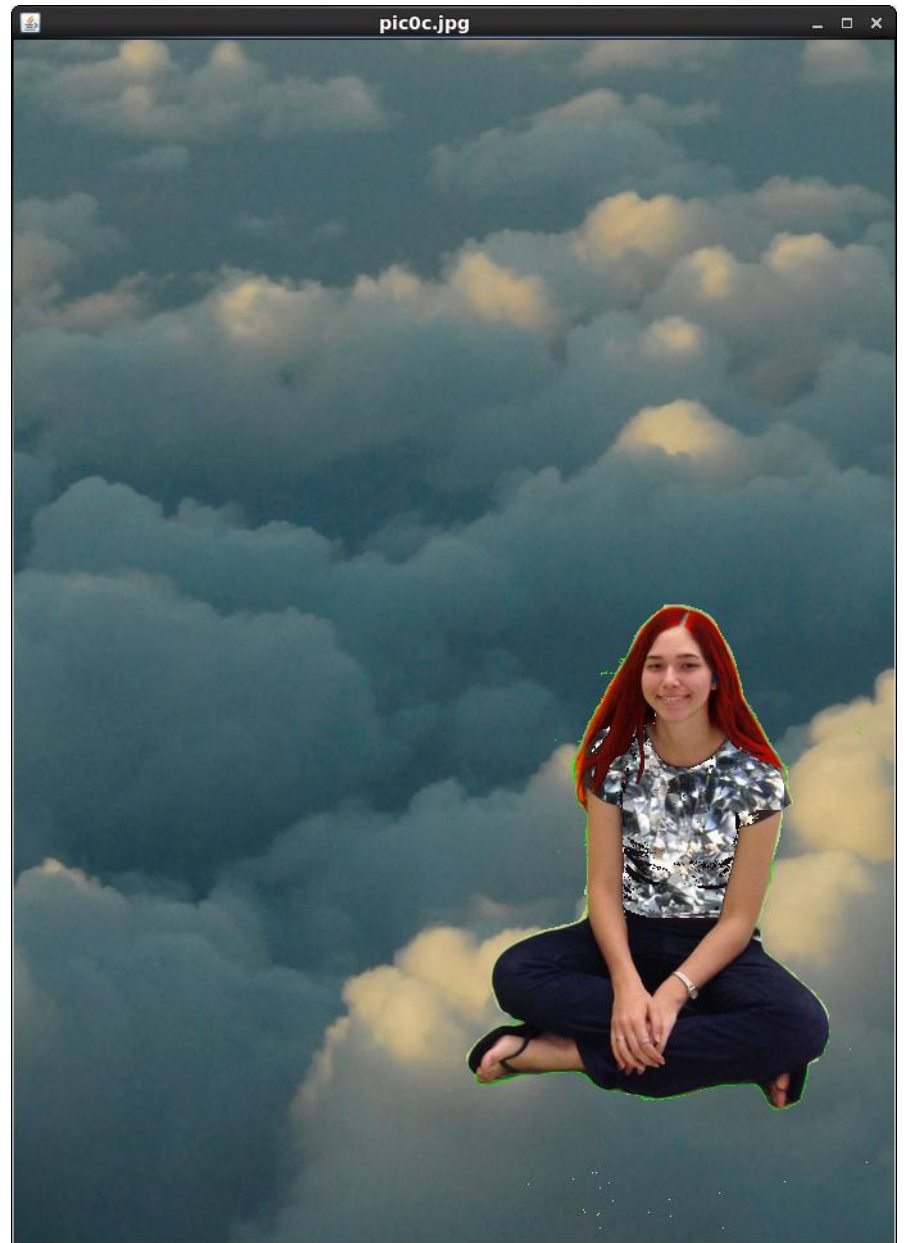
Become a super hero!

Sneha Jayaprakash and Sarah Haroon

Sandra Hui and Sandeep Gill

Sachi Pitkin and Tiffany Truong

Dylan Mozlowski and Luis Castillo

Political commentary

Michael Chin + Chu Jang

Pop Culture

Michelle Wu and Kirk Wong
"It's a-me, Mario! And my brother, Luigi!" :D

Jason Tan and Zeyu Chen

???

Daniel Chang and Kevin Nguyen

SO MANY MORE… GO CHECK IT OUT!

Inspriation:
http://entertainment.nbcnews.com/_news/2012/09/18/13941063-call-me-maybe-meets-gangnam-style-in-ultimate-mashup?lite

Options to raisePitch

- Create new Sound

  - V1) Of exact length needed for higher pitched sound

  - V2) Of same length as original with "silence" at end

Complete the raisePitch method

```
public Sound raisePitch()
{
  int  origI, newPlace = 0;
  SoundSample [] original = this.getSamples();

  Sound highP = new Sound( original.length / 2 );
  SoundSample [] higher   = highP.getSamples();

  for( origI = 0; origI < original.length ; origI+=2 )
  {
    higher[newPlace].setValue( original[origI].getValue() );

    newPlace++;
  }

  return highP;
}
```

Complete V2: Create new sound of same length with 0 at end

```
public Sound raiseP()
{
  int newPlace = 0;
  Sound highP  = new Sound(this);

  SoundSample[] original = this.getSamples();
  SoundSample[] higher   = highP.getSamples();



}
```

How would the code below, change the SoundSample array?

```
public void mystery()                          // In the Sound class
{
  SoundSample [] original = this.getSamples();
  for ( int index = 0 ; index < original.length ; index++ )
  {
    original[index].setValue( original[index/2].getValue() );
  }
}
```

100	150	200	300	140	10	-40	-100	-250	-150

A

100	100	150	150	200	200	300	300	140	140

B

100	100	100	100	100	100	100	100	100	100

C

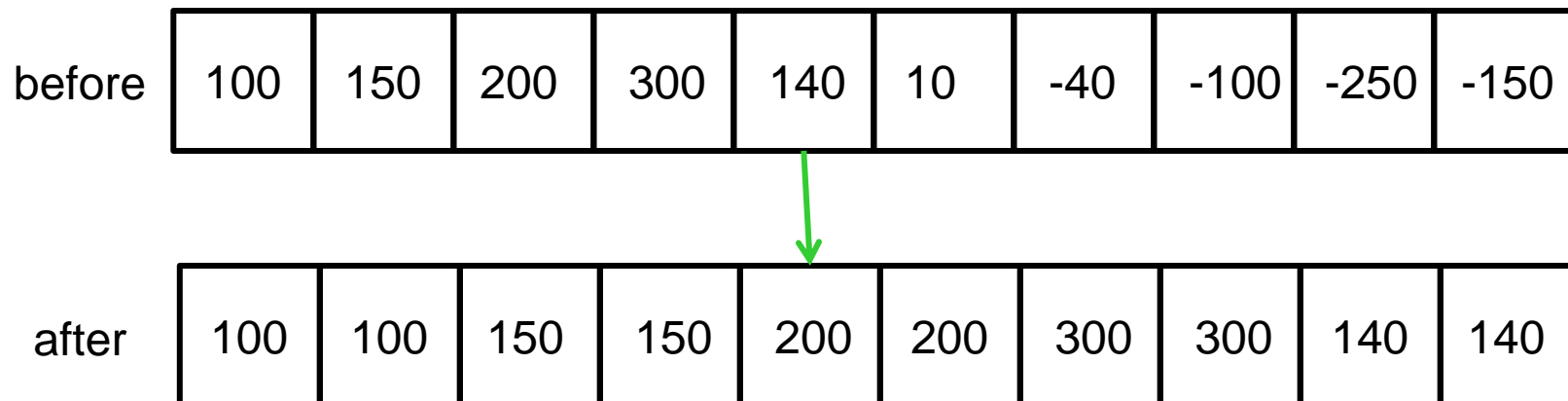| 100	200	140	-40	-250	10	-40	-100	-250	-150

D
It causes
an error

Lowering the Pitch of the Sound

```
public void lowerPitch()                    // In the sound class
{
  SoundSample[] original = this.getSamples();

  for ( int index = 0; index < original.length; index++ )

    original[index].setValue( original[index/2].getValue() );
}
```

Problem: We are overwriting the values we need to use before we have used them!
Possible solutions?

before	100	150	200	300	140	10	-40	-100	-250	-150

after	100	100	150	150	200	200	300	300	140	140

Start at the end!

```java
public void lowerPitch()                    // In the sound class
{
  SoundSample[] original = this.getSamples();

  for( _____ )

    original[index].setValue( original[index/2].getValue() );
}
```
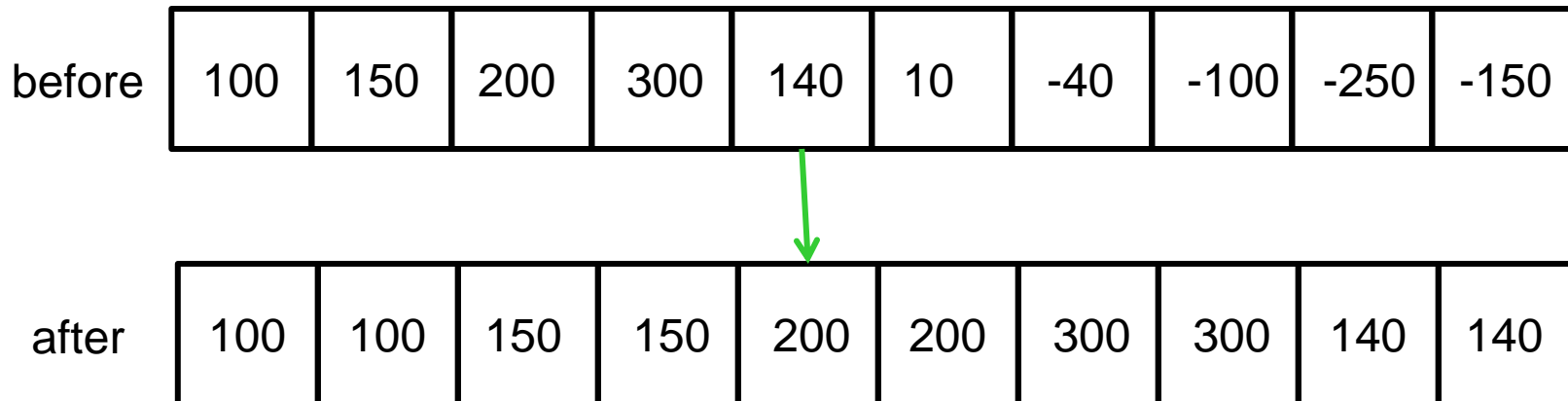
before

| 100 | 150 | 200 | 300 | 140 | 10 | -40 | -100 | -250 | -150 |

after

| 100 | 100 | 150 | 150 | 200 | 200 | 300 | 300 | 140 | 140 |
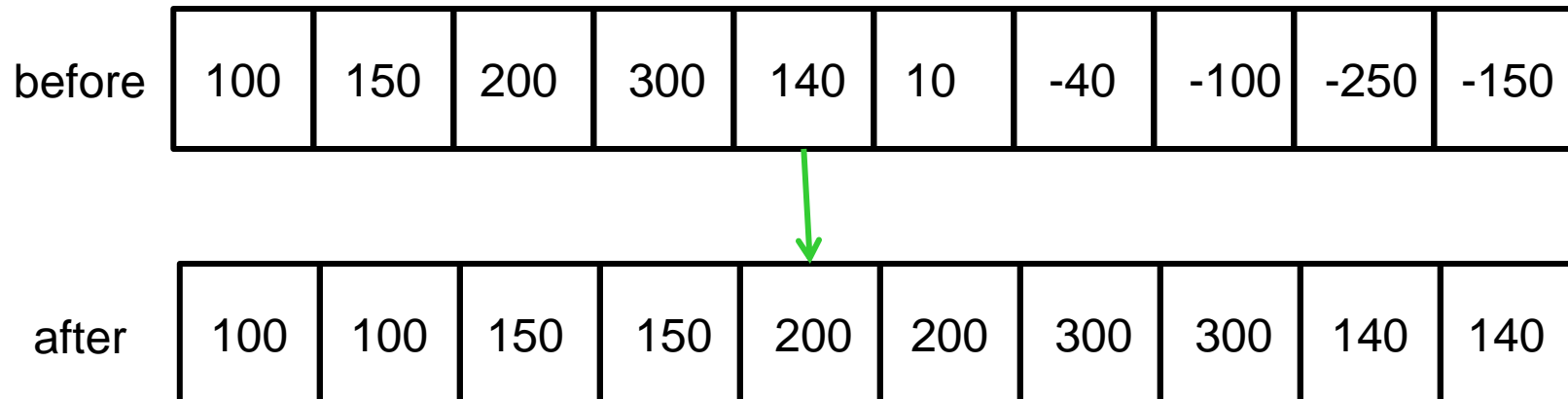
Another name for this method…

```
public void stretchInPlace()          // In the sound class
{
  SoundSample[] original = this.getSamples();

  for ( int index = original.length-1; index >= 0; index-- )

    original[index].setValue( original[index/2].getValue() );
}
```

before	100	150	200	300	140	10	-40	-100	-250	-150

after	100	100	150	150	200	200	300	300	140	140

…that could apply to Pictures too!

Complete the code below to stretch the calling object Picture both horizontally and vertically

```
public void stretchInPlace()                    // In the Sound class
{
  SoundSample[] original = this.getSamples();

  for( int index = original.length-1 ; index >= 0 ; index-- )
    original[index].setValue( original[index/2].getValue() );
}
```

```
public void stretchInPlace()                    // In the Picture class
{
  for ( int x =                                    )
    for ( int y =                                    )
    {
        Pixel source = this.getPixel(                    );
        Pixel target = this.getPixel(                    );
        target.setColor( source.getColor() );
    }
}
```

TODO

- Reading for next class: 10.1-10.4

- Finish PSA 7 by tonight (Bring headphones to lab!)

- Bring graded Exam #3 to class Wednesday for review