

# Announcements

- ▶ Homework
  - ▶ Homework 7 due tonight!
  - ▶ No homework due next week!
- ▶ Midterm 1 still week from Friday
  - ▶ I'm going to get some study materials up by tomorrow (my plate is a bit full suddenly here...)
- ▶ Polling: `rembold-class.ddns.net`

# The Elephant (hopefully not Covid) in the Room

- ▶ Lectures will be streamed via Youtube or possibly Zoom
  - ▶ Same time
  - ▶ Will have chat interaction
  - ▶ Still polling questions
- ▶ Labs will probably switch over entirely to GitHub
  - ▶ I'll aim to have some sort of video or voice conference running during those times to help with any questions
- ▶ Homework will resume after Spring Break
- ▶ I'm still working out details on the test. I need the weekend.
- ▶ Pay attention to Campuswire
  - ▶ It will be where I make announcements of any changes
  - ▶ Still the easiest place to ask and get questions answered

# Review Question

What is the printed value?

```
A = [  
    {'name': 'Jill', 'weight':125, 'height':62},  
    {'name': 'Sam', 'weight':156, 'height':68},  
    {'name': 'Bobby', 'weight':173, 'height':75},  
]  
A.append({'weight':204, 'height':70, 'name':'Jim'})  
B = A[1]  
B['weight'] = 167  
del A[0]['weight']  
print([d.get('weight',100) for d in A])
```

A) [100,167,173,204]

C) [125,167,173,204]

B) [100,156,173,204]

D) [100,156,173,70]

# Sets

- ▶ A **set** is an unordered list of unique immutable objects
- ▶ The set itself can be mutable (normally) or immutable (frozenset)
- ▶ What works the same:
  - ▶ The **in** function
  - ▶ Finding the length
  - ▶ Looping over elements
- ▶ What breaks:
  - ▶ No slicing or indexing!
- ▶ Common uses:
  - ▶ Removing duplicates from a sequence
  - ▶ Mathematical operations like intersection, union, difference

# Non-Scalar Summary

Type	Type of Elements	Examples of literals	Mutable
<b>str</b>	characters	<code>' ', 'a', 'abc'</code>	No
<b>tuple</b>	any type	<code>() , (2,) , ('abc',3)</code>	No
<b>range</b>	integers	<code>range(5) , range(2,10,2)</code>	No
<b>list</b>	any type	<code>[] , [3] , [6,'abc']</code>	Yes
<b>dict</b>	any type	<code>{}, {'a':1}, {1:'abc', 2:5}</code>	Yup
<b>set</b>	any immutable	<code>{}, {2}, {'abc',5}</code>	Both

# Getting Spritely

- ▶ SpriteLists are common ways to display collections of images in arcade
- ▶ We probably need to understand how a single Sprite works first though!
- ▶ Basic syntax:

```
arcade.Sprite(<filename>, <scale_factor>)
```

- ▶ Image needs to be in the same folder (or a subfolder) of your script
- ▶ Can also set the center x and y positions at the same time.
- ▶ Draw to the screen with `.draw()`
- ▶ Lots of other built in capabilities in the form of other methods

# Lists of Sprites

- ▶ Frequently more useful to deal with groups of sprites
- ▶ Arcade also has a lot of performance enhancements for working with groups of sprites over single sprites
- ▶ Called a `SpriteList`
  - ▶ Has similar methods to normal lists
    - ▶ `.append`, `.extend`, `.remove`, etc
  - ▶ Has methods to draw or update every sprite in the list
  - ▶ Can also be used for collision detections

# Animating Sprite Lists

- ▶ Can combine to easily animate groups of Sprites
- ▶ Sprites can have properties which indicate how they should move:
  - ▶ `change_x`
  - ▶ `change_y`
  - ▶ `velocity`
- ▶ Calling an `.update` method will apply all these incremental movements
- ▶ `SpriteLists` can be drawn and updated all at the same time!