

As you walk in

Quiz will start at the beginning of lecture

- Have pencil/pen ready
- Don't use your own scratch paper
 - We have some if you need it
- Silence phones



Quiz

Before we start

- Don't open until we start
- Make sure your name and Andrew ID are on the front
- Read instruction page
- No questions (unless clarification on English)

Additional info

- 30 min



15-112
Lecture 2

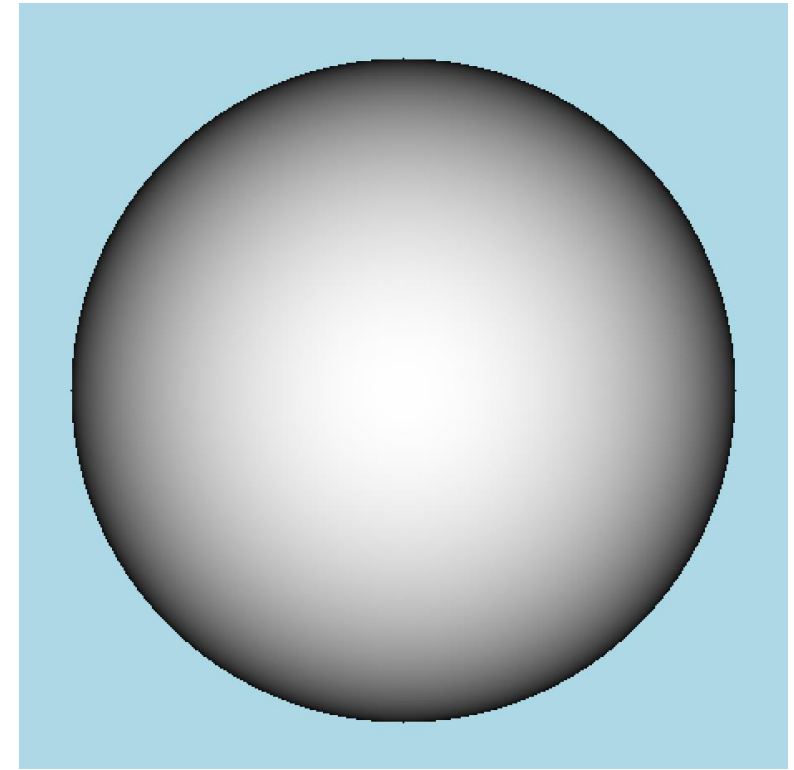
Week 4 Tue
1-D Lists

Instructor: Pat Virtue

Post Quiz Fun

How many rectangles are drawn for $r=100$?

```
def drawSphere(canvas, cx, cy, r):  
    for x in range(cx-r, cx+r+1):  
        for y in range(cy-r, cy+r+1):  
            xSphere = x - cx  
            ySphere = y - cy  
  
            # 2D radius  
            rxy = math.sqrt(xSphere**2 + ySphere**2)  
  
            if rxy <= r: # Inside 2D radius  
                zSphere = math.sqrt(r**2 - xSphere**2 - ySphere**2)  
  
                zGray = int(zSphere/r * 255)  
                color = rgbString(zGray, zGray, zGray)  
  
                canvas.create_rectangle(x, y, x+1,y+1,  
                    fill=color, outline='')
```



Circle math:
 $x^2 + y^2 = r$

Sphere math:
 $x^2 + y^2 + z^2 = r$

Announcements

Assignments

Week 5 Pre-reading Checkpoint

- Checkpoint out Wed
- Due Fri 9/23, 8 pm

HW4

- Out this evening
- Due Saturday 9/24, 8 pm
- Points will be deducted for style going forward

Quiz

Week 4 material

- Tue 9/27, in lecture

Lists

Poll 1

What does this print?

```
import copy
```

```
A = [10, 20, 30]
```

```
B = A
```

```
C = copy.copy(A)
```

```
A[0] = 44
```

```
B[1] = 55
```

```
C[2] = 66
```

```
print('A:', A)
```

```
print('B:', B)
```

```
print('C:', C)
```

I. A: [44, 20, 30]

B: [10, 55, 30]

C: [10, 20, 66]

II. A: [44, 55, 30]

B: [44, 55, 30]

C: [10, 20, 66]

III. A: [44, 20, 66]

B: [10, 55, 30]

C: [44, 20, 66]

IV. A: [44, 55, 66]

B: [44, 55, 66]

C: [44, 55, 66]

Poll 2

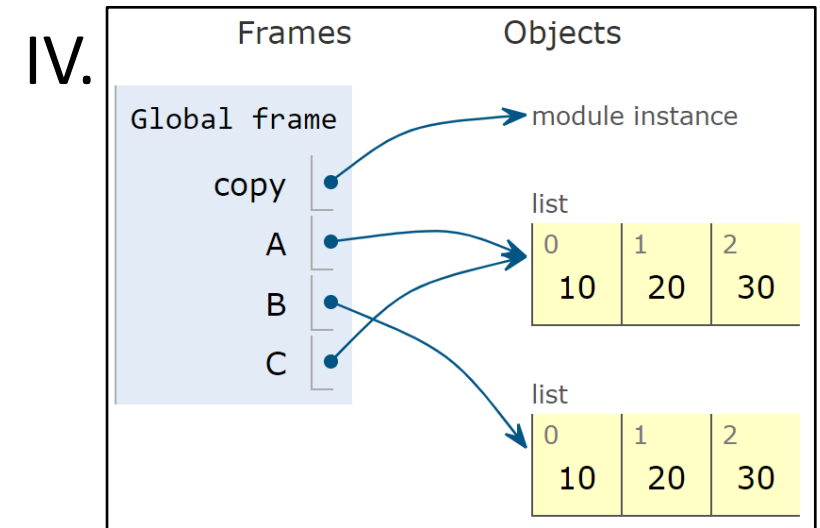
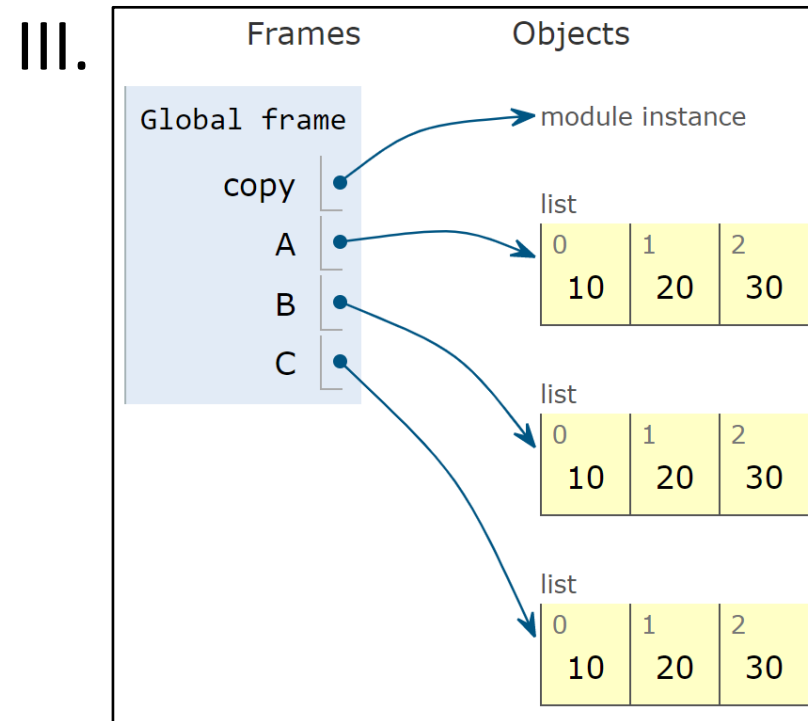
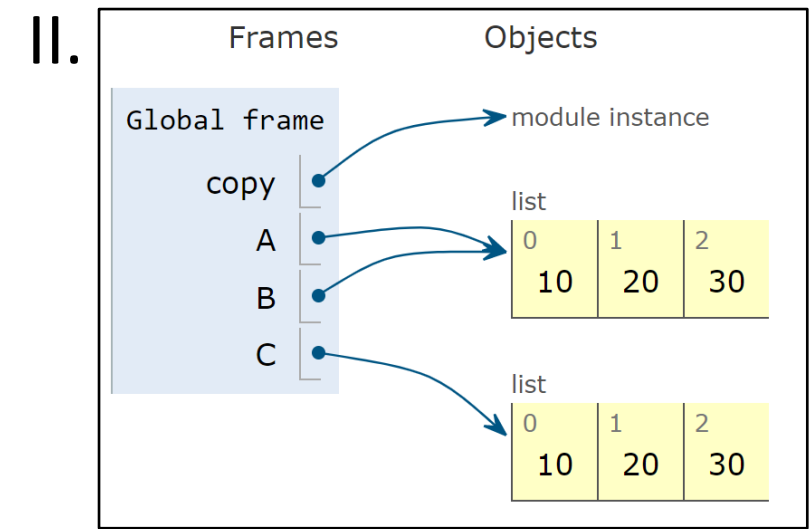
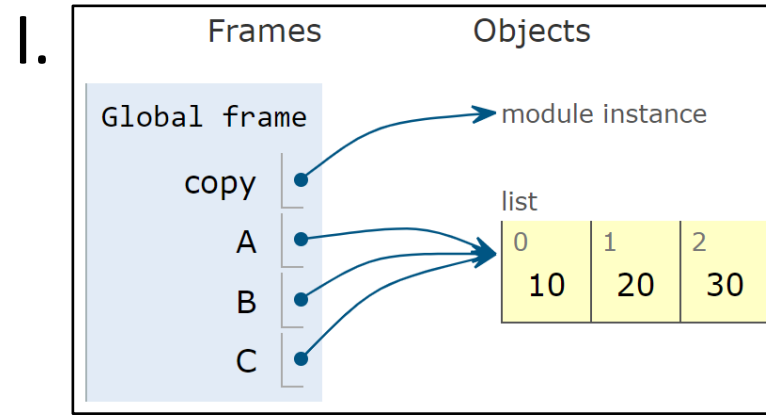
Which is the correct visualization?

```
import copy
```

```
A = [10, 20, 30]
```

```
B = A
```

```
C = copy.copy(A)
```

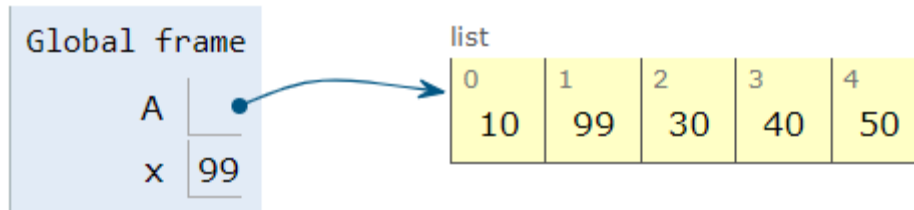


List indexing and slicing

$A = [10, 20, 30, 40, 50]$

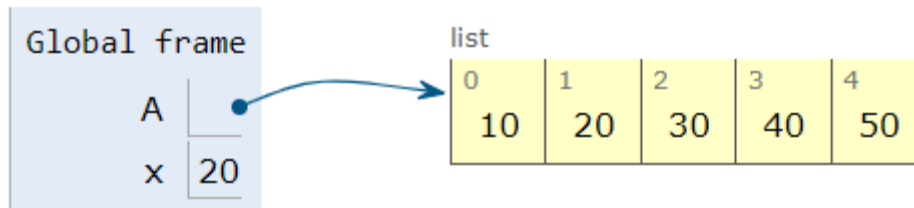
$x = 99$

$A[1] = x$



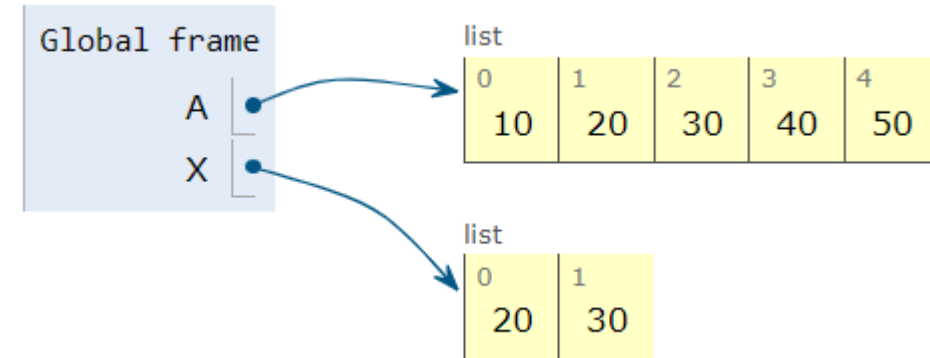
$A = [10, 20, 30, 40, 50]$

$x = A[1]$



$A = [10, 20, 30, 40, 50]$

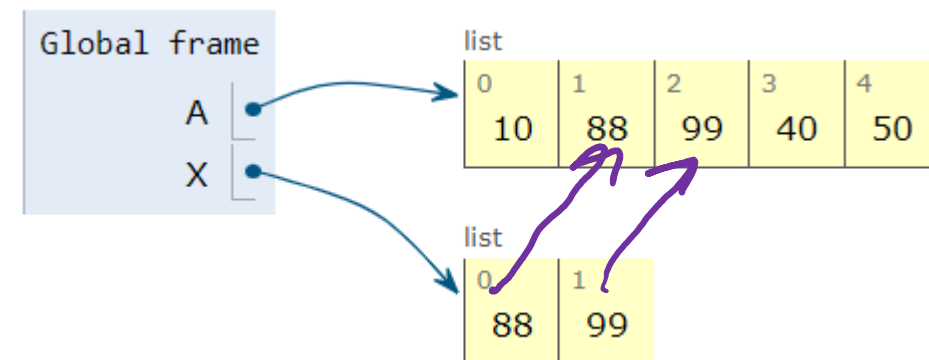
$X = A[1:3]$



$A = [10, 20, 30, 40, 50]$

$X = [88, 99]$

$A[1:3] = X$

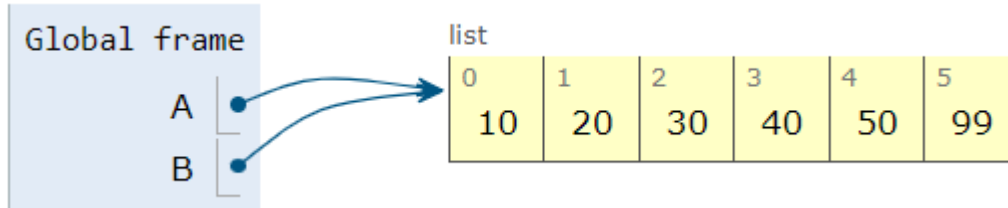


Adding elements

```
A = [10, 20, 30, 40, 50]
```

```
B = A
```

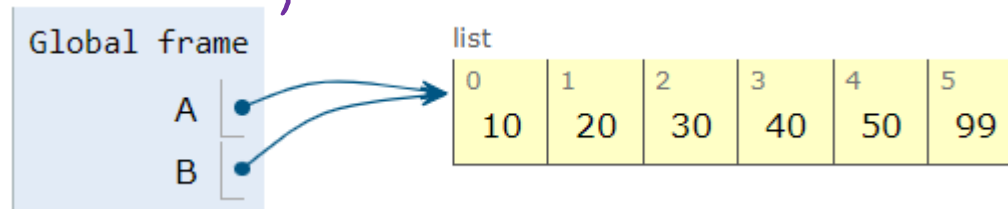
```
A.append(99)
```



```
A = [10, 20, 30, 40, 50]
```

```
B = A
```

```
A += [99]
```

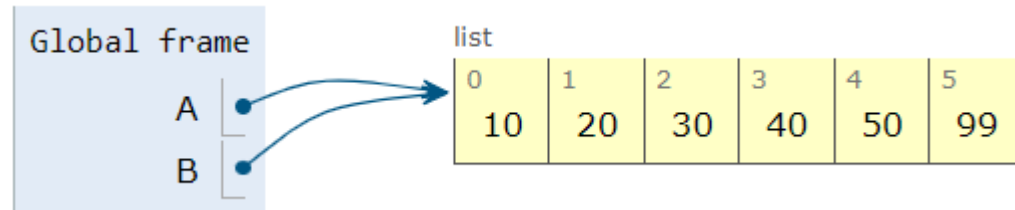


Adding elements

A = [10, 20, 30, 40, 50]

B = A

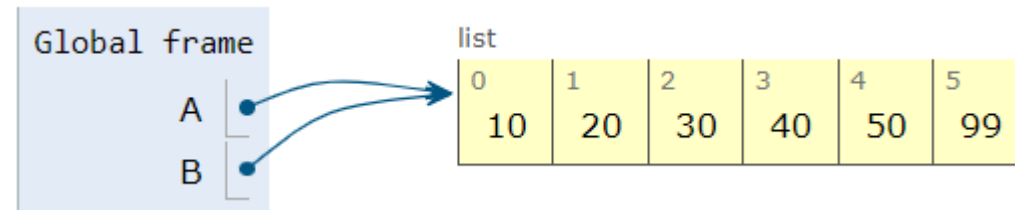
A.append(99)



A = [10, 20, 30, 40, 50]

B = A

A += [99]



A = [10, 20, 30, 40, 50]

A += 99

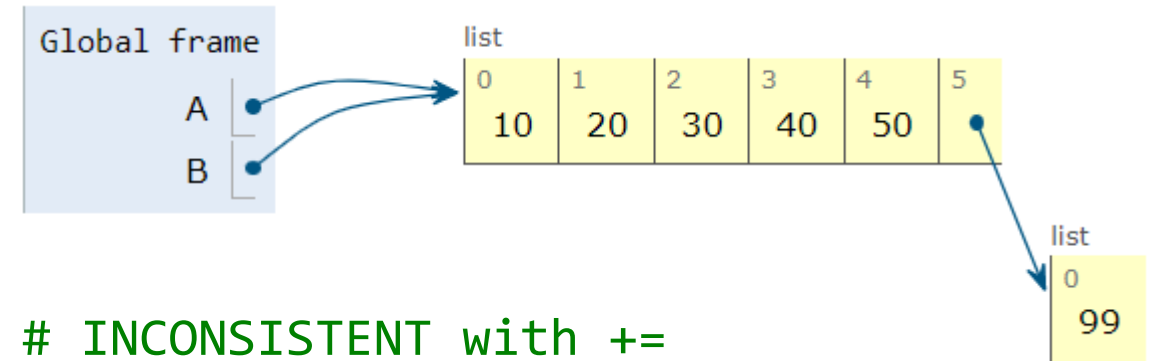
TypeError: 'int' object is not iterable

CAUTION

A = [10, 20, 30, 40, 50]

B = A

A.append([99])

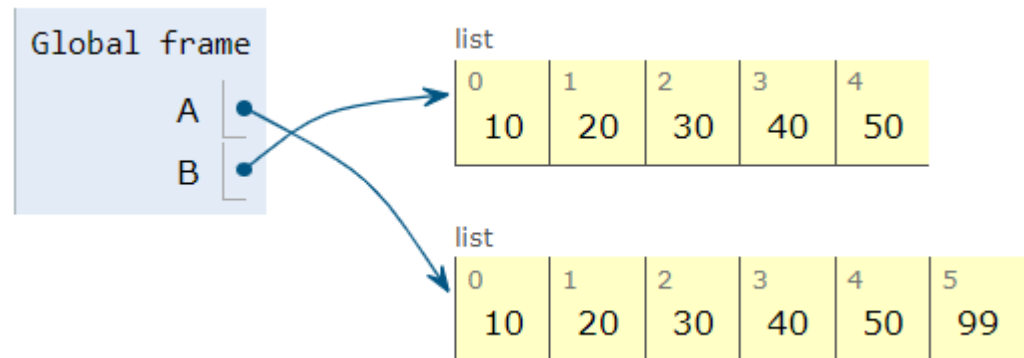


INCONSISTENT with +=

A = [10, 20, 30, 40, 50]

B = A

A = A + [99]



Poll 3

What are the resulting A, B, and C?

```
import copy
```

```
A = [10, 20, 30]
```

```
B = A
```

```
C = copy.copy(A)
```

```
A[0] = 44
```

```
B[1] = 55
```

```
C[2] = 66
```

```
A = A + [77]
```

I. A: [44, 20, 30, 77]

B: [10, 55, 30]

C: [10, 20, 66]

II. A: [44, 55, 30, 77]

B: [44, 55, 30]

C: [10, 20, 66]

III. A: [44, 20, 66, 77]

B: [10, 55, 30]

C: [44, 20, 66]

IV. A: [44, 55, 30, 77]

B: [44, 55, 30, 77]

C: [10, 20, 66]

Poll 4

What does this print?

```
def f(L):  
    L.remove(3)  
  
A = [2, 3, 4, 5]  
print(f(A))
```

- I. [2, 3, 4, 5]
- II. [2, 4, 5]
- III. [2, 3, 5]
- IV. []
- V. None

Poll 5

What does this print?

```
def f(L):
```

```
    L.remove(3)
```

```
A = [2, 3, 4, 5]
```

```
f(A)
```

```
print(A)
```

I. [2, 3, 4, 5]

II. [2, 4, 5]

III. [2, 3, 5]

IV. []

V. None

Poll 6

Which is best?

I.

```
def doubleValues(L):  
    for i in range(len(L)):  
        L[i] *= 2
```

II.

```
def doubleValues(L):  
    for i in range(len(L)):  
        L[i] *= 2  
    return L
```

III.

```
def doubleValues(L):  
    A = []  
    for item in L:  
        A.append(item*2)  
    return A
```

IV.

```
def doubleValues(L):  
    A = []  
    for item in L:  
        A.append(item*2)
```