

Presentation 9

Objects

Announcements for Today

Assignment 1

- We are starting grading
 - Will take most of the day
 - Grades noon tomorrow
- Resubmit until correct
 - Read feedback in CMS
 - Reupload/request regrade
- If you were very **wrong**...
 - You got an e-mail
 - More 1-on-1s this week

Assignment 2

- Posted **Today**
 - Written assignment
 - Do while revising A1
 - Relatively short (2-3 hrs)
- Due next **Tuesday**
 - Submit as a PDF
 - Scan or phone picture
 - **Use apps in instructions**

Announcements for Today

Assignment 1

Assignment 2

- We are starting grading

- Will take
- Grades 9a

- Resubmit until

- Read feedback
- Reupload/re

- If you were very **wrong**...

- You got an e-mail
- More 1-on-1s this week

- Posted **Today**

Assignment

revising A1

very short (2-3 hrs)

Tuesday

- Submit as a PDF

- Scan or phone picture

- **Use apps in instructions**

Video Lessons

- **Lesson 11** for today

- **Lesson 12** for next time

Activity Time

- Let's start with some code

```
>>> from introcs import Point3
```

```
>>> p = Point3(1.0,2.0,3.0)
```

```
>>> q = Point3(4.0,5.0,6.0)
```

```
>>> r = p
```

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What is p.w?

A: 1.0

B: 4.0

C: 0.0

D: **Error!**

E: I do not know

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```
>>> p.x = 9.0
```

What is q.x?

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C: 9.0

D: **Error!**

E: I do not know

A New Class

- RGB is **red**, **green**, **blue**

```
>>> from introcs import RGB
```

```
>>> a = RGB(192,128,64)
```

```
>>> b = RGB(255,0,0)
```



Invariant: Attributes are ints 0..255

A New Class

- RGB is **red**, **green**, **blue**

```
>>> from introcs import RGB
```

```
>>> a = RGB(192,128,64)
```

```
>>> b = RGB(255,0,0)
```

```
>>> b.red = b.red+1
```

What is b.red?

A: 256

B: 255

C: 0

D: **Invariant violated**

E: I do not know

A New Class

- RGB is **red**, **green**, **blue**

```
>>> from introcs import RGB
```

```
>>> a = RGB(192,128,64)
```

```
>>> b = RGB(255,0,0)
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C: 0

D: Invariant violated

E: I do not know

A New Class

- RGB is **red**, **green**, **blue**

```
>>> from introcs import RGB
```

```
>>> a = RGB(192,128,64)
```

```
>>> b = RGB(255,0,0)
```

```
>>> b.red = b.red/2
```

What is b.red?

A: 127

B: 128

C: 127.5

D: **Invariant violated**

E: I do not know

A New Class

- RGB is **red**, **green**, **blue**

```
>>> from introcs import RGB
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A Mutable Function

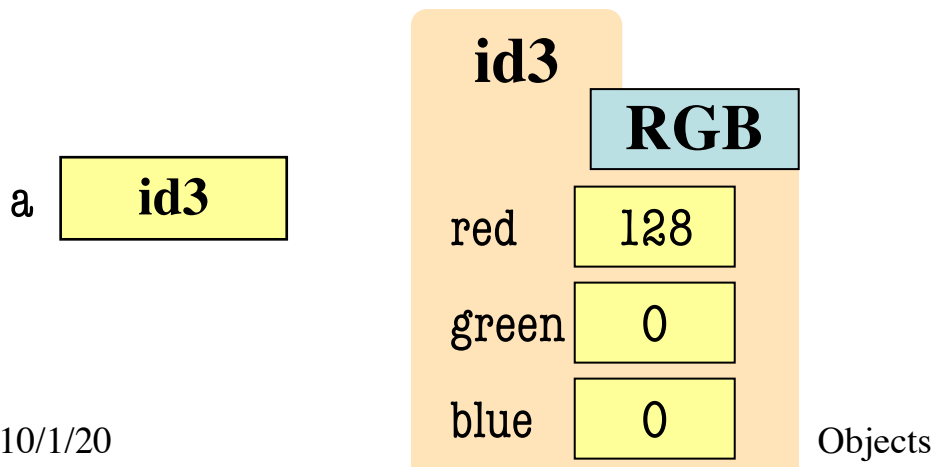
Function Definition

```
1 def dered(c):  
2     """Reduces red attribute  
3     Param c: an RGB"""  
4     c.red = c.red//2
```

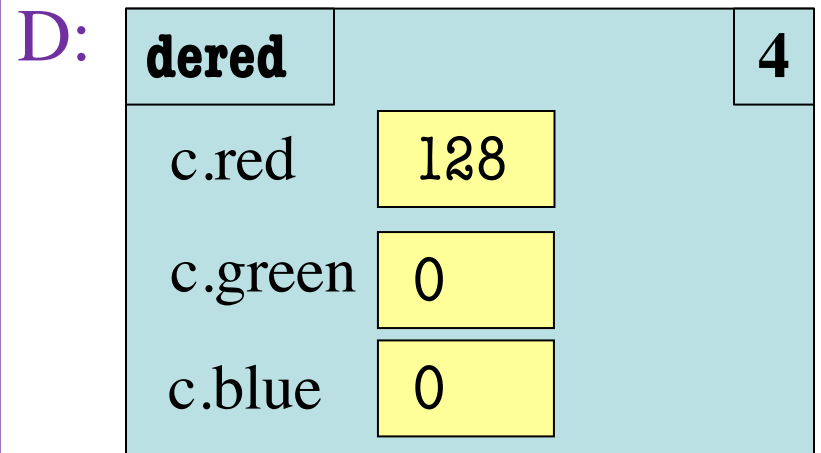
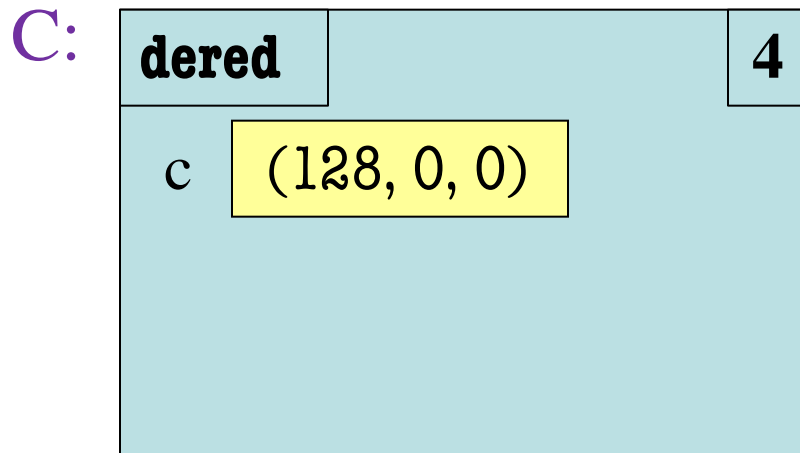
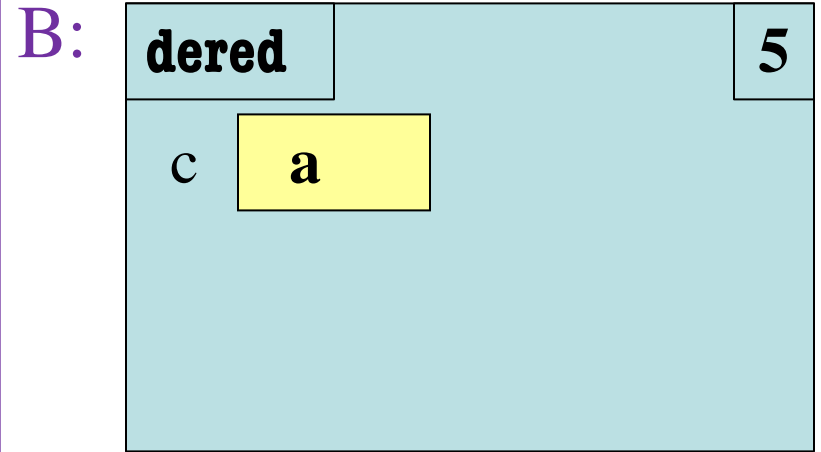
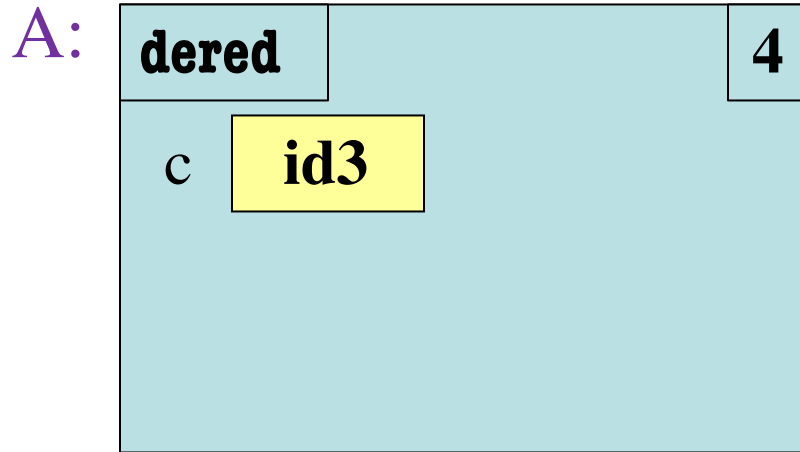
Function Call

```
>>> dered(a)
```

What does the
frame look like
at the **start**?



Which One is Closest to Your Answer?



Which One is Closest to Your Answer?

A:

dered	4
c	id3

B:

dered	5
c	a

E:

— \ (ツ) / —

C:

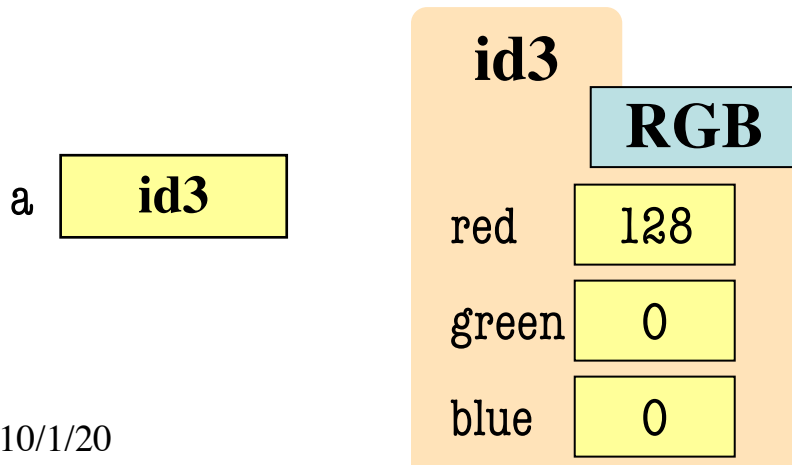
dered	4
c	(128, 0

	4
	128
c.green	0
c.blue	0

A Mutable Function

Function Definition

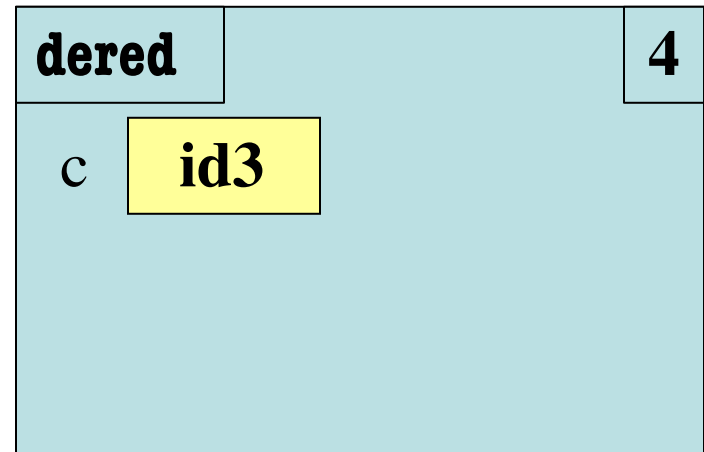
```
1 def dered(c):  
2     """Reduces red attribute  
3     Param c: an RGB"""  
4     c.red = c.red//2
```



Function Call

```
>>> dered(a)
```

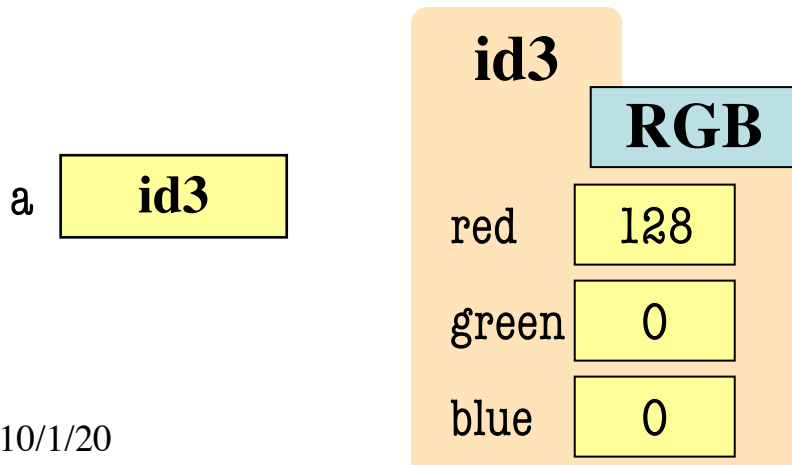
A:



A Mutable Function

Function Definition

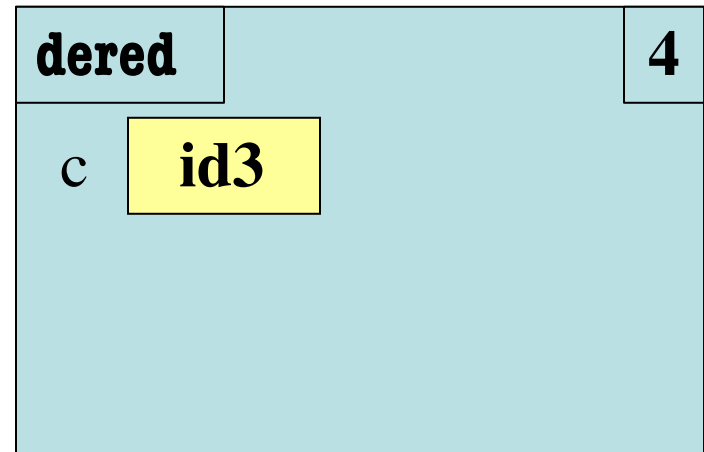
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```



Function Call

```
>>> dered(a)
```

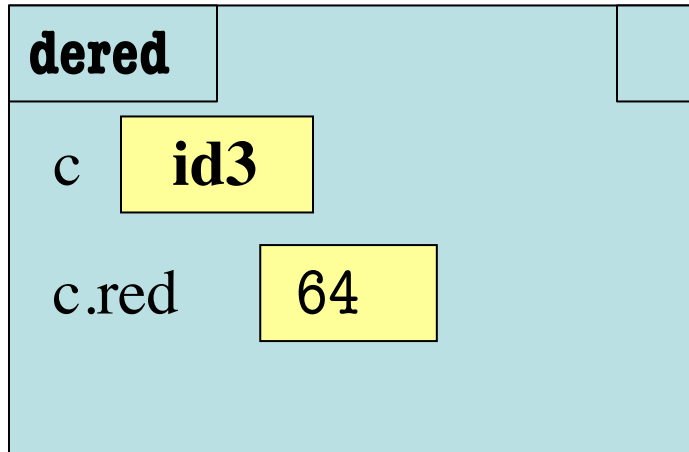
A:



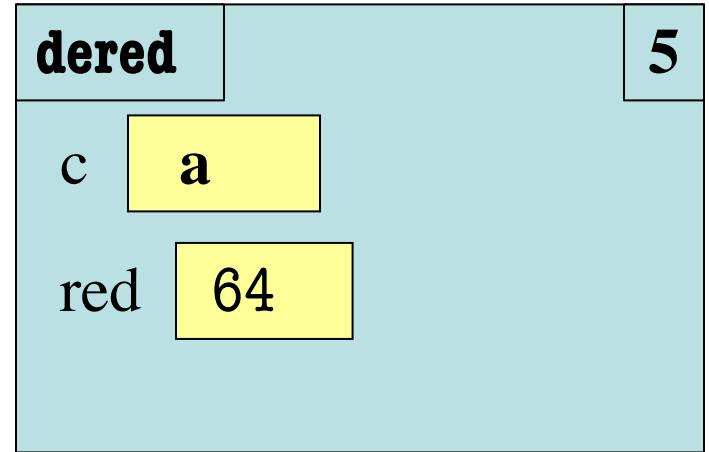
What is the **next step**?

Which One is Closest to Your Answer?

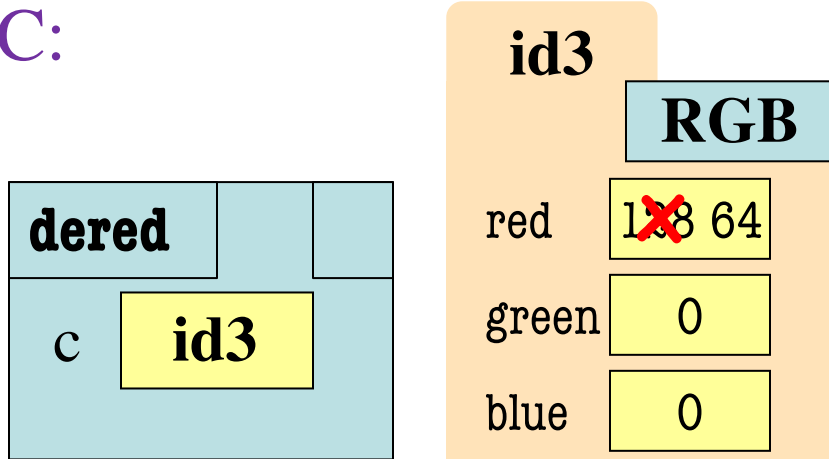
A:



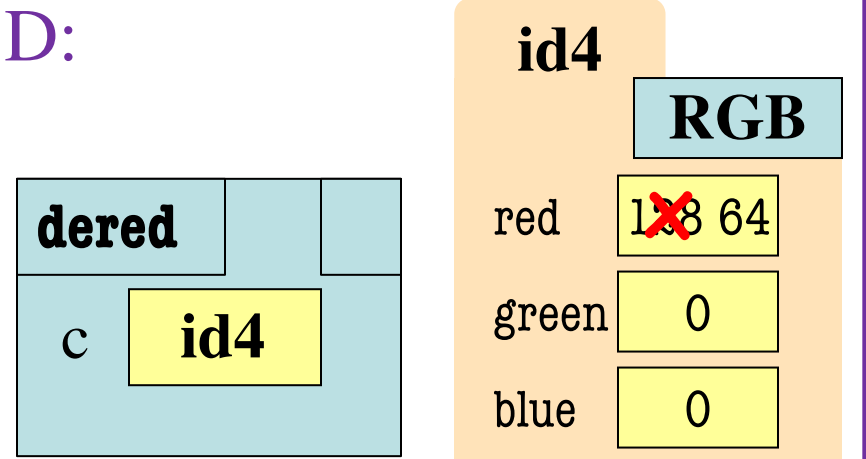
B:



C:



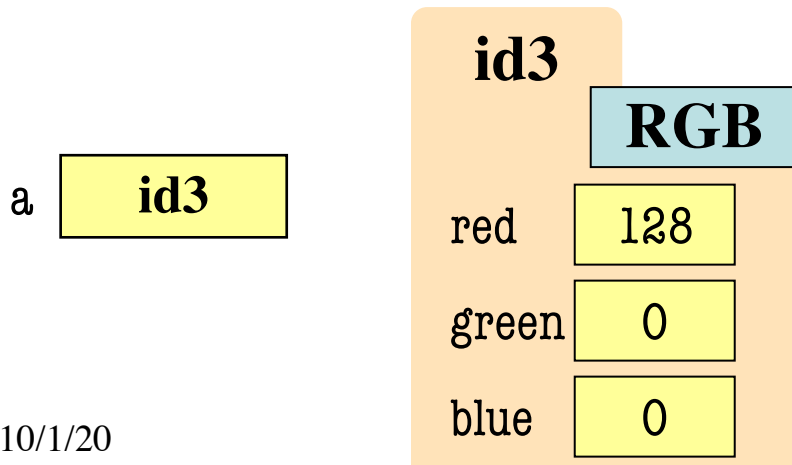
D:



A Mutable Function

Function Definition

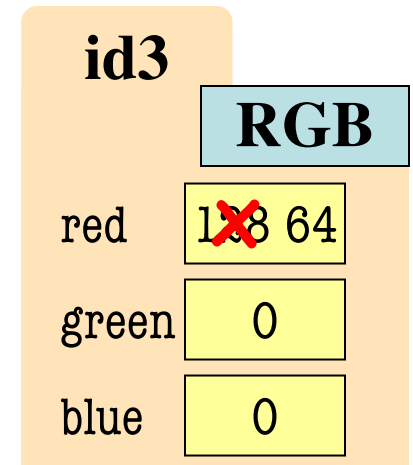
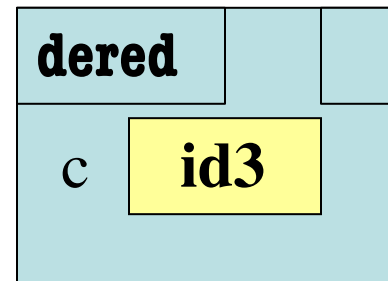
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1 def dered(c):  
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Function Call

```
>>> dered(a)
```

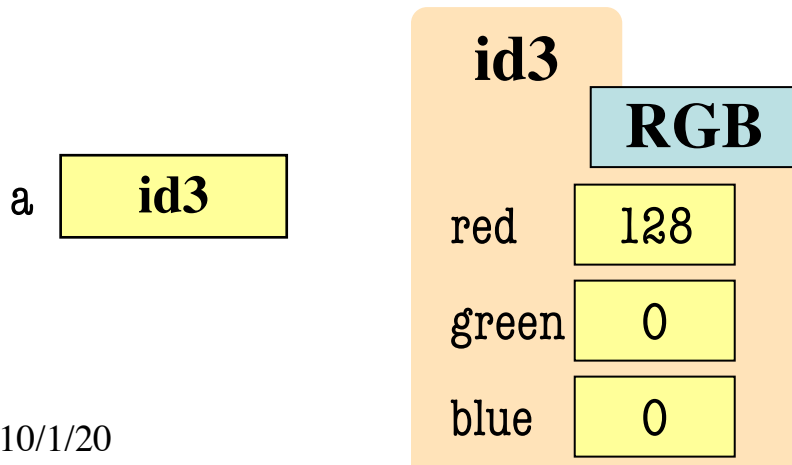
C:



A Mutable Function

Function Definition

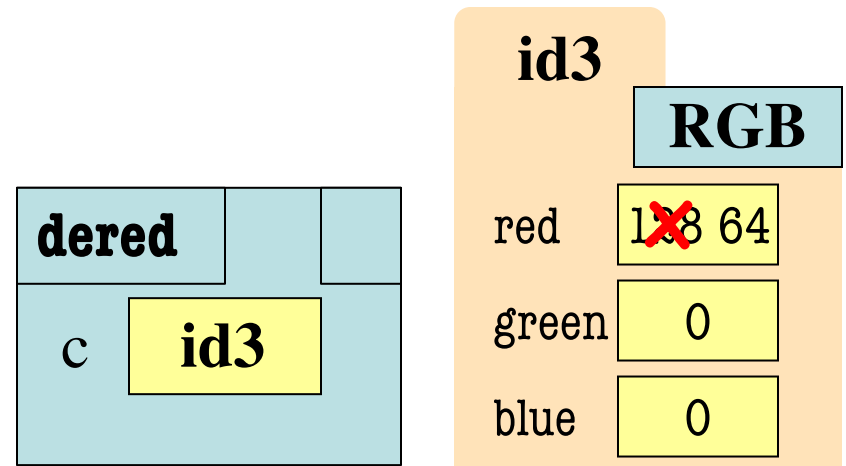
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```



Function Call

```
>>> dered(a)
```

C:



What is the **next step**?

Which One is Closest to Your Answer?

A:

a **id3**

dered		
c	id3	

id3

	RGB
red	128
green	0
blue	0

B:

a **None**

dered		
c	id3	

id3

	RGB
red	64
green	0
blue	0

C:

a **id3**

dered		
c	id3	

id3

	RGB
red	128 64
green	0
blue	0

D:

a **id3**

dered		
c	id3	

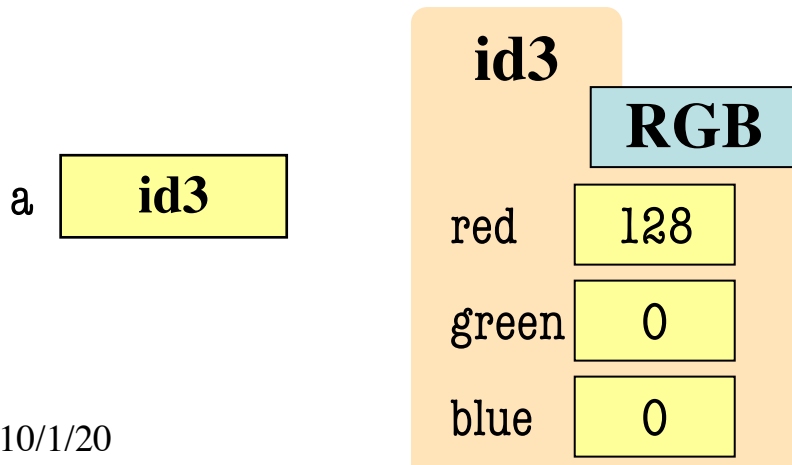
id3

	RGB
red	64
green	0
blue	0

A Mutable Function

Function Definition

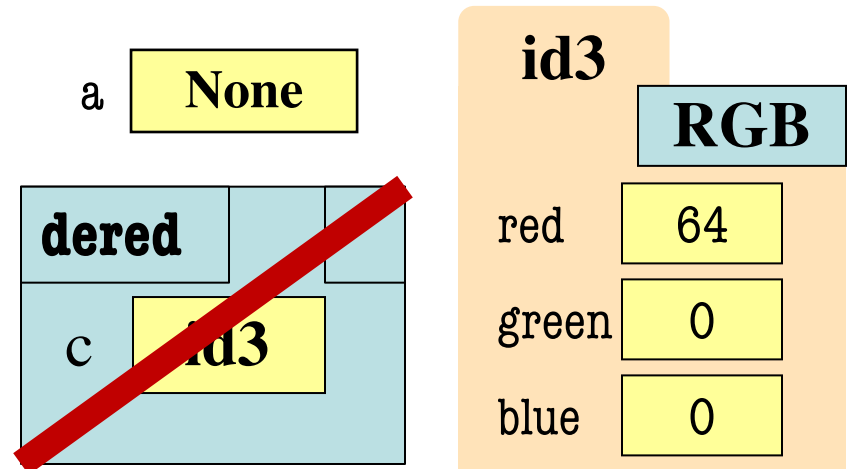
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Function Call

```
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```

D:



Only cross-out once

Questions?