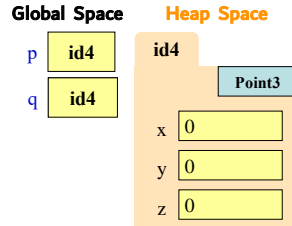


Attribute Assignment (Question)

```
>>> p = shapes.Point3(0,0,0)
>>> q = p
```

- Execute the assignments:
 - >>> p.x = 5
 - >>> q.x = 7
- What is value of p.x?

A: 5
B: 7
C: id4
D: I don't know



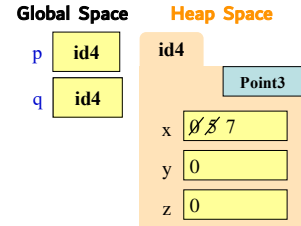
20

Attribute Assignment (Solution)

```
>>> p = shapes.Point3(0,0,0)
>>> q = p
```

- Execute the assignments:
 - >>> p.x = 5
 - >>> q.x = 7
- What is value of p.x?

A: 5
B: 7 **CORRECT**
C: id4
D: I don't know



21

How Many Folders (Question)

```
import shapes
p = shapes.Point3(1,2,3)
q = shapes.Point3(3,4,5)
```

Draw everything that gets created.
How many folders get drawn?

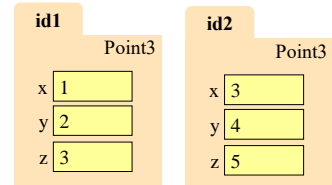
25

How Many Folders (Solution)

```
import shapes
p = shapes.Point3(1,2,3)
q = shapes.Point3(3,4,5)
```

Draw everything that gets created.
How many folders get drawn?

Heap Space



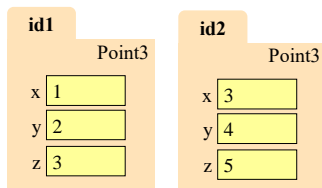
26

What Else? (Question)

```
import shapes
p = shapes.Point3(1,2,3)
q = shapes.Point3(3,4,5)
```

Draw everything that gets created.
How many folders get drawn?
What else gets drawn?

Heap Space



27

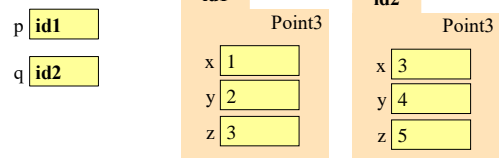
What Else? (Solution)

```
import shapes
p = shapes.Point3(1,2,3)
q = shapes.Point3(3,4,5)
```

Draw everything that gets created.
How many folders get drawn?
What else gets drawn?

Global Space

Heap Space



28

Swap (Question)

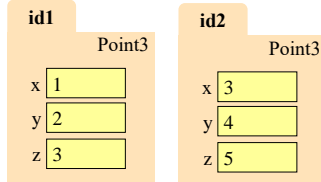
```
import shapes
p = shapes.Point3(1,2,3)
q = shapes.Point3(3,4,5)

def swap_x(p, q):
    1 t = p.x
    2 p.x = q.x
    3 q.x = t
swap_x(p, q)
```

What is in p.x at the end of this code?

- A: 1
- B: 2
- C: 3
- D: I don't know

Heap Space



Global Space



Swap (Solution)

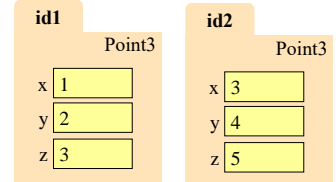
```
import shapes
p = shapes.Point3(1,2,3)
q = shapes.Point3(3,4,5)

def swap_x(p, q):
    1 t = p.x
    2 p.x = q.x
    3 q.x = t
swap_x(p, q)
```

What is in p.x at the end of this code?

- A: 1
- B: 2
- C: 3 **CORRECT**
- D: I don't know

Heap Space



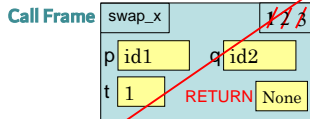
Global Space



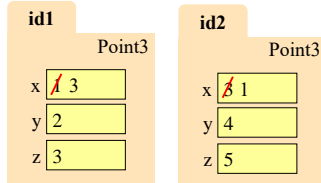
Swap (Explanation)

```
import shapes
p = shapes.Point3(1,2,3)
q = shapes.Point3(3,4,5)

def swap_x(p, q):
    1 t = p.x
    2 p.x = q.x
    3 q.x = t
swap_x(p, q)
```



Heap Space



Global Space



Global p (Question)

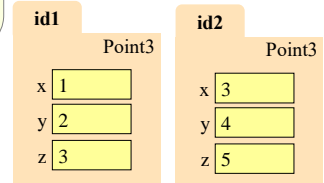
```
import shapes
p = shapes.Point3(1,2,3)
q = shapes.Point3(3,4,5)

def swap(p, q):
    1 t = p
    2 p = q
    3 q = t
swap(p, q)
```

What is in global p after calling swap?

- A: id1
- B: id2
- C: I don't know

Heap Space



Global Space



Global p (Solution)

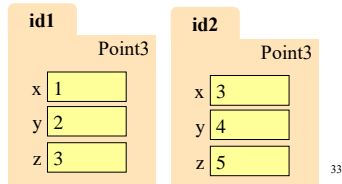
```
import shapes
p = shapes.Point3(1,2,3)
q = shapes.Point3(3,4,5)

def swap(p, q):
    1 t = p
    2 p = q
    3 q = t
swap(p, q)
```

What is in global p after calling swap?

- A: id1 **CORRECT**
- B: id2
- C: I don't know

Heap Space



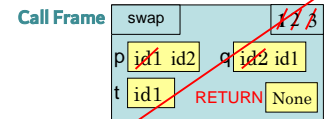
Global Space



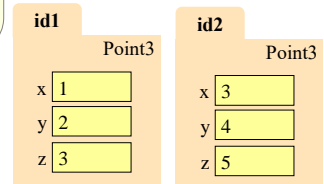
Global p (Explanation)

```
import shapes
p = shapes.Point3(1,2,3)
q = shapes.Point3(3,4,5)

def swap(p, q):
    1 t = p
    2 p = q
    3 q = t
swap(p, q)
```



Heap Space



Global Space

