

Heap/Stack Diagram

Using the style of heap/stack diagram introduced in Chapter 7, show the state of both the heap and the stack at the point in the computation indicated by the arrow in the following code, where the `Rational` class is the one defined in Chapter 6.

```
public void run() {  
    Rational r = new Rational(1, 2);  
    r = raiseToPower(r, 3);  
    println("r ^ 3 = " + r);  
}
```

```
private Rational raiseToPower(Rational x, int n) {  
    Rational result = new Rational(1);  
  
    for (int i = 0; i < n; i++) {  
        result = result.multiply(x);  
    }  
    return result;  
}
```

<----- Diagram: Indicate which values in the heap are garbage at this point in the calculation.

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```

Diagram: Indicate which values in the heap are garbage at this point in the calculation.

Stack		
i	3	FFB0
Result	1080	FFB4
n	3	FFB8
x	1000	FFB8
raiseToPower(Rational x, int n)		
r	1000	FFC0
Rational(1,2)		

Heap		
	1000	
num	1	
den	2	
	1020	G A R B A G E
num	1	
den	1	
	1040	
num	1	
den	2	
	1060	G A R B A G E
num	1	
den	4	
	1080	
num	1	
den	8	