



CS 149

Professor: Alvin Chao



Review of Java Primitive Types

Java Primitive Types

Keyword	Size	Min Value	Max Value
byte	1 byte	-128	127
short	2 bytes	-32,768	32,767
int	4 bytes	-2^{31}	$2^{31} - 1$
long	8 bytes	-2^{63}	$2^{63} - 1$
float	4 bytes	$\pm 3.4 \times 10^{-38}$	$\pm 3.4 \times 10^{38}$
double	8 bytes	$\pm 1.7 \times 10^{-308}$	$\pm 1.7 \times 10^{308}$
boolean	Depends on JVM	false	true
char	2 bytes	'\u0000'	'\uffff'



Variable Assignments

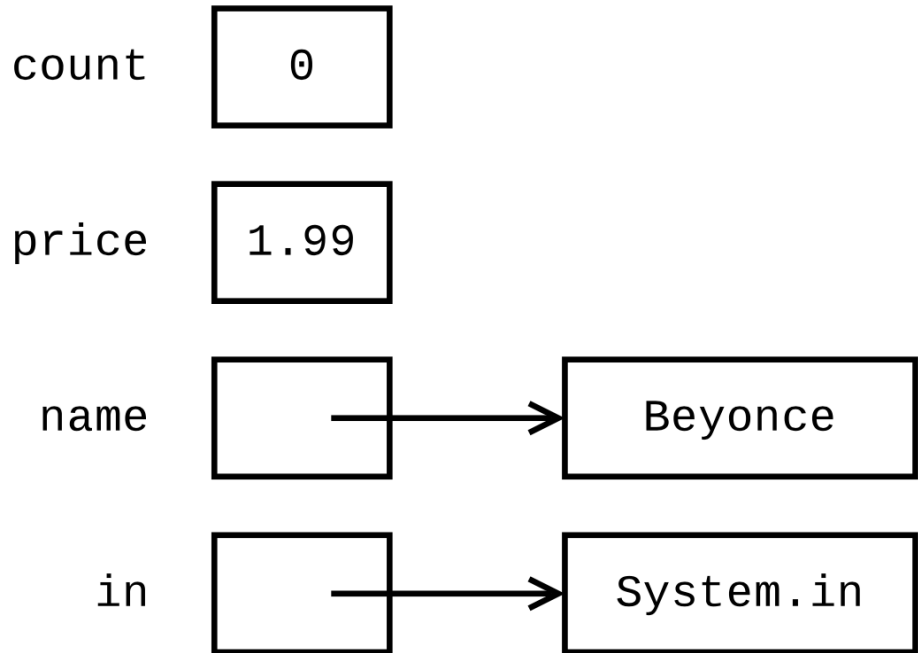
```
byte miles;  
short minutes;  
int checking;  
long days;  
float total;  
double sum;  
boolean flag;  
char letter;
```

```
checking = 56000;  
total = 0;  
sum = total;  
total = sum;  
checking = miles;  
sum = checking;  
flag = minutes;  
days = '0';
```

Which of these is not allowed?

Reference Types 1

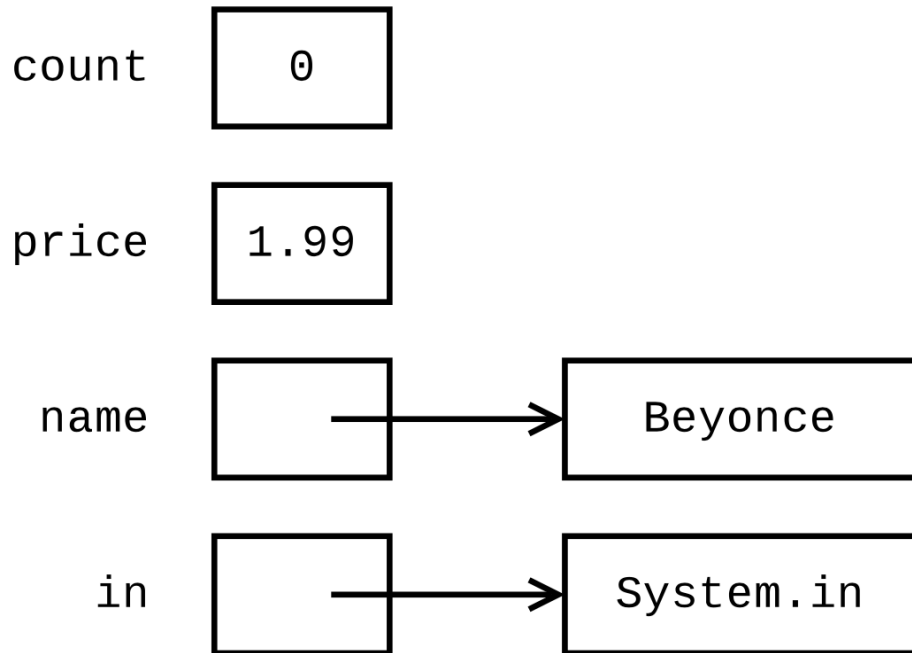
```
int count;  
double price;  
String name;  
Scanner in;  
  
count = 0;  
price = 1.99;  
name = "Beyonce";  
in = new Scanner(System.in);
```



- What are the reference types in the example above?
- What is the difference between primitive and reference type names?
- Variables in Java can use at most eight bytes of memory. The values "Beyonce" and System.in cannot be stored directly in the memory locations for name and in.
- What is the value of the variable count? What is the value of the variable price?

Reference Types 2

```
int count;  
double price;  
String name;  
Scanner in;  
  
count = 0;  
price = 1.99;  
name = "Beyonce";  
in = new Scanner(System.in);
```



- What is the value of the variable name?
- What is the value of the variable in?
- Carefully explain what it means to assign one variable to another. For example, what does the statement `price = count;` do in terms of memory?



Ref Type Model

- Draw a memory diagram for the following code.
- ```
int width;
double score;
Scanner input;
String first;
String other;
width = 20;
score = 0.94;
input = new Scanner(System.in);
first = "Taylor";
score = width;
other = first;
```
- What is the output of the following statements after running the code above? Explain your answer using the diagram.
- ```
first = "Swift";  
System.out.println(other);
```

- **Acknowledgements**
- Parts of this activity are based on materials developed by Helen Hu and Urik Halliday, modified by Chris Mayfield and Nathan Sprague, and licensed under CC BY-NC 4.0 International

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