Processing Input, Parameters, and Return Values

CSC 116 – Section 002

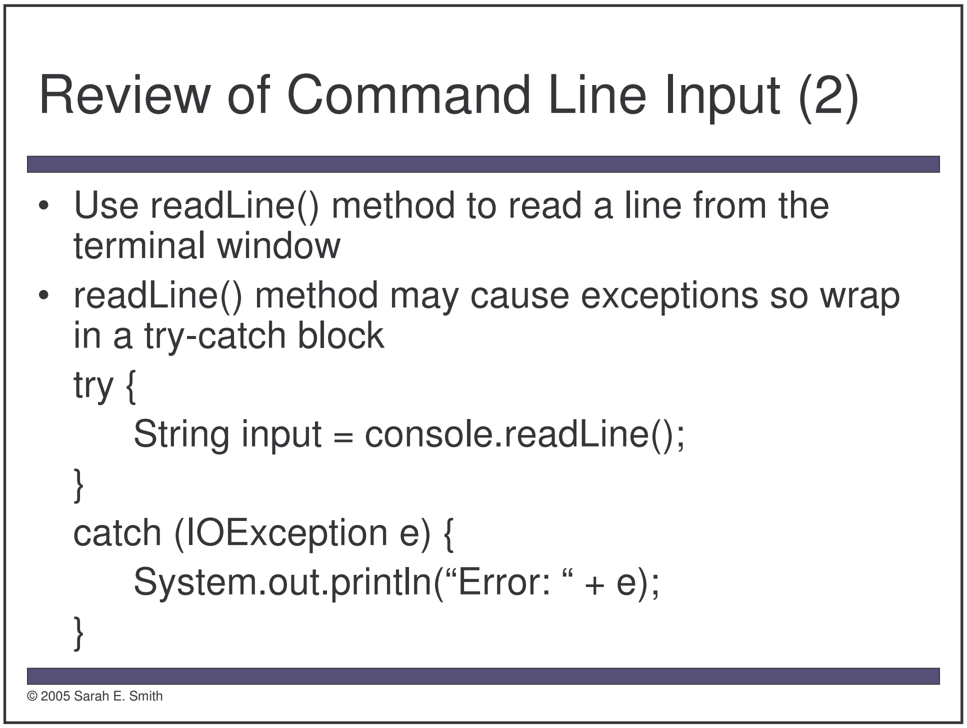
March 14, 2005

Review of Command Line Input

- Use BufferedReader and InputStreamReader classes to read input
- Use System.in to specify that input comes from standard input
- Syntax:

BufferedReader console =

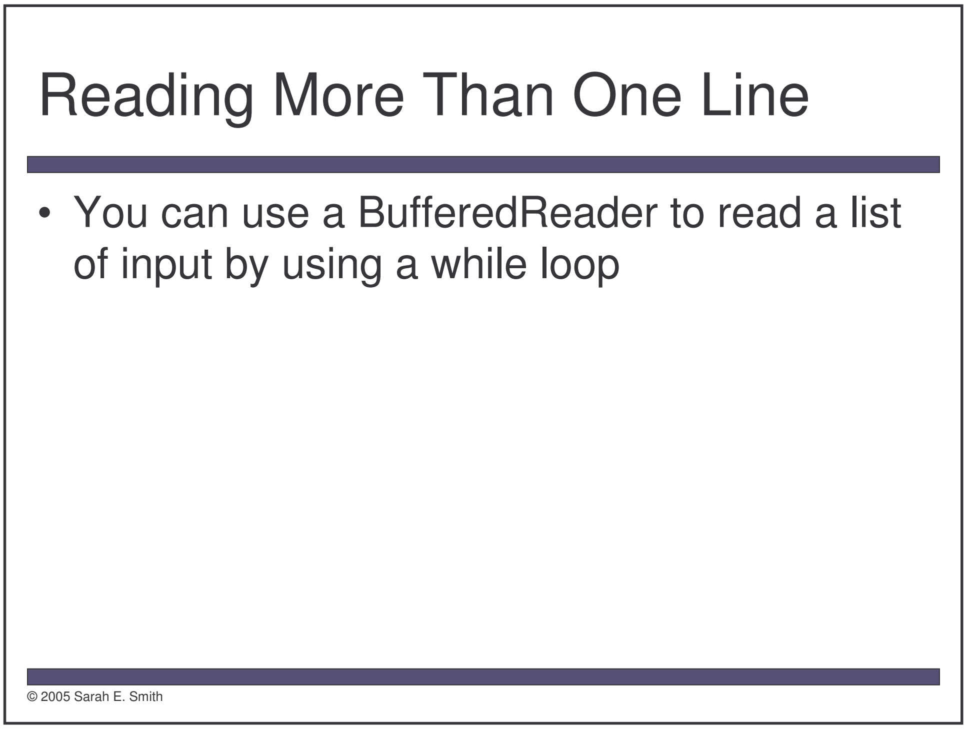
new BufferedReader(new InputStreamReader(System.in));



Review of Command Line Input (2)

- Use readLine() method to read a line from the terminal window
- readLine() method may cause exceptions so wrap in a try-catch block

```
try {
     String input = console.readLine();
}
catch (IOException e) {
     System.out.println(“Error: “ + e);
}
```



Reading More Than One Line

- You can use a BufferedReader to read a list of input by using a while loop

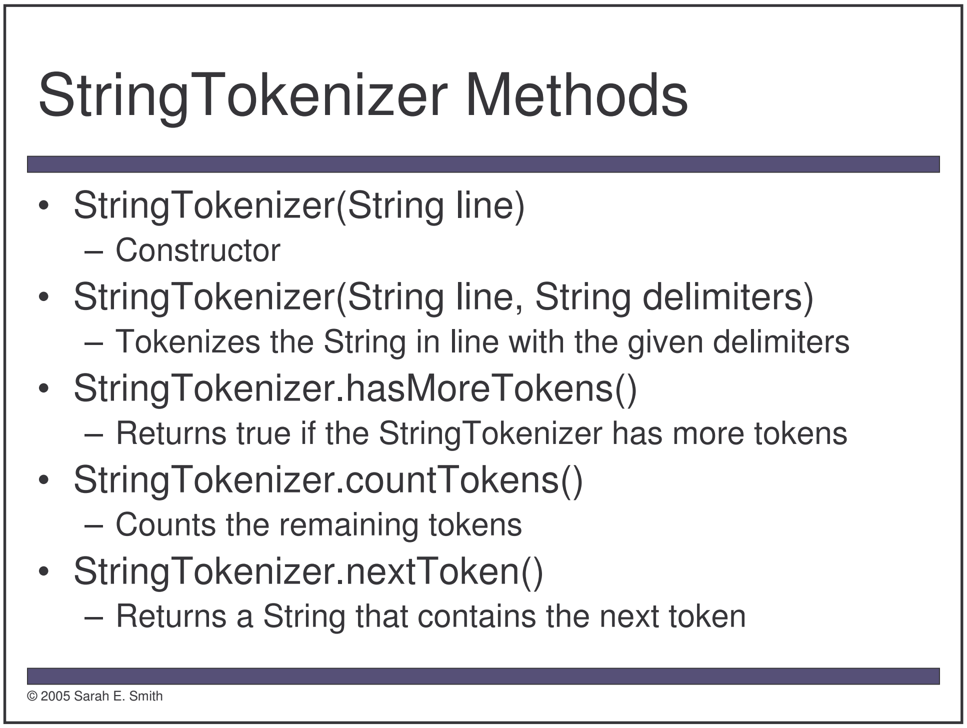
Reading More Than One Line (2)

- Ex:

```
BufferedReader console = new BufferedReader(new
      InputStreamReader(System.in));
boolean done = false;
while (!done) {
      String line = console.readLine();
      if (line == null)
            done = true;
      else
            System.out.println(line);
}
```

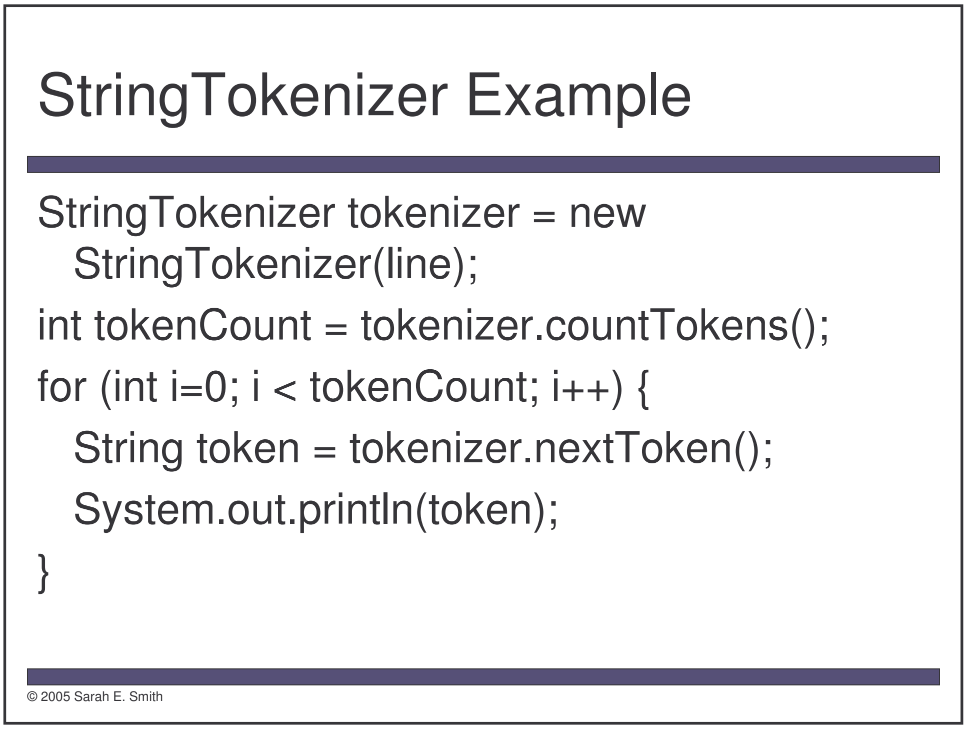
StringTokenizer

- Sometimes you may want to process the input of a string by looking at pieces of it
- The StringTokenizer class allows you to break apart a string on a delimiter
  - Default delimiter is a space
  - You may specify any number of delimiters that you want
- Import java.util.StringTokenizer to use



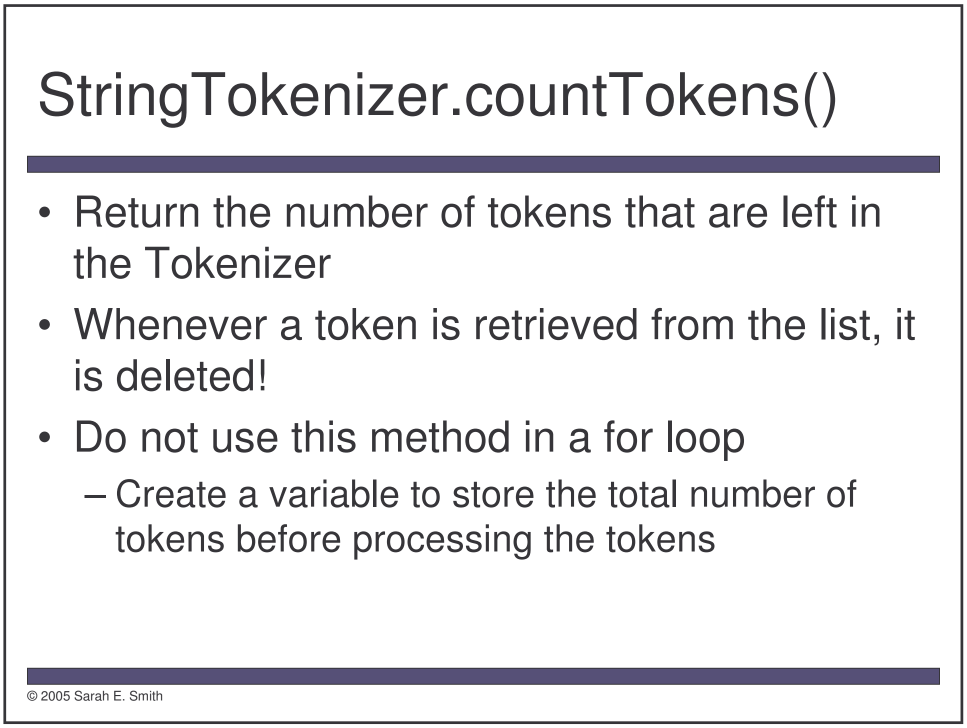
StringTokenizer Methods

- StringTokenizer(String line)
  - Constructor
- StringTokenizer(String line, String delimiters)
  - Tokenizes the String in line with the given delimiters
- StringTokenizer.hasMoreTokens()
  - Returns true if the StringTokenizer has more tokens
- StringTokenizer.countTokens()
  - Counts the remaining tokens
- StringTokenizer.nextToken()
  - Returns a String that contains the next token



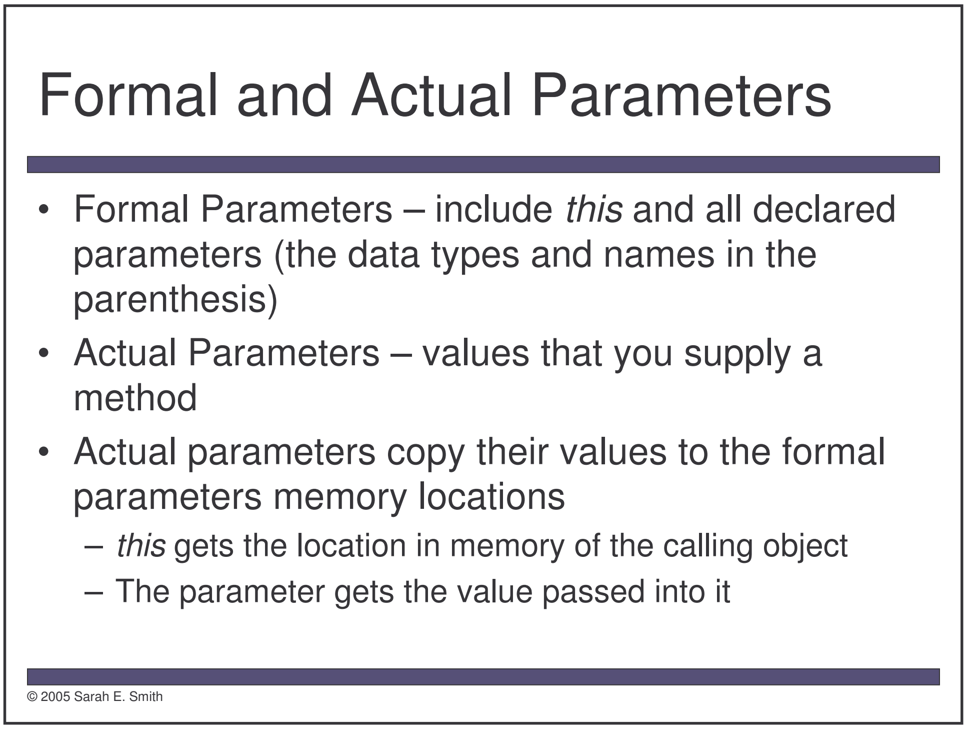
StringTokenizer Example

```
StringTokenizer tokenizer = new
   StringTokenizer(line);
int tokenCount = tokenizer.countTokens();
for (int i=0; i < tokenCount; i++) {
   String token = tokenizer.nextToken();
   System.out.println(token);
}
```



StringTokenizer.countTokens()

- Return the number of tokens that are left in the Tokenizer
- Whenever a token is retrieved from the list, it is deleted!
- Do not use this method in a for loop
  - Create a variable to store the total number of tokens before processing the tokens



Formal and Actual Parameters

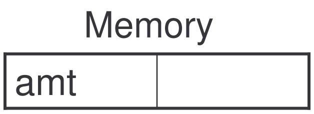
- Formal Parameters – include *this* and all declared parameters (the data types and names in the parenthesis)
- Actual Parameters – values that you supply a method
- Actual parameters copy their values to the formal parameters memory locations
  - *this* gets the location in memory of the calling object
  - The parameter gets the value passed into it

Return Statement

- The return statement causes an immediate exit.
- If a return statement is reached, the code after it will not be executed!
- Methods that do not contain an explicit return statement return back to the calling line when all the code has been executed.

Execution Flow Example

```
amt=yConvert.fromD(200); → public double
                              fromDollar(double d) {
                              double amt, fee;
                              fee = er – fr;
                              amt = d * fee;
                              return amt;
                           }
```



Execution Flow Example

```
amt=yConvert.fromD(200);
```

Memory

amt	

d	200.0
amt	
fee	

```
public double
   fromDollar(double d) {
   double amt, fee;
   fee = er – fr;
   amt = d * fee;
   return amt;
}
```

Execution Flow Example

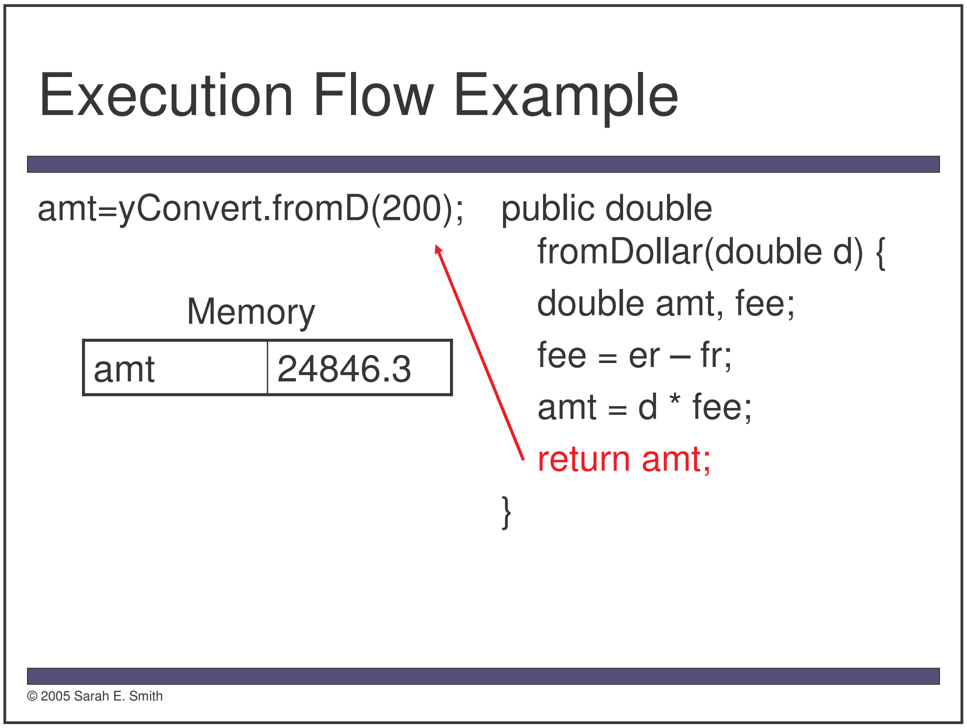
```
amt=yConvert.fromD(200);
```

Memory

amt	

d	200.0
amt	24846.3
fee	124.2315

```
public double
   fromDollar(double d) {
   double amt, fee;
   fee = er – fr;
   amt = d * fee;
   return amt;
}
```



Execution Flow Example

```
amt=yConvert.fromD(200);
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Memory

amt	24846.3

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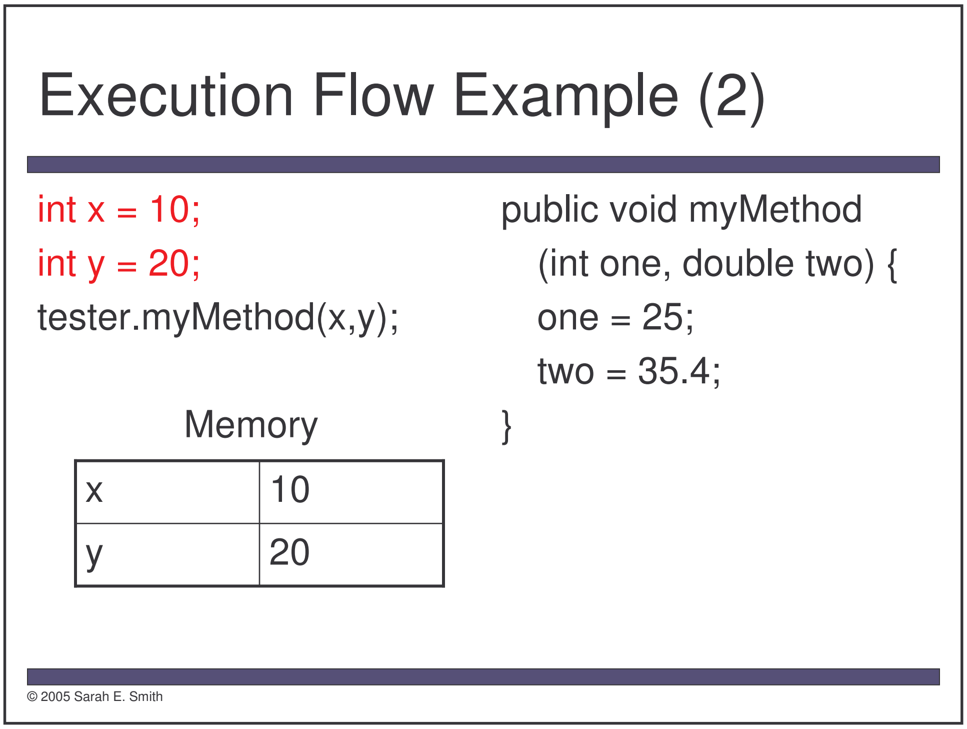

Execution Flow Example (2)

```
int x = 10;
int y = 20;
tester.myMethod(x,y);
```

Memory

x	10
y	20

```
public void myMethod
   (int one, double two) {
   one = 25;
   two = 35.4;
}
```

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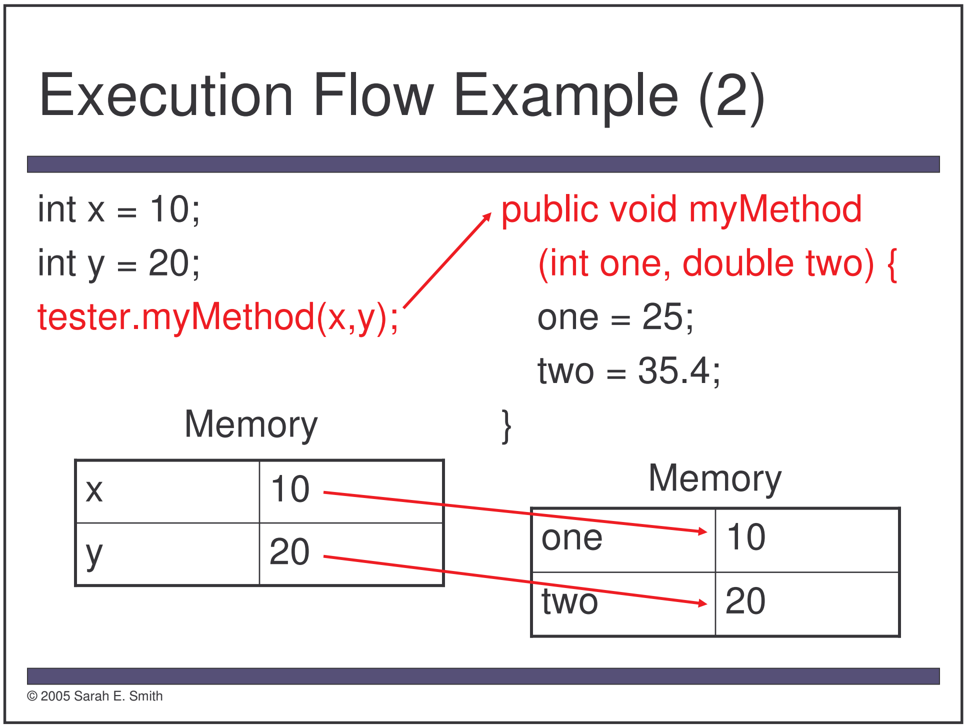

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```

```
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    two = 35.4;
}
```
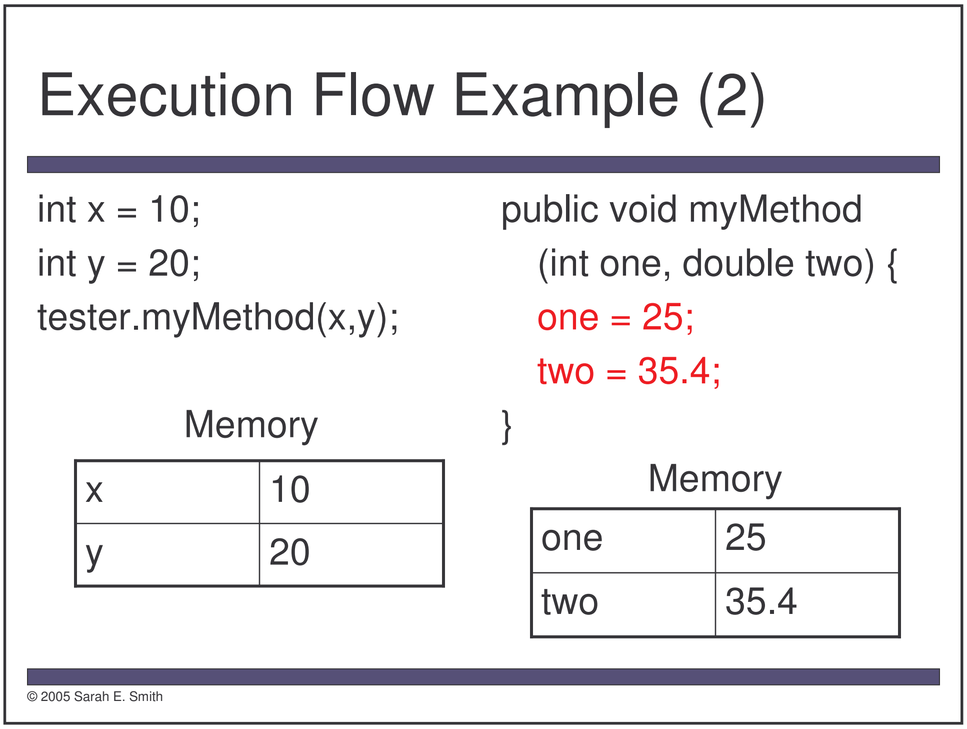

Memory

x	10
y	20

Memory

one	10
two	20



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}
```

Memory

x	10
y	20

Memory

one	25
two	35.4

Execution Flow Example (2)

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int x = 10;
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tester.myMethod(x,y);
```

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public void myMethod
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Memory

x	10
y	20

References

- Jason Schwarz's Lecture 14 and 15 slides: http://courses.ncsu.edu/csc116/
- Example of execution flow from Chapter 4.4 in Wu p 172 and 174