1. Log in
2. Today We Begin Unit 2
   - Scanner Input & Decimal Formatting
   - Various If Statements
   - For and While Loops
   - Recursion

Oct 16-7:52 AM

DecimalFormat - Formatting Numbers

```
DecimalFormat formatMachine = new DecimalFormat("$###.00");
```

REQUIRED
The name of the "decimal formatting agent" in the JAVA library that you are "retrieving"!

Oct 16-8:37 AM

```
DecimalFormat formatMachine = new DecimalFormat("$###.00");
```

ANY NAME YOU WANT
This is the name of the decimal formatting object that we are actually creating!

Oct 16-8:40 AM

```
DecimalFormat formatMachine = new DecimalFormat("$###.00");
```

REQUIRED
Tells JAVA to create a new decimal formatting object ... think of it as making a formatting machine called "formatMachine"

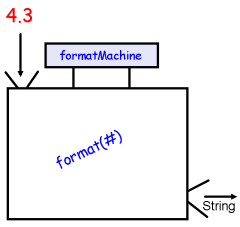
Oct 16-8:40 AM

```
DecimalFormat formatMaching = new DecimalFormat("$###.00");
```

PARAMETER PASSED TO THE FORMATTER
$ - Print me a $ sign at the beginning, no matter what!
# - If there is a number there, print it!
0 - If there isn't a number there, I want to see a 0

* Notice that DecimalFormat takes in String variables

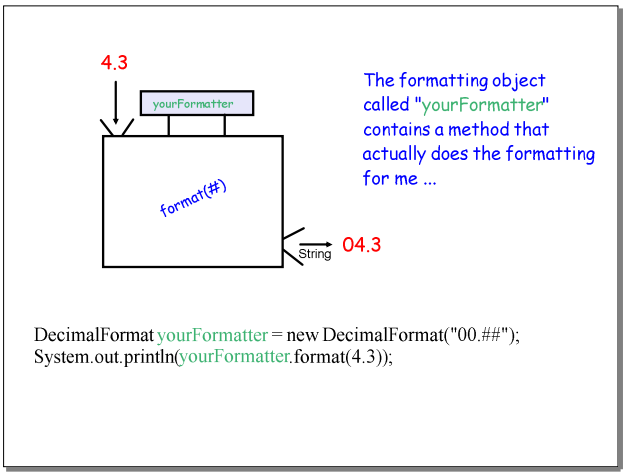
Oct 16-8:42 AM



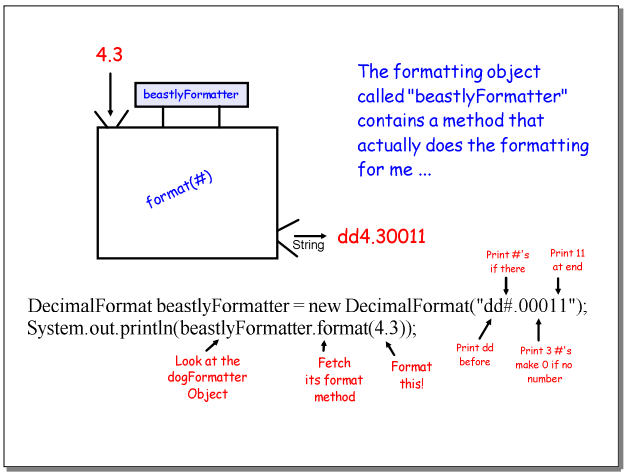
The formatting object called "formatMachine" contains a method that actually does the formatting for me ...

```
DecimalFormat formatMachine = new DecimalFormat("$###.00");
System.out.println(formatMachine.format(4.3));
```

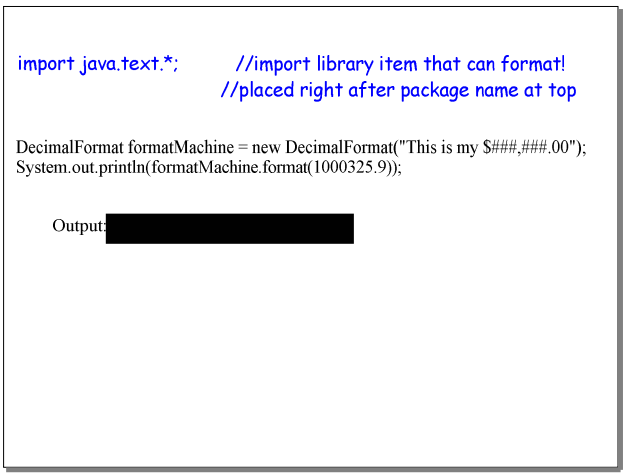
Oct 16-8:43 AM



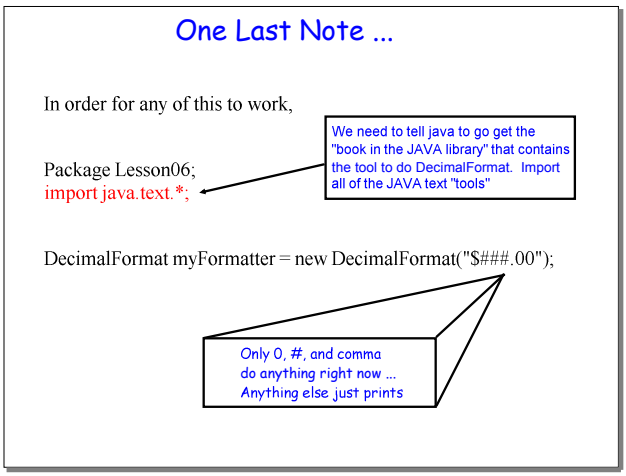
Oct 16-8:45 AM



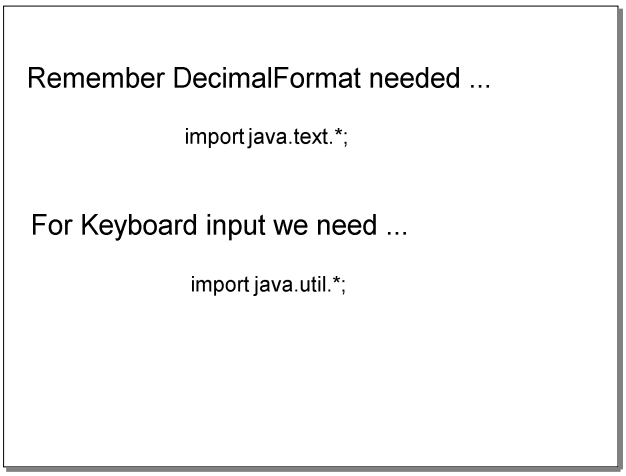
Oct 16-8:46 AM



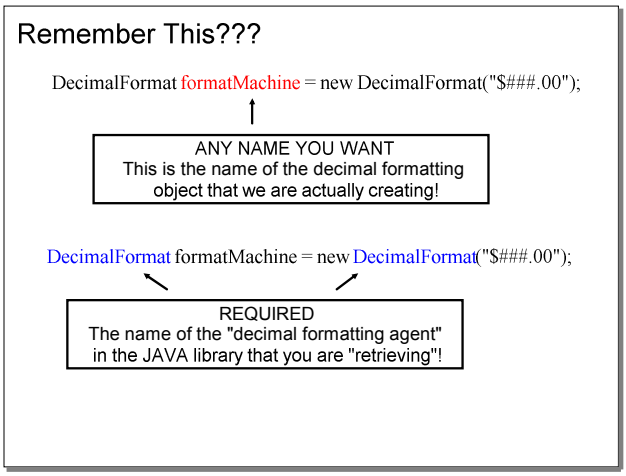
Oct 16-9:13 AM



Oct 16-8:48 AM



Oct 16-9:12 AM



Oct 16-9:19 AM

To get keyboard input, we need to know ...

```
Scanner myKBreader = new Scanner(System.in);
```

ANY NAME YOU WANT
This is the name of the Scanner object that we are actually creating!

```
Scanner yourKBreader = new Scanner(System.in);
```

REQUIRED
The name of the "type of agent" in the JAVA library that you are "retrieving"!

Oct 16-9:19 AM

To get keyboard input, we need to know this ...

```
Scanner myKBreader = new Scanner(System.in);
```

REQUIRED
Tells JAVA to create a new Scanner object ... think of it as making a scanning machine called "myKBreader"

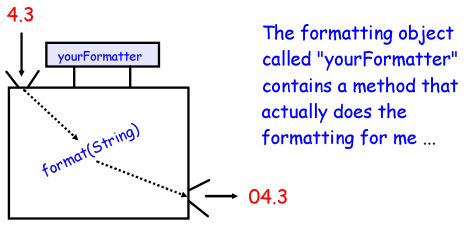
```
Scanner myKBreader = new Scanner(System.in);
```

PARAMETER PASSED TO THE SCANNER
We are scanning and passing whatever the system takes in!

* Notice that Scanner takes in anything! (int, double, String ...)

Oct 16-9:20 AM

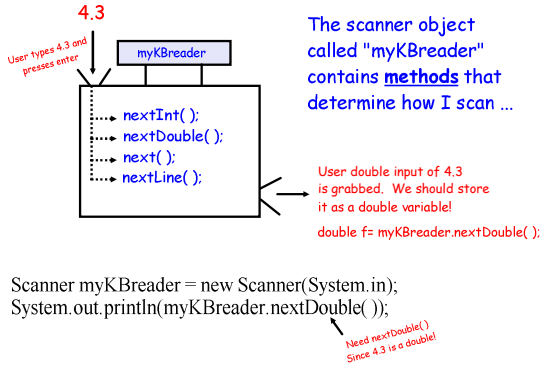
Remember This???



The formatting object called "yourFormatter" contains a method that actually does the formatting for me ...

```
DecimalFormat yourFormatter = new DecimalFormat("00.##");
System.out.println(yourFormatter.format(4.3));
```

Oct 16-9:21 AM



The scanner object called "myKBreader" contains **methods** that determine how I scan ...

User double input of 4.3 is grabbed. We should store it as a double variable!

```
double f= myKBreader.nextDouble( );
```

```
Scanner myKBreader = new Scanner(System.in);
System.out.println(myKBreader.nextDouble( ));
```

Need nextDouble( ) Since 4.3 is a double!

Oct 16-9:21 AM

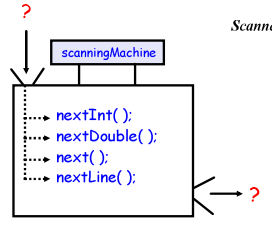
Most Basic Scanner Program ...

```
Scanner scanningMachine= new Scanner(System.in);
System.out.println("Type your favorite integer: ");
int yourNumber = scanningMachine.nextInt();
System.out.println("Your number: " + yourNumber);
```

*** Analyze this line-by-line ***
(next slide)

Oct 16-9:22 AM

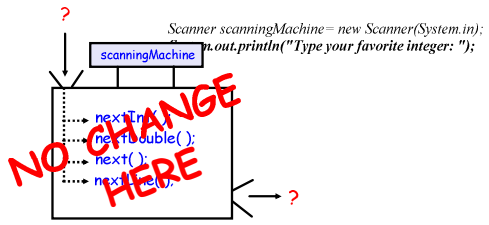
Step 1: Build the Scanner Object ...




```
Scanner scanningMachine= new Scanner(System.in);
```

Oct 16-9:23 AM

Step 2: Output a request for user input ...



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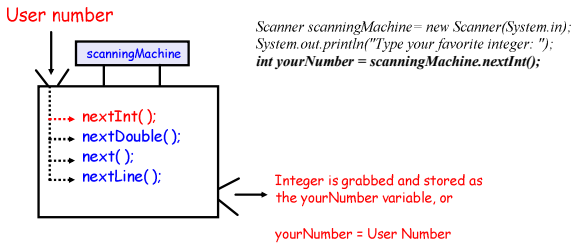
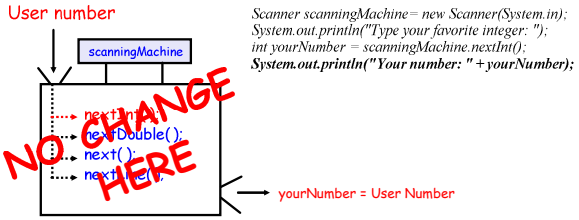
Step 3: Scan the user integer that is entered ...



Oct 16-9:24 AM

Step 4: Output is displayed ...



Oct 16-9:24 AM

Scanner Summary ...

```
import java.util.*;                    //required to access scanner "builder"
Scanner scanMonster = new Scanner(System.in);          //builds scanner

scanMonster.nextInt( );          // grabs an integer
scanMonster.nextDouble( );       // grabs a double
scanMonster.next( );             // grabs the next "item" before whitespace
scanMonster.nextLine( );         // grabs everything entered
```

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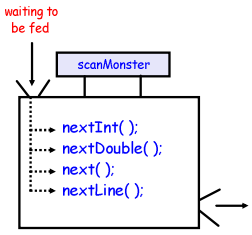

Scanner scanMonster = new Scanner(System.in);

Oct 16-9:26 AM

Some final examples to analyze ...

```
Scanner numberEater = new Scanner(System.in);
System.out.println("Enter a number (no decimals): ");
int b = numberEater.nextInt( );
b = 2*b;
System.out.println("I changed your number and got " + b);
```

* note: if the user enters a double, an error occurs ... doubles can not be stored as integers!

If the user input is 5, the output will be: I changed your number and got 10

Oct 16-9:27 AM

Example #2 ...

```
Scanner souperCool = new Scanner(System.in);
System.out.println("Enter a decimal number: ");
double a = souperCool.nextDouble( );
a += 3;
System.out.println("I changed your number and got " + a);
```

* note: if the user enters an integer, it is simply converted to a double (as usual).

If the user input is 5.1, the output will be: I changed your number and got 8.1

Oct 16-9:27 AM

Example #3 ...

```
Scanner takeAll = new Scanner(System.in);
System.out.println("Type a one sentence thought: ");
String userThought = takeAll.nextLine( );
System.out.println("Your thought: \"" + userThought + "\"");
```

* note: nextLine( ) grabs **all** of the user input as one big string

If user input is hello world, the output will be: Your thought: "hello world"

Oct 16-9:27 AM

Example #4 ...

```
Scanner takeIt= new Scanner(System.in);
System.out.println("Type a one sentence thought: ");
String firstThought = takeIt.next( );
System.out.println("Your 1st thought was: \"" + firstThought+ "\"");
```

* note: next( ) grabs all of the user input until the first "whitespace"

If user input is My name is Me, the output will be: Your 1st thought was: "My"

Oct 16-9:28 AM

Things to do ...

1. Read and complete the Decimal Formatting WS
2. Read and complete the Scanner Input WS

Oct 16-9:12 AM