1. Log in
2. Today We Begin Unit 4
   - Writing Methods (creating your own!)
   - Recursion
   - Classes and Objects

Oct 16-7:52 AM

So far this has been all of our programs ...

```
package Lesson00;

public class className
{
   public static void main (String args[])
   {

      Our program code goes here...

   }
}
```

Nov 4-7:21 AM

An important review of this structure ...

```
package Lesson00;

public class className
{
   public static void main (String args[])
   {

      Our program code goes here...

   }
}
```

The package (or folder) that our class is located in!

Nov 4-7:21 AM

An important review of this structure ...

```
package Lesson00;

public class className
{
   public static void main (String args[])
   {

      Our program code goes here...

   }
}
```

The package (or folder) that our class is located in!

Public - Open to be used by all items in the project.
Private - "Limited" to usage only in the current package.

Nov 4-7:21 AM

An important review of this structure ...

```
package Lesson00;

public class className
{
   public static void main (String args[])
   {

      Our program code goes here...

   }
}
```

The package (or folder) that our class is located in!

Public - Open to be used by all items in the project.
Private - "Limited" to usage only in the current package.

class - Defines the item as a JAVA class (program)
className - Name of the JAVA class

Nov 4-7:21 AM

An important review of this structure ...

```
package Lesson00;

public class className
{
   public static void main (String args[])
   {

      Our program code goes here...

   }
}
```

Public/Private
Public - Open to use
Private - "hidden"

static - for now, think of a static method as a method that does something for the entire class (main does it all!)

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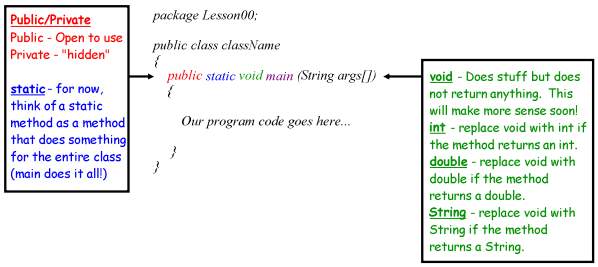
An important review of this structure ...



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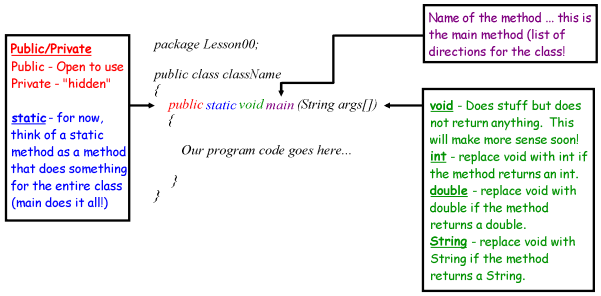
An important review of this structure ...



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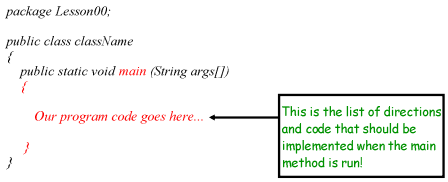
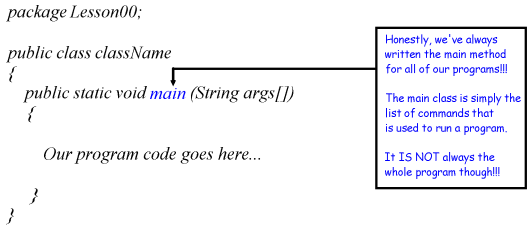
An important review of this structure ...



Nov 4-7:21 AM

So far this has been all of our programs ...



Nov 4-7:21 AM

A few notes about user-defined methods ...

1. This is called the method header:

```
public static int addEm(int n)
```

Nov 6-7:24 AM

A few notes about user-defined methods ...

1. This is called the method header:

```
public static int addEm(int n)
```

Access Specifier
Tells which other methods can access this method.
Public - All other methods
Private - Only methods in its class
Static - More on this later!

Nov 6-7:24 AM

A few notes about user-defined methods ...

1. This is called the method header:

```
public static int addEm(int n)
```

Return Type
What type of variable gets returned?
int- Returns and integer.
double - Returns a double.
String - Returns a String.
boolean - Returns either true or false.
void - Performs actions but returns nothing!

Nov 6-7:26 AM

A few notes about user-defined methods ...

1. This is called the method header:

```
public static int addEm(int n)
```

Method Name
What is it called!

Nov 6-7:27 AM

A few notes about user-defined methods ...

1. This is called the method header:

```
public static int addEm(int n)
```

Parameter(s)
What information will the method take in and use?
(needs data type and name)

Nov 6-7:27 AM

Let's write a class ... myFirstCalculator

- Ask the user for 2 numbers (one at a time)
- Display a numbered menu
  >1. Add the numbers
  >2. Mulitply the numbers
- Ask the user which they would like to do
- Use an if-statement to perform the action & display

Nov 4-7:23 AM

```
public class my1stCalculator {
   public static void main(String[] args) {
      Scanner getNumber = new Scanner(System.in);
      System.out.print("Enter the 1st #: ");
      int num1 = getNumber.nextInt();
      System.out.print("Enter the 2nd #: ");
      int num2 = getNumber.nextInt();

      System.out.println(" ");
      System.out.println("1. Add the numbers");
      System.out.println("2. Multiply the numbers");
      System.out.print("Choose an option:");

      int choice = getNumber.nextInt();

      if(choice==1)
         System.out.println(num1+" + "+num2+" = "+(num1+num2));
      else if (choice==2)
         System.out.println(num1+" * "+num2+" = "+(num1*num2));
      else
         System.out.println("Illegal Entry, program will now exit!");
   }
}
```

Set up the scanner and collect the user's two numbers

Nov 4-12:13 PM

```
public class my1stCalculator {
   public static void main(String[] args) {
      Scanner getNumber = new Scanner(System.in);
      System.out.print("Enter the 1st #: ");
      int num1 = getNumber.nextInt();
      System.out.print("Enter the 2nd #: ");
      int num2 = getNumber.nextInt();

      System.out.println(" ");
      System.out.println("1. Add the numbers");
      System.out.println("2. Multiply the numbers");
      System.out.print("Choose an option:");

      int choice = getNumber.nextInt();

      if(choice==1)
         System.out.println(num1+" + "+num2+" = "+(num1+num2));
      else if (choice==2)
         System.out.println(num1+" * "+num2+" = "+(num1*num2));
      else
         System.out.println("Illegal Entry, program will now exit!");
   }
}
```

Display a menu and get the user's choice

Nov 4-12:13 PM

```
public class my1stCalculator {
   public static void main(String[] args) {

      Scanner getNumber = new Scanner(System.in);
      System.out.print("Enter the 1st #: ");
      int num1 = getNumber.nextInt();
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      System.out.println(" ");
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      int choice = getNumber.nextInt();

      if(choice==1)
         System.out.println(num1+" + "+num2+" = "+(num1+num2));
      else if (choice==2)
         System.out.println(num1+" * "+num2+" = "+(num1*num2));
      else
         System.out.println("Illegal Entry, program will now exit!");
   }
}
```

Do the action that the user requests and display answer

Nov 4-12:13 PM

Do you remember this method?

Math.pow(a,b)

Name of the method

What the method needs to work!

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Our first method ...

- Make our own method (mini-program) that adds two numbers for us.
- Once made, we can use this method as our "adding machine" whenever needed
- We need to feed our method 2 numbers
- We need the method to return a number answer

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Here we go ...

- Make our own method (mini-program) called addNumbers

public since we want it to be accessible

```
public addNumbers( )
{

}
```

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Our first method ...

- Make our own method (mini-program) called addNumbers

```
public addNumbers( )
{

}
```

Method name, remember the ( ) signifies its a method

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Our first method ...

- Make our own method (mini-program) called addNumbers

```
public static addNumbers( )
{

}
```

Needs to be a static method since it is going to do something for our class (add 2 numbers)

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Our first method ...

- Make our own method (mini-program) called addNumbers
- We need to feed our method 2 numbers

```
public static addNumbers(int a, int b)
{

}
```

These are called **Parameters** - the items the method needs to take in.

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Our first method ...

- Make our own method (mini-program) called addNumbers
- We need to feed our method 2 numbers
- Make the method return the answer to a+b.

```
public static int addNumbers(int a, int b)
{
    return a+b;
}
```

Tells to return an int value

Basically sends the answer to a+b back (returns)

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So, in summary ...

```
public static int addNumbers(int a, int b)
{
    return a+b;
}
```

Give it 2 integers

It gives you the integer answer to a+b

*** **Special Note**: If you replaced the above ***int*** with ***double*** ... returns a decimal! ***

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How do we implement this method?

```
package unit4;
public class my1stCalculatorMethods {
   public static double addNumbers(int a, int b)
   {
      return a+b;
   }
   public static void main(String[] args) {
      Scanner getNumber = new Scanner(System.in);
      System.out.print("Enter the 1st #: ");
      int num1 = getNumber.nextInt();
      System.out.print("Enter the 2nd #: ");
      int num2 = getNumber.nextInt();
      System.out.println(addNumbers(num1,num2));
   }
}
```

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Things to do ...

* Complete Unit 4 WS 01 Method Structure & Creation

Oct 16-9:12 AM