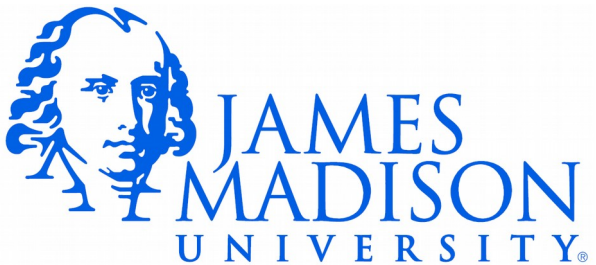
CS139



Anatomy of a Java Program: Comments

- Javadoc comments:

```
/**
 * Application that converts inches to centimeters.
 *
 * @author Chris Mayfield
 * @version 01/21/2014
 */
```

- Everything between /** and */ ignored by compiler
- Used to generate code documentation

Anatomy of a Java Program: Comments

- Block comments are used for text that should *not* be part of the published documentation:

```
/*
   Permission is hereby granted, free of charge, to any
   person obtaining a copy of this software and associated
   documentation files (the "Software"), to deal in the
   Software without restriction.
*/
```

- In-line comments are used for short clarifying statements:

```
// Create a scanner for standard input.
```

Anatomy of a Java Program: Classes

- Java is an object-oriented language (OO)
  - Java classes tie together instructions and data
  - All Java code *must* exist within some class

```
public class ConvertInches {

}
```

- `public` and `class` are keywords: Words that have a special meaning for Java.
  - `public` – (more later)
  - `class` – Create a class with the following name. (Must match the file name)
  - Class names are always captalized
- Braces { and } enclose blocks of code

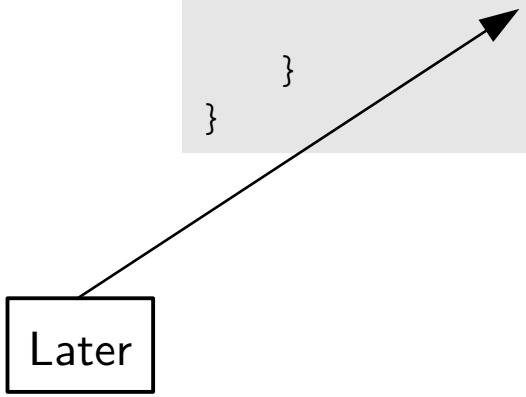
Anatomy of a Java Program: Methods

- Method – named collection of Java statements:

```
public class ConvertInches {

    public static void main(String[] args) {

    }
}
```



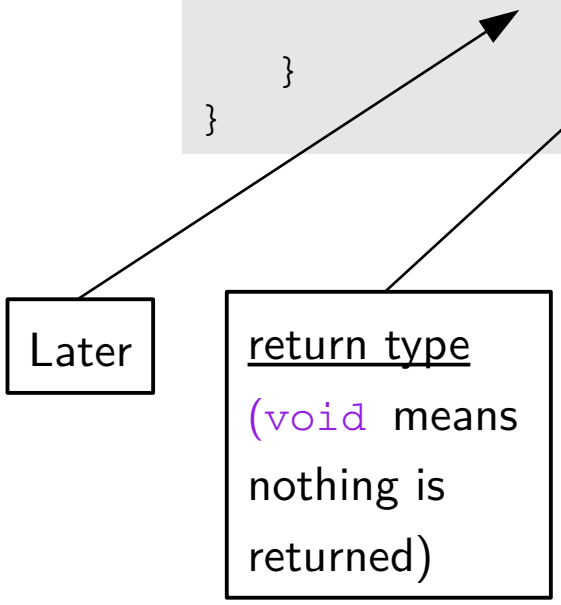
Anatomy of a Java Program: Methods

- Method – named collection of Java statements:

```
public class ConvertInches {

    public static void main(String[] args) {

    }
}
```



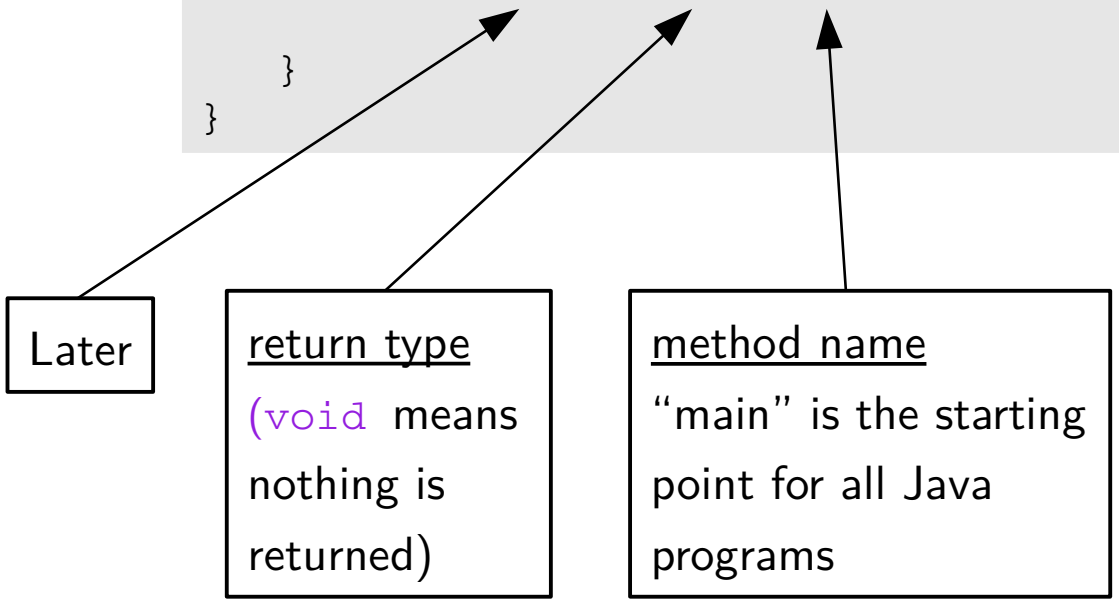
Anatomy of a Java Program: Methods

- Method – named collection of Java statements:

```
public class ConvertInches {

    public static void main(String[] args) {

    }
}
```



Anatomy of a Java Program: Methods

- Method – named collection of Java statements:

```
public class ConvertInches {

    public static void main(String[] args) {

    }
}
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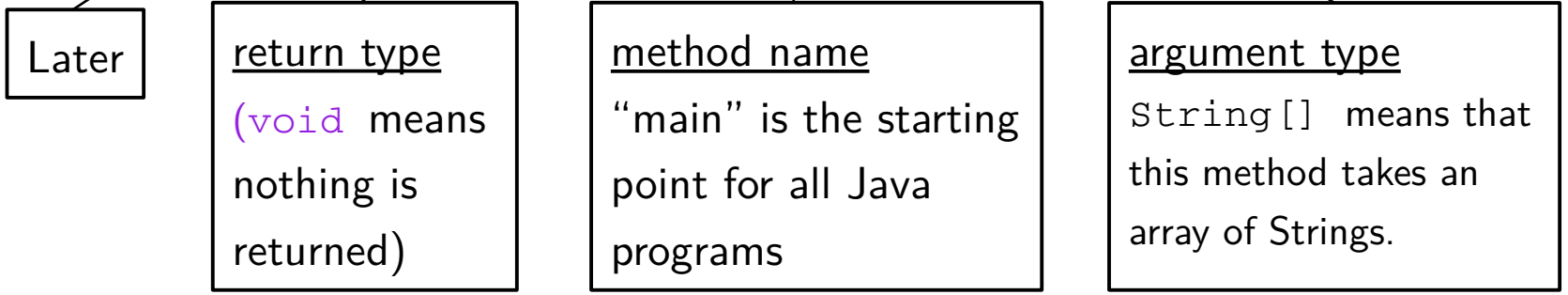
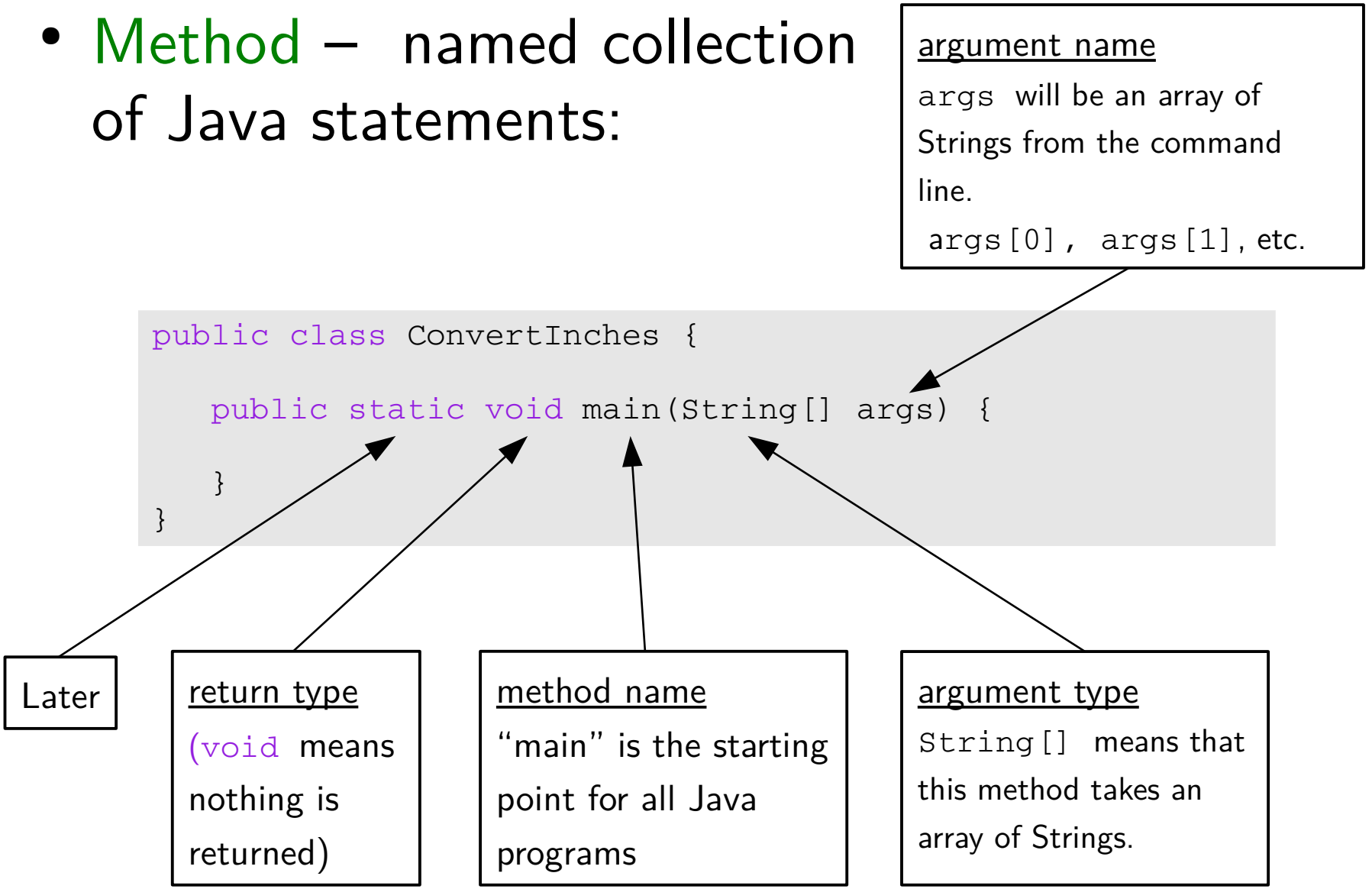


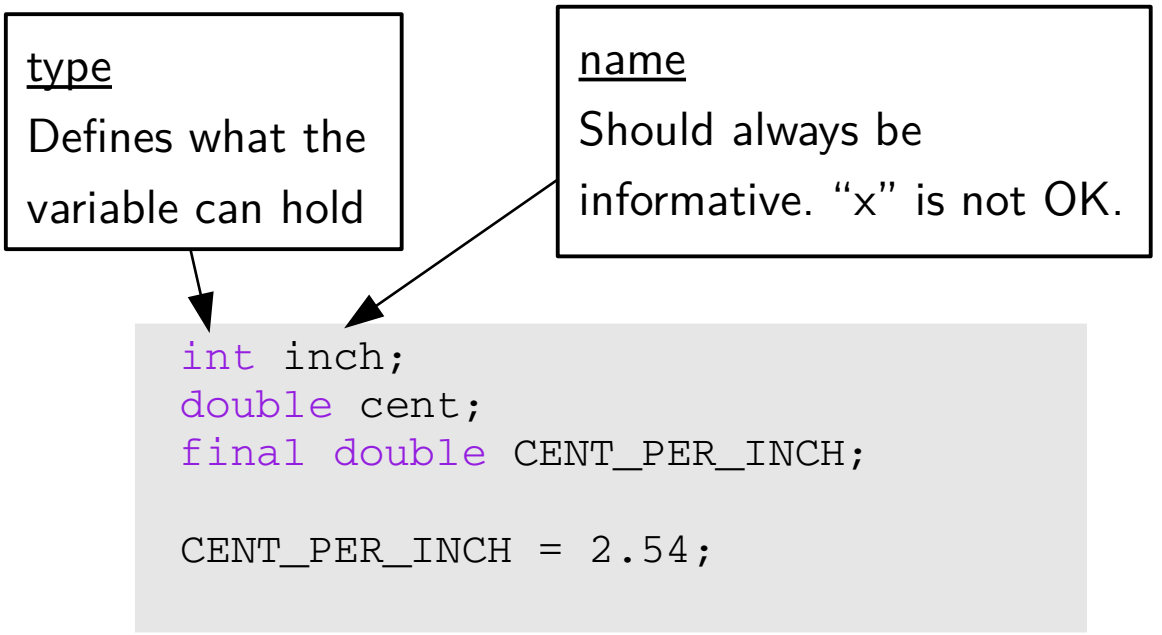
Anatomy of a Java Program: Methods

- Method – named collection of Java statements:



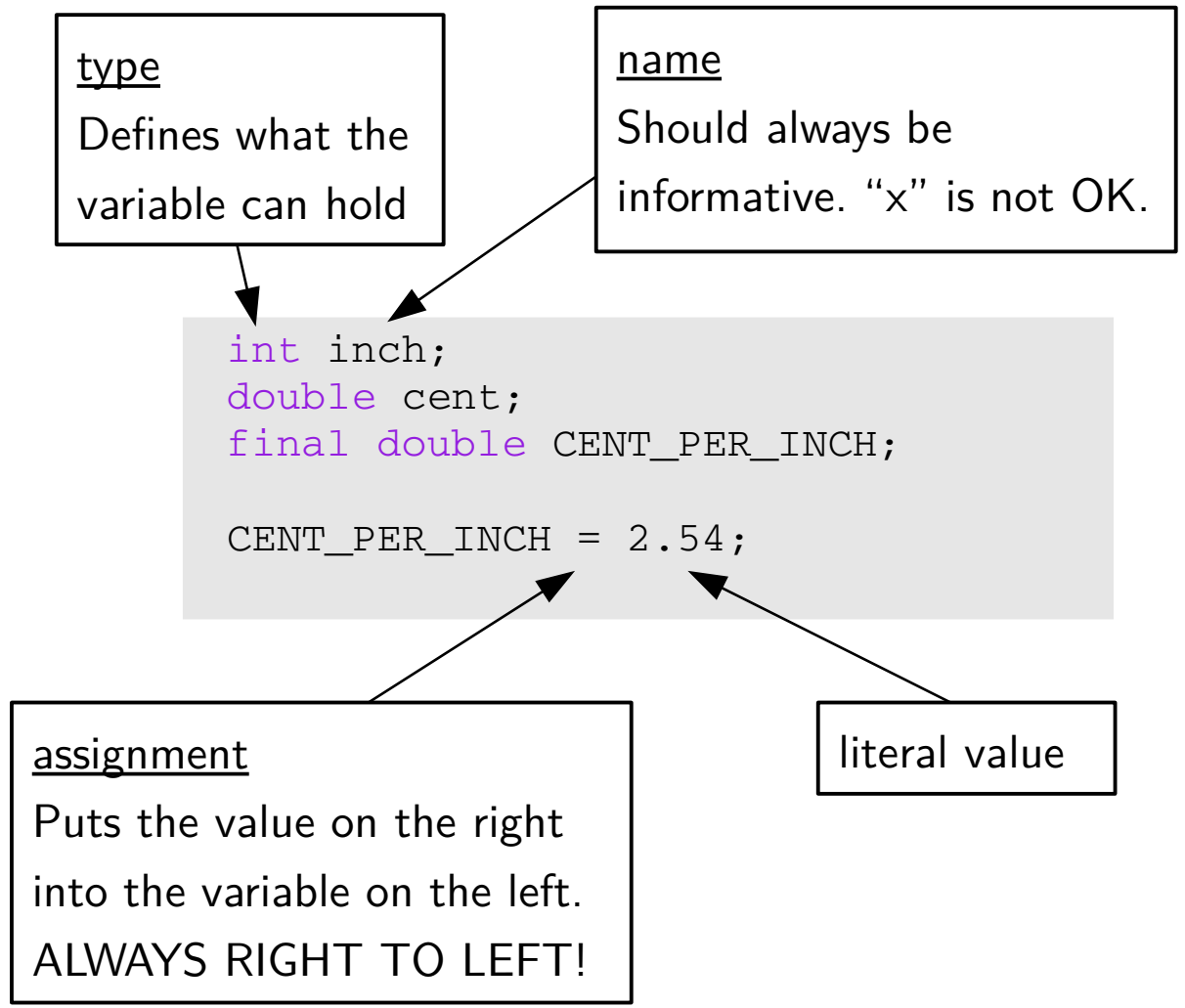
Anatomy of a Java Program: Declaring and Assigning Variables

- variable – named box for storing data:



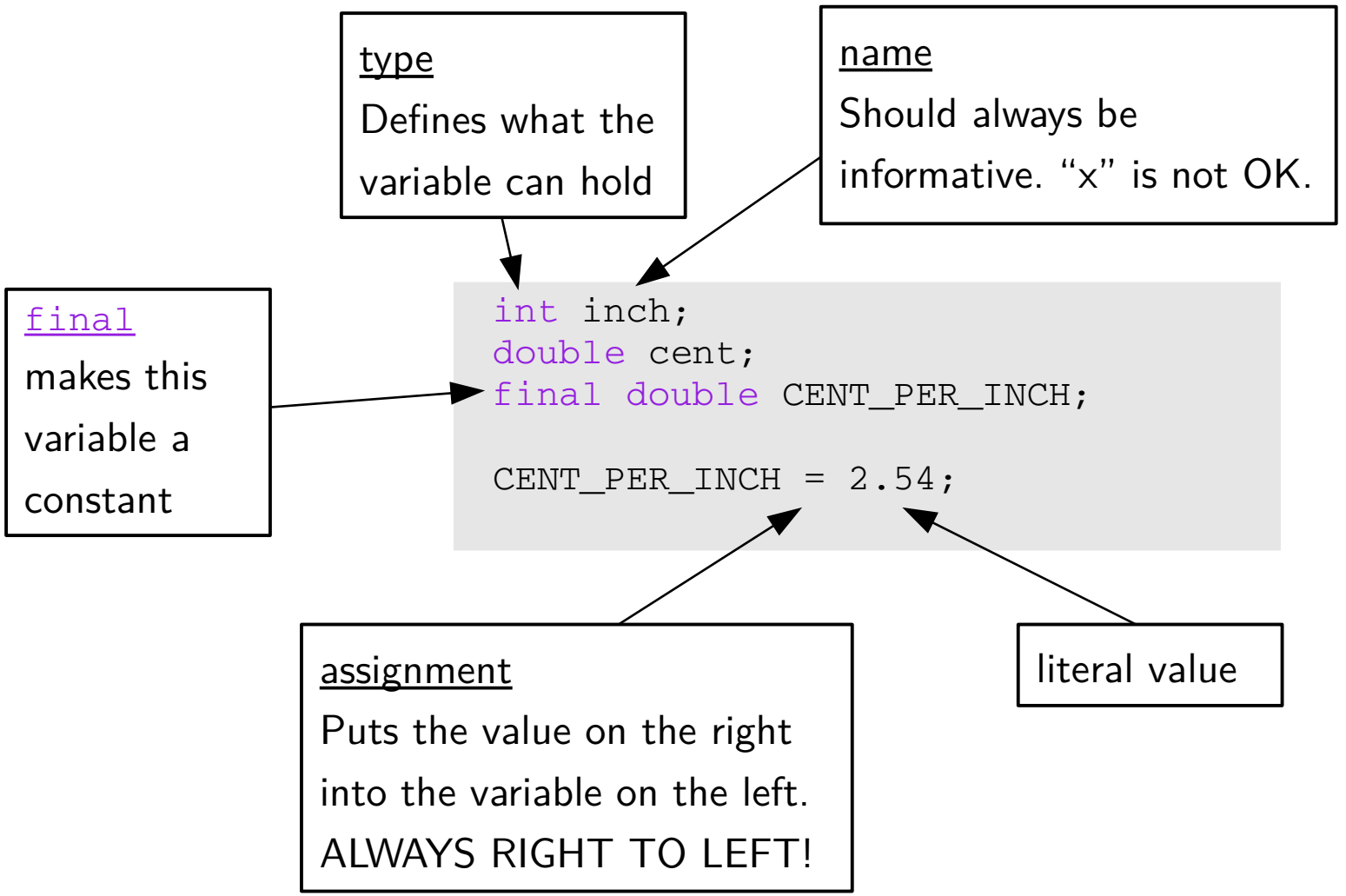
Anatomy of a Java Program: Declaring and Assigning Variables

- variable – named box for storing data:



Anatomy of a Java Program: Declaring and Assigning Variables

- variable – named box for storing data:



Anatomy of a Java Program: Standard Library and Keyboard Input

```
import java.util.Scanner;

/**
* Application that converts inches to
centimeters.
*
* @author Chris Mayfield
* @version 01/21/2014
*/
public class ConvertInches {

   public static void main(String[] args) {
      int inch;
      double cent;
      final double CENT_PER_INCH;
      CENT_PER_INCH = 2.54;

      // Create a scanner for standard input.
      Scanner keyboard;
      keyboard = new Scanner(System.in);

      // Prompt the user and get the value.
      System.out.print("How many inches? ");
      inch = keyboard.nextInt();
```

import

"Brings in" external classes

The `Scanner` class, along with `System.in` are used to read user input from the terminal

Putting it all together...

```
import java.util.Scanner;

/**
* Application that converts inches to centimeters.
*
* @author Chris Mayfield
* @version 01/21/2014
*/
public class ConvertInches {

   public static void main(String[] args) {
      int inch;
      double cent;
      final double CENT_PER_INCH;
      CENT_PER_INCH = 2.54;

      // Create a scanner for standard input.
      Scanner keyboard;
      keyboard = new Scanner(System.in);

      // Prompt the user and get the value.
      System.out.print("How many inches? ");
      inch = keyboard.nextInt();

      // Convert and output the result.
      cent = inch * CENT_PER_INCH;
      System.out.print(inch + "in = ");
      System.out.println(cent + "cm ");
   }

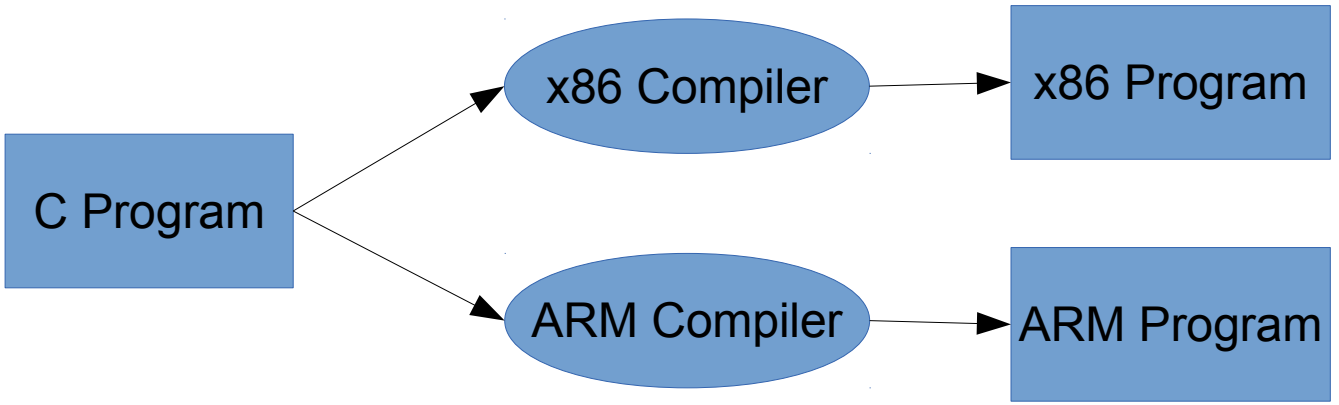
}
```

multiplication

+ joins strings (or adds numbers)

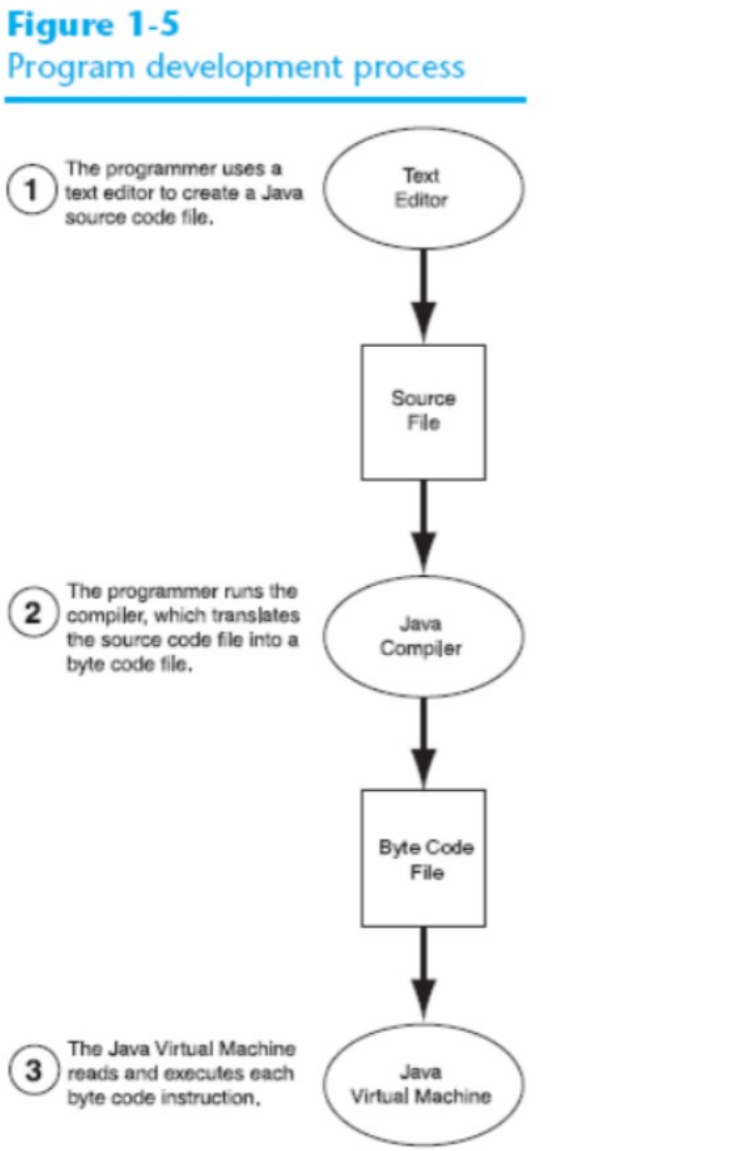
Reminder: Portability

- Most “high-level” languages are considered portable because they can be compiled into machine code for any computer:



Java Compilation

- Byte Code Files are portable because there are JVM's that run on most machines
- The same compiled byte code works on any JVM



Which is Syntactically Correct?

```
public static void main(String[] args)
{
      System.out.println("Hello " + args[0] + "!");
      System.out.println("Welcome to CS139.");
}
```

```
public class Personal {
   public static void main(String[] args)
   {
      System.out.println("Hello " + args[0] + "!");
      System.out.println("Welcome to CS139.");
   }
}
```

```
public class Personal
{
   // public static void main(String[] args)
   {
      System.out.println("Hello " + args[0] + "!");
      System.out.println("Welcome to CS139.");
   }
}
```

Which is Syntactically Correct? (File name is Good.java)

```
public class Welcome {
   public static void main(String[] args)
   {
      String name;
      name = "Bob";
      System.out.println("Hello " + name + "!");
      System.out.println("Welcome to CS139.");
   }
}
```

```
public class Good {
   public static void main(String[] args)
   {
      String name;
      "Bob" = name;
      System.out.println("Hello " + name + "!");
      System.out.println("Welcome to CS139.");
   }
}
```

```
public class Good {
   public static void main(String[] args)
   {
      String name;
      name = "Bob";
      System.out.println("Hello " + name + "!");
      System.out.println("Welcome to CS139.");
   }
}
```

Which is Syntactically Correct?

```
public class Good
   public static void main(String[] args)
   {
      String name;
      name = "Bob";
      System.out.println("Hello " + name + "!");
      System.out.println("Welcome to CS139.");
   }
}
```

```
public class Good {
   public static void main(String[] args)
   {
      String name;
      name = "Bob";
      System.out.println("Hello " + name + "!")
      System.out.println("Welcome to CS139.");
   }
}
```

```
public class Good {
   public static void main(String[] args){
      String name; name = "Bob";
        System.out.println("Hello " + name + "!");
     System.out.println("Welcome to CS139.");}
}
```

If Time...

- Get out some paper.
- Write a complete “Hello world!” program in Java.
- WITHOUT PEEKING!