Input / Output

Scanner class

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Input in Java: the **Scanner** Class

- The **Scanner** class comes with Java.

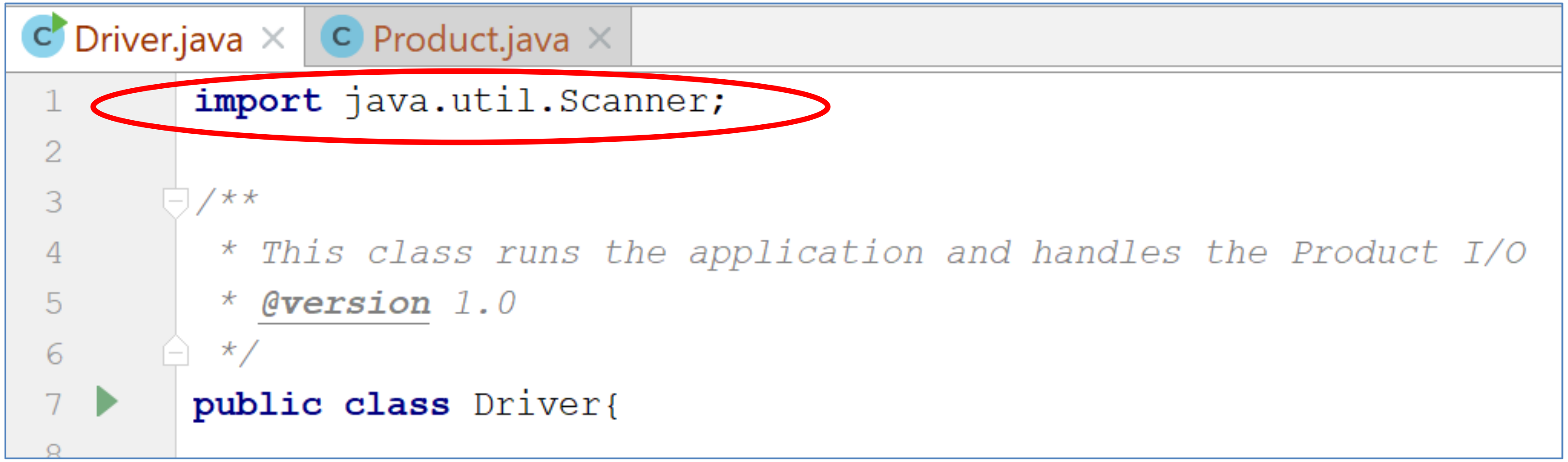
- It allows us to **take in data from the console** / terminal window.

- It is part of the **java.util** package in the Java Application Programming Interfaces (API).

Input in Java: the **Scanner** Class

- In order to use the Scanner class, place the following line as the **first line of code in your file** (i.e. before class declaration):

```
import java.util.Scanner;
```

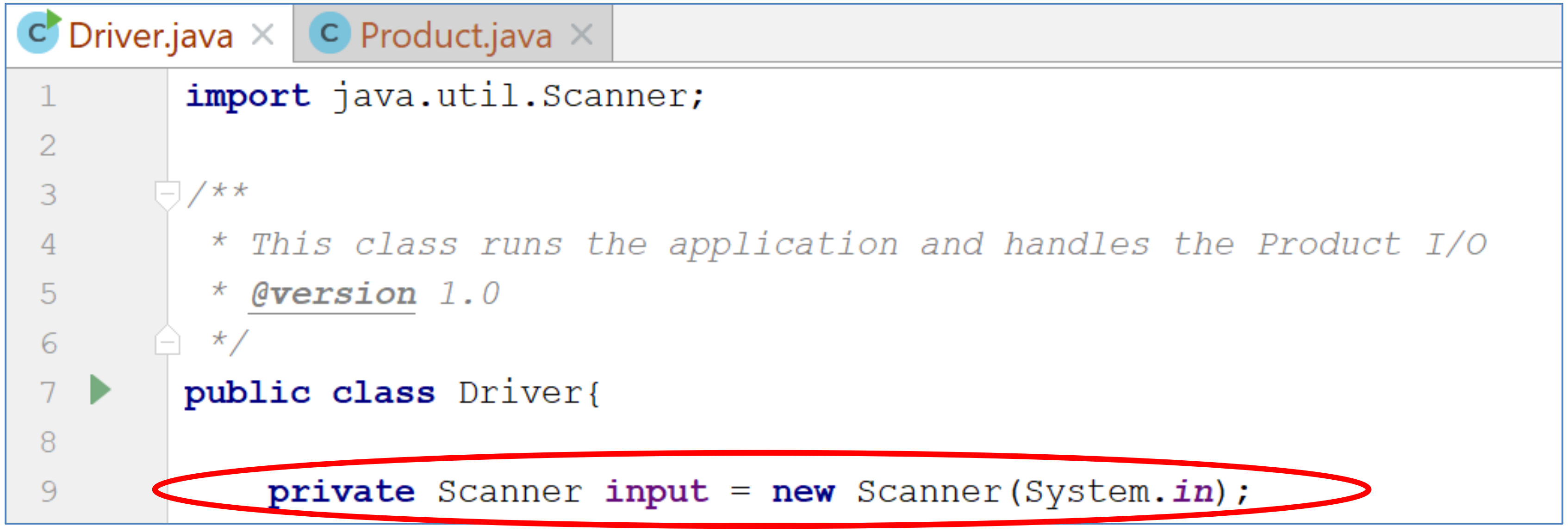


```
import java.util.Scanner;

/**
 * This class runs the application and handles the Product I/O
 * @version 1.0
 */
public class Driver{
```

Input in Java: the **Scanner** Class

- Having imported the **util** package, you will need to write the following instruction in your program.

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

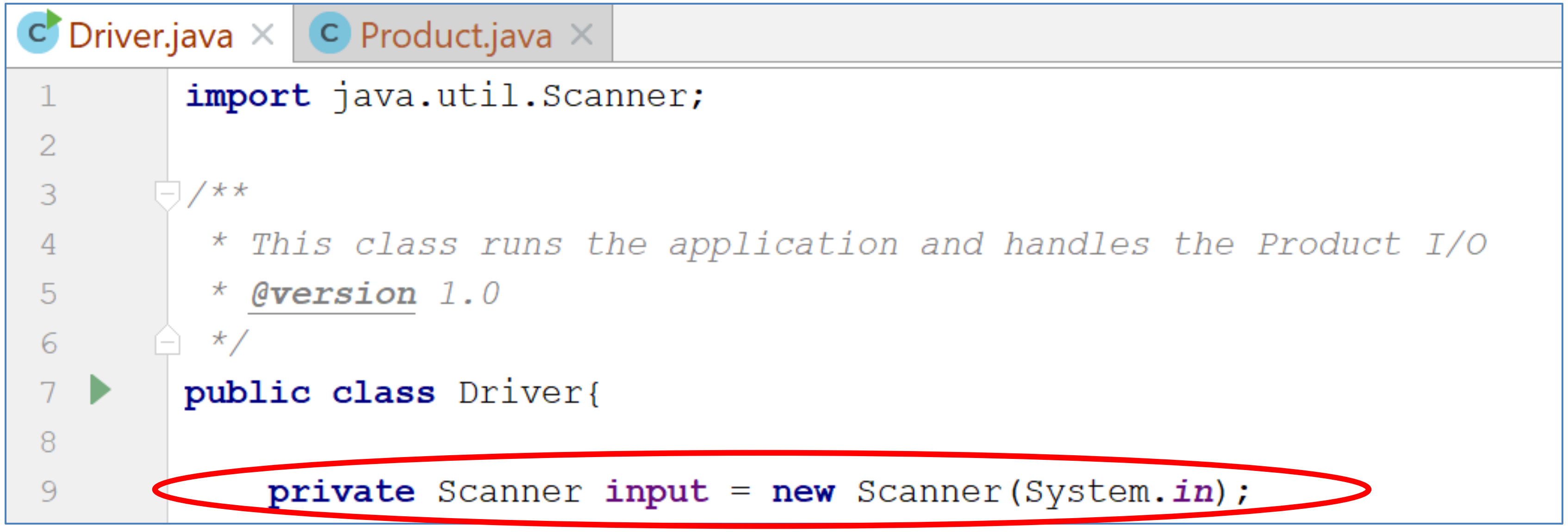


```
import java.util.Scanner;

/**
 * This class runs the application and handles the Product I/O
 * @version 1.0
 */
public class Driver{

    private Scanner input = new Scanner(System.in);
```

Input in Java: the **Scanner** Class

- This declares a Scanner **object** called **input** (you can name this object anything you wish).

- You must have this instruction to be able to call the methods in the Scanner class.



```java
import java.util.Scanner;

/**
 * This class runs the application and handles the Product I/O
 * @version 1.0
 */
public class Driver{

    private Scanner input = new Scanner(System.in);
```

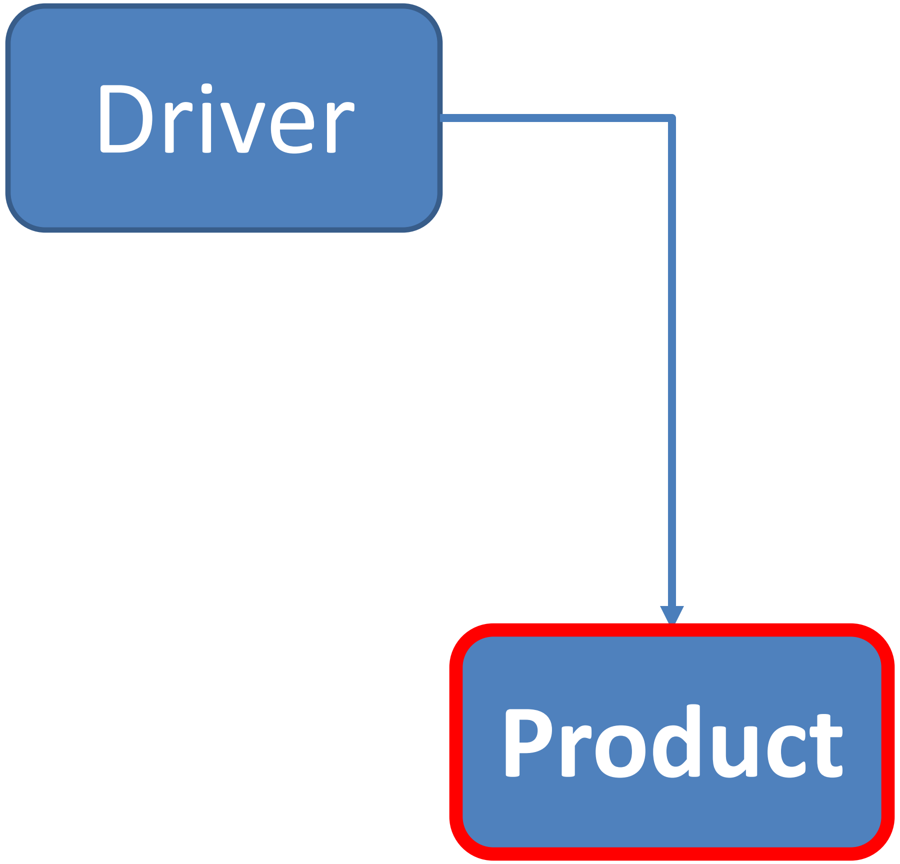
Input in Java: the **Scanner** Class

- Now that a Scanner object is set up, we can use all the **input methods** that have been defined in the Scanner class.

- There are **methods** to take in:

ints	**.nextInt()**
doubles	**.nextDouble()**
Strings	**.nextLine()**
chars	**.next().charAt(0)**
etc…	See API docs for more

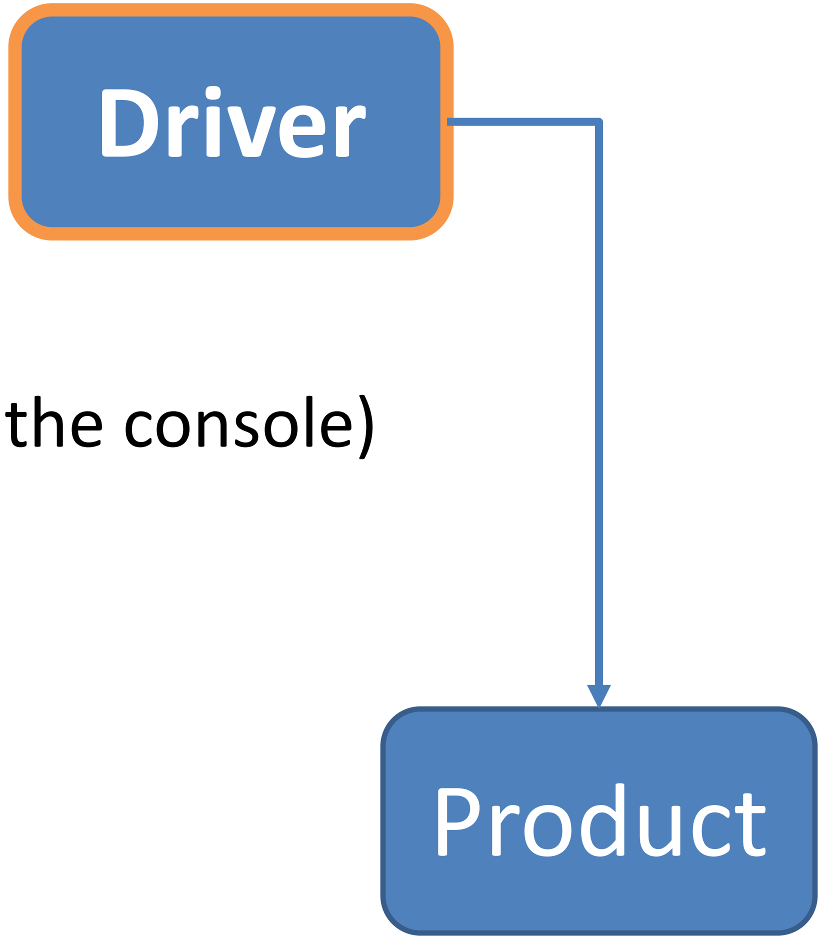
Recap: Shop V1.0 - **Product**



- The **Product** class stores **details** about a product:
  - name
  - code
  - unit cost
  - in the current product line or not?

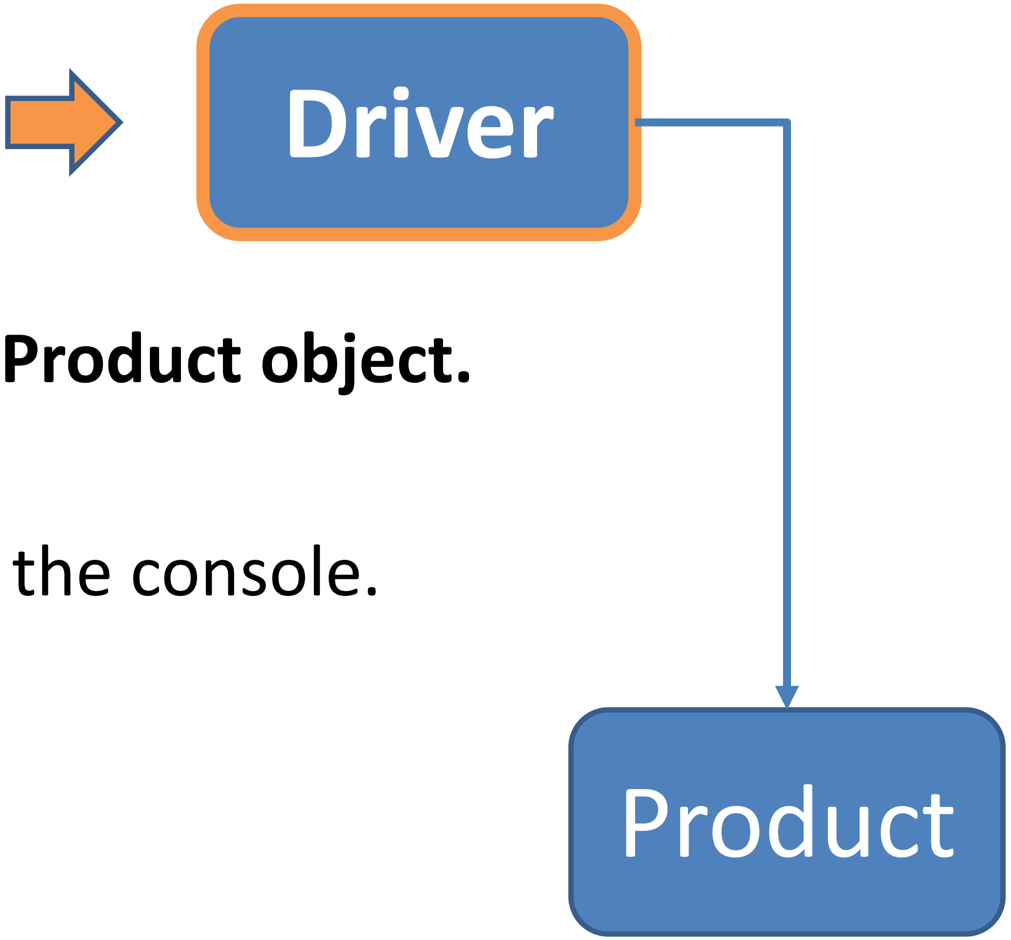
Recap: Shop V1.0 - Driver

- The **Driver** class
  - has the **main()** method.
  - **reads** the product details from the user (via the console)
  - **creates** a new Product object.
  - **prints** the product object (to the console)

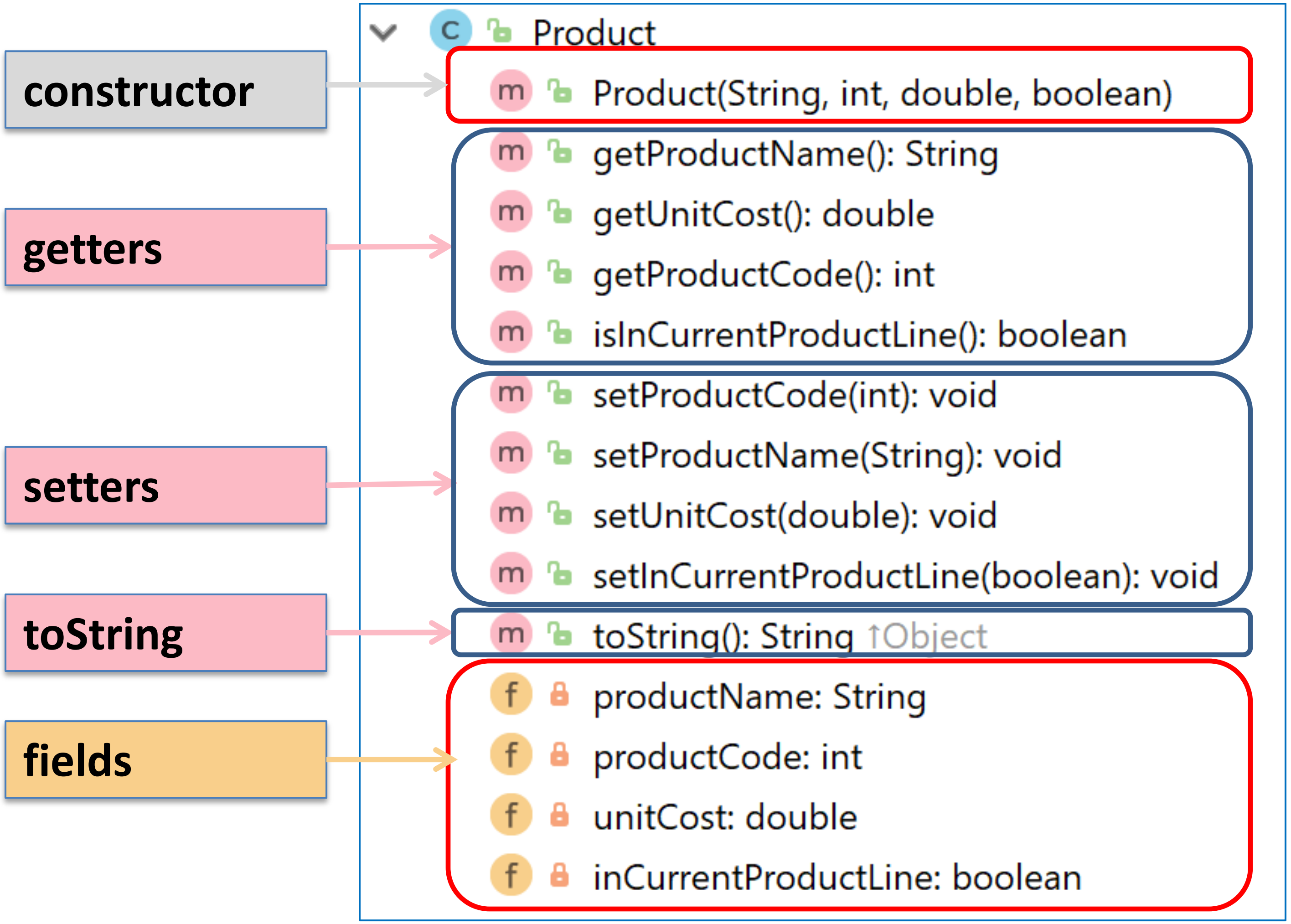


Shop V1.0 - Driver

- We want to use **Scanner** to **read in** product details from the console.
- We will then **store** these details in a **Product object.**
- **And then print** these details back to the console.



Recap: Shop V1.0: Product



constructor

getters

setters

toString

fields

Product

Product(String, int, double, boolean)

getProductName(): String

getUnitCost(): double

getProductCode(): int

isInCurrentProductLine(): boolean

setProductCode(int): void

setProductName(String): void

setUnitCost(double): void

setInCurrentProductLine(boolean): void

toString(): String ↑Object

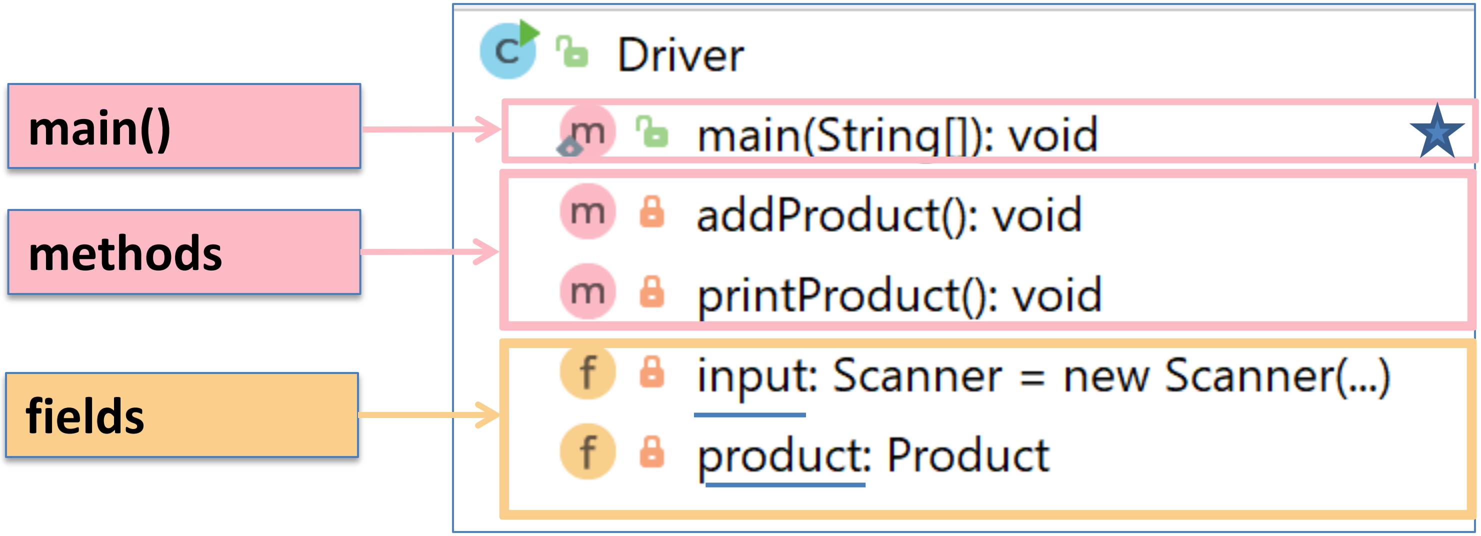
productName: String

productCode: int

unitCost: double

inCurrentProductLine: boolean

Shop V1.0: **Driver** class…



main()

methods

fields

Driver

main(String[]): void

addProduct(): void

printProduct(): void

input: Scanner = new Scanner(...)

product: Product

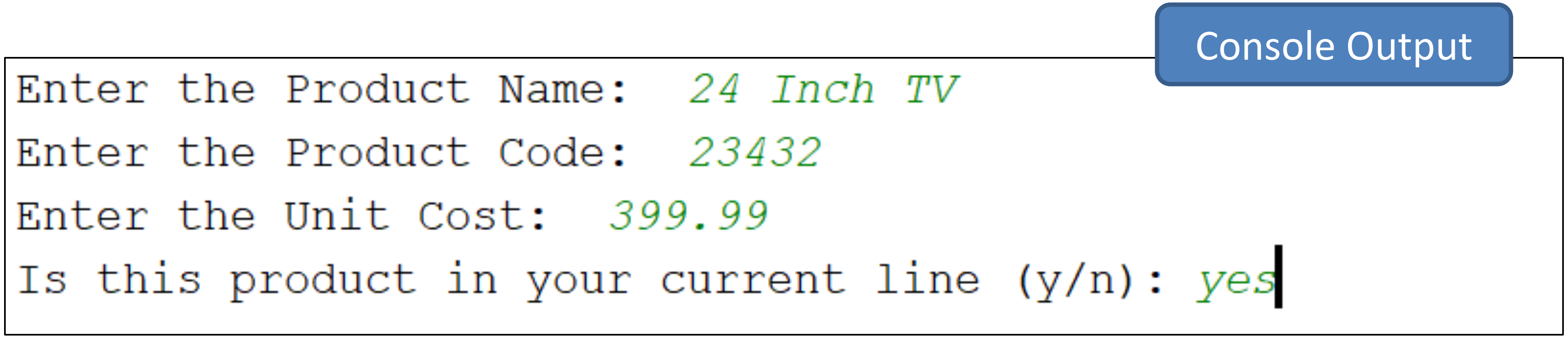
What the program will look like…

String

int

double

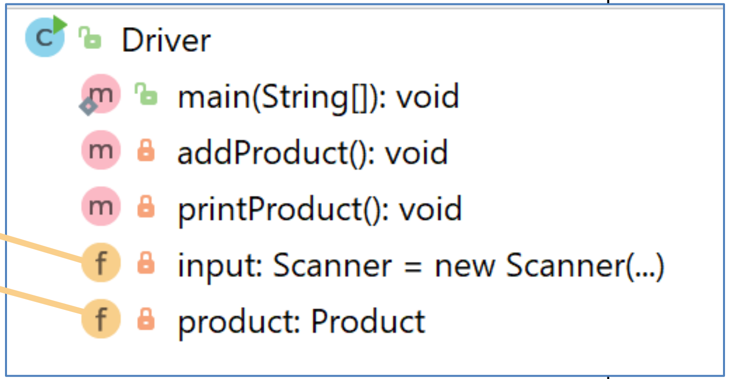
boolean



Console Output

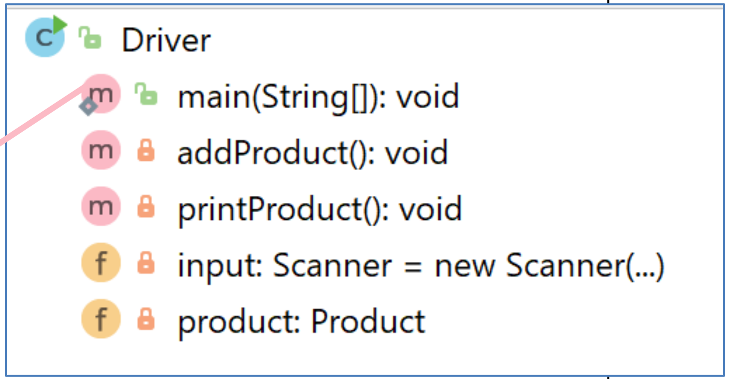
```
Enter the Product Name:   24 Inch TV
Enter the Product Code:   23432
Enter the Unit Cost:   399.99
Is this product in your current line (y/n): yes
```

```
public class Driver{

    private Scanner input = new Scanner(System.in);
    private Product product;

    public static void main(String[] args) {

      Driver driver = new Driver();
      driver.addProduct();
      driver.printProduct();
   }

    //gather the product data from the user and create a new product.
    private void addProduct(){
       System.out.print("Enter the Product Name:  ");
       String productName = input.nextLine();

       System.out.print("Enter the Product Code:  ");
       int productCode = input.nextInt();

       System.out.print("Enter the Unit Cost:  ");
       double unitCost = input.nextDouble();

       System.out.print("Is this product in your current line (y/n): ");
       char currentProduct = input.next().charAt(0);

       boolean inCurrentProductLine = false;
       if ((currentProduct == 'y') || (currentProduct == 'Y'))
          inCurrentProductLine = true;

       product = new Product(productName, productCode, unitCost, inCurrentProductLine);
    }

    //print the product (the toString method is automatically called).
    private void printProduct(){
       System.out.println(product);
   }
}
```



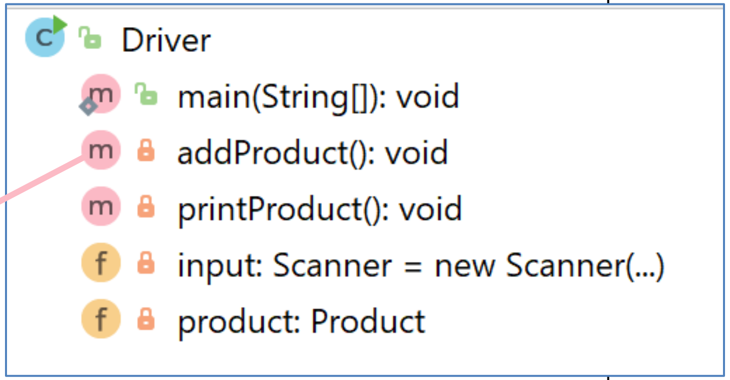
Driver
main(String[]): void
addProduct(): void
printProduct(): void
input: Scanner = new Scanner(...)
product: Product

```java
public class Driver{

    private Scanner input = new Scanner(System.in);
    private Product product;

    public static void main(String[] args) {

      Driver driver = new Driver();
      driver.addProduct();
      driver.printProduct();
   }

    //gather the product data from the user and create a new product.
    private void addProduct(){
       System.out.print("Enter the Product Name:  ");
       String productName = input.nextLine();

       System.out.print("Enter the Product Code:  ");
       int productCode = input.nextInt();

       System.out.print("Enter the Unit Cost:  ");
       double unitCost = input.nextDouble();

       System.out.print("Is this product in your current line (y/n): ");
       char currentProduct = input.next().charAt(0);

       boolean inCurrentProductLine = false;
       if ((currentProduct == 'y') || (currentProduct == 'Y'))
          inCurrentProductLine = true;

       product = new Product(productName, productCode, unitCost, inCurrentProductLine);
    }

    //print the product (the toString method is automatically called).
    private void printProduct(){
       System.out.println(product);
   }
}
```



Driver
- main(String[]): void
- addProduct(): void
- printProduct(): void
- input: Scanner = new Scanner(...)
- product: Product

```
public class Driver{

    private Scanner input = new Scanner(System.in);
    private Product product;

    public static void main(String[] args) {

      Driver driver = new Driver();
      driver.addProduct();
      driver.printProduct();
    }

    //gather the product data from the user and create a new product.
    private void addProduct(){
       System.out.print("Enter the Product Name:  ");
       String productName = input.nextLine();

       System.out.print("Enter the Product Code:  ");
       int productCode = input.nextInt();

       System.out.print("Enter the Unit Cost:  ");
       double unitCost = input.nextDouble();

       System.out.print("Is this product in your current line (y/n): ");
       char currentProduct = input.next().charAt(0);

       boolean inCurrentProductLine = false;
       if ((currentProduct == 'y') || (currentProduct == 'Y'))
          inCurrentProductLine = true;

       product = new Product(productName, productCode, unitCost, inCurrentProductLine);
    }

    //print the product (the toString method is automatically called).
    private void printProduct(){
       System.out.println(product);
    }
}
```



Driver
- main(String[]): void
- addProduct(): void
- printProduct(): void
- input: Scanner = new Scanner(...)
- product: Product

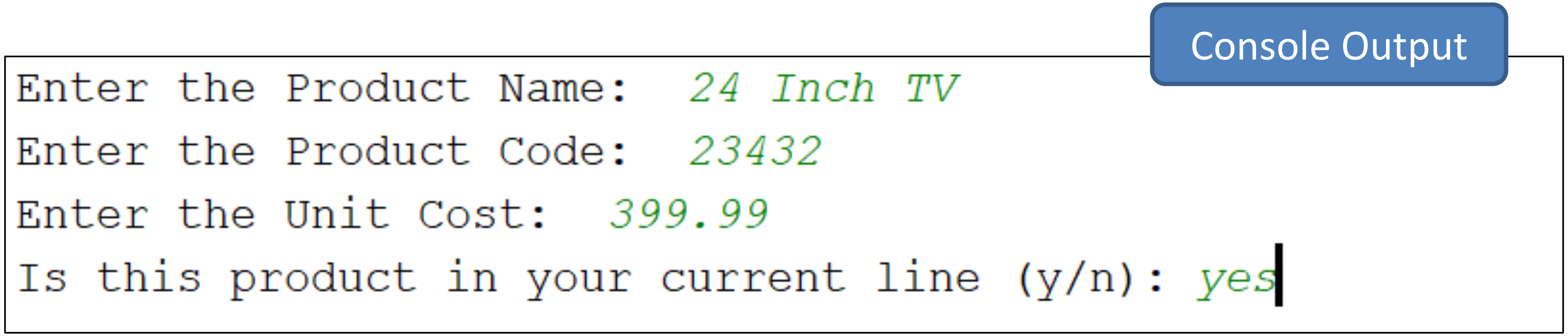
The **addProduct()** console output…

String

int

double

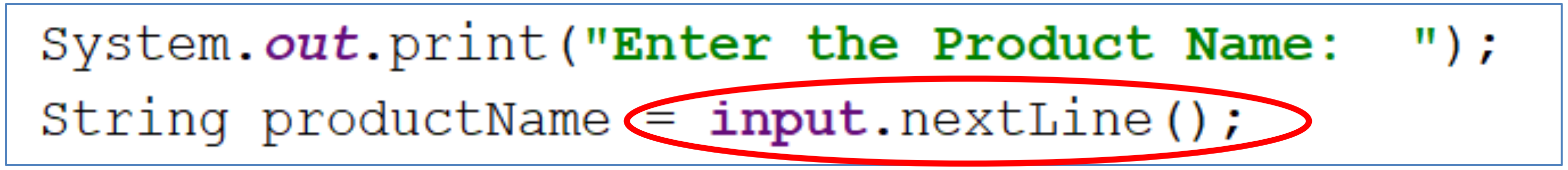
boolean



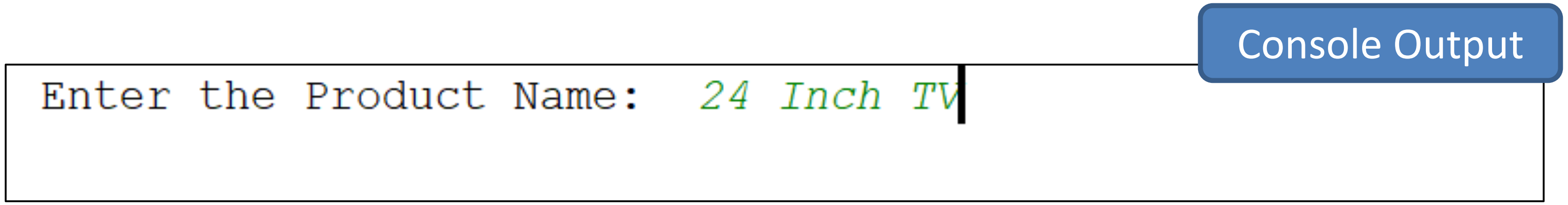
```
Enter the Product Name:  24 Inch TV
Enter the Product Code:  23432
Enter the Unit Cost:  399.99
Is this product in your current line (y/n): yes
```

Now, Let’s Look at how this is done…

ShopV1.0 – read Product Name (String)



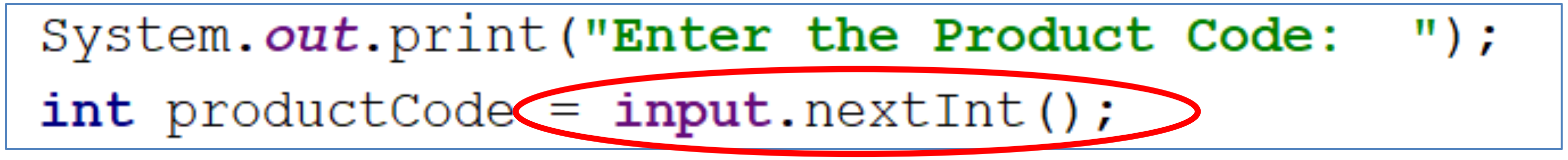
```
System.out.print("Enter the Product Name:   ");
String productName = input.nextLine();
```



Console Output

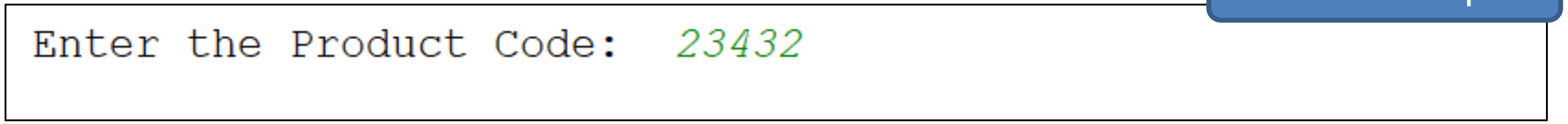
```
Enter the Product Name:   24 Inch TV
```

ShopV1.0 – read Product Code (int)



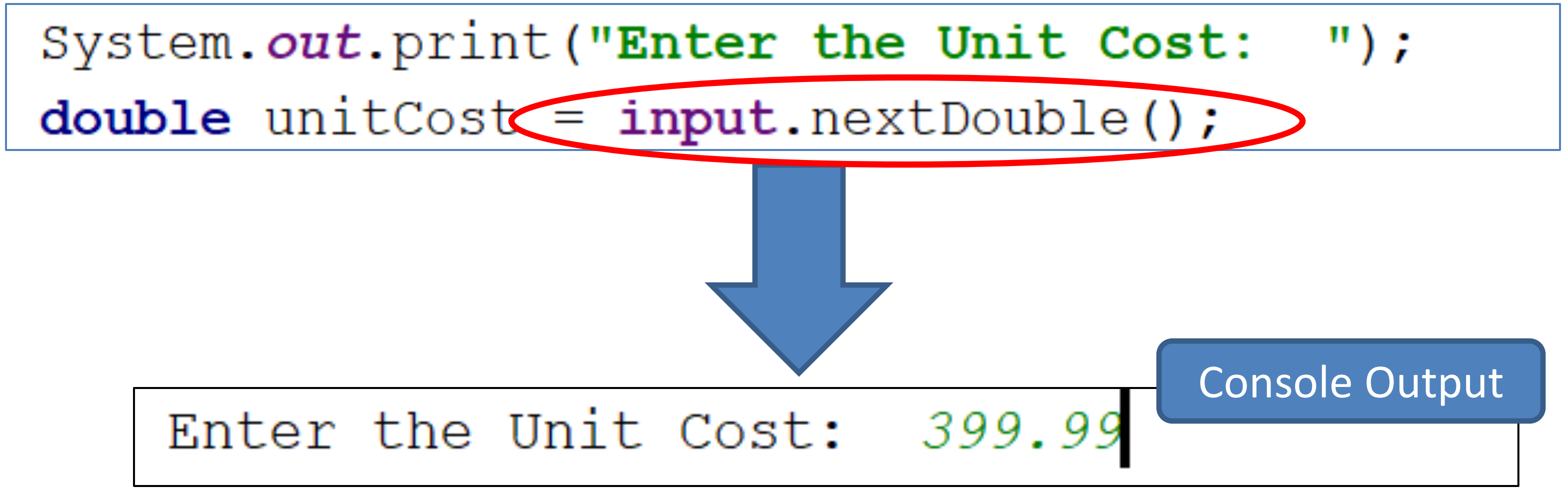
```
System.out.print("Enter the Product Code:   ");
int productCode = input.nextInt();
```

Console Output



```
Enter the Product Code:   23432
```

ShopV1.0 – read Unit Cost (**double**)



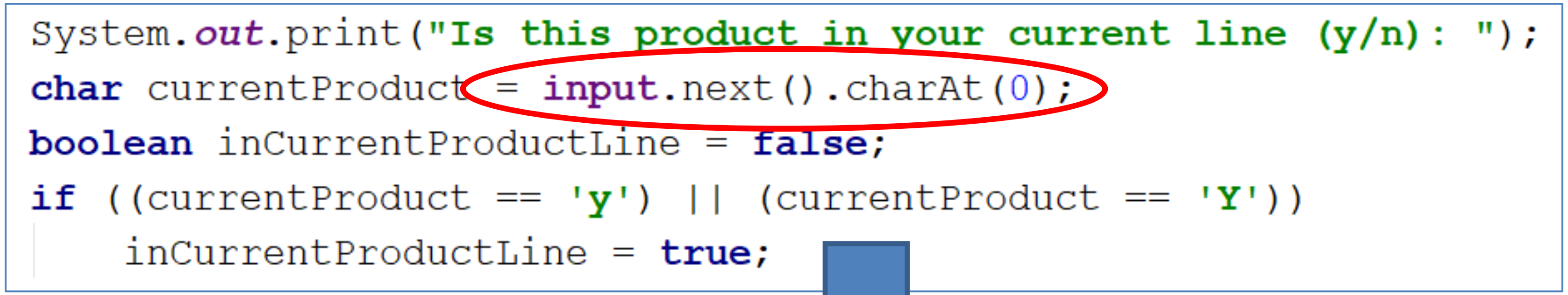
```
System.out.print("Enter the Unit Cost:  ");
double unitCost = input.nextDouble();
```

Console Output

```
Enter the Unit Cost:  399.99
```

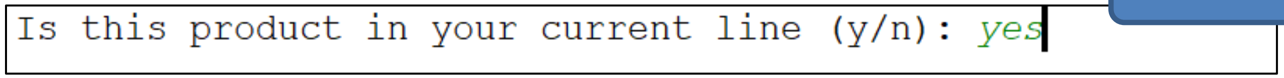
ShopV1.0 – In Current Product Line? (**boolean**)

For **booleans**, take in a **char**acter first, then test it



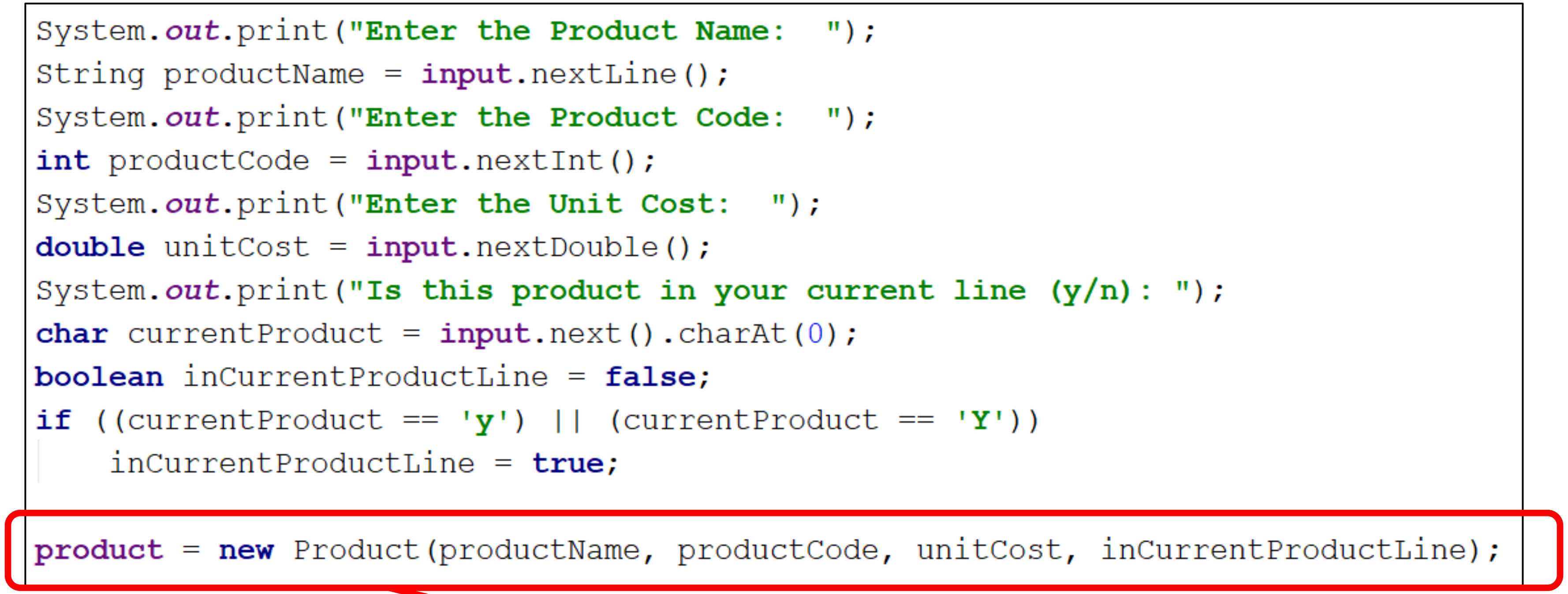
```
System.out.print("Is this product in your current line (y/n): ");
char currentProduct = input.next().charAt(0);
boolean inCurrentProductLine = false;
if ((currentProduct == 'y') || (currentProduct == 'Y'))
    inCurrentProductLine = true;
```

Console Output

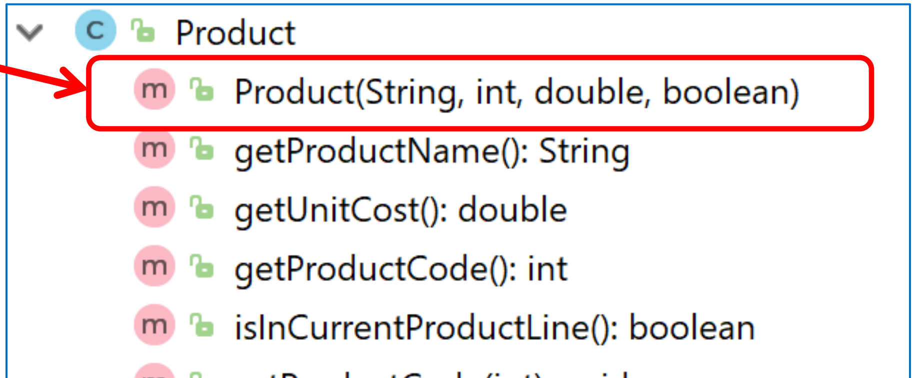


```
Is this product in your current line (y/n): yes
```

ShopV1.0 – Create Product Object



```java
System.out.print("Enter the Product Name:  ");
String productName = input.nextLine();
System.out.print("Enter the Product Code:  ");
int productCode = input.nextInt();
System.out.print("Enter the Unit Cost:  ");
double unitCost = input.nextDouble();
System.out.print("Is this product in your current line (y/n): ");
char currentProduct = input.next().charAt(0);
boolean inCurrentProductLine = false;
if ((currentProduct == 'y') || (currentProduct == 'Y'))
    inCurrentProductLine = true;

product = new Product(productName, productCode, unitCost, inCurrentProductLine);
```



```
Product
    Product(String, int, double, boolean)
    getProductName(): String
    getUnitCost(): double
    getProductCode(): int
    isInCurrentProductLine(): boolean
```

Using the values taken in
pass them to the **Product constructor**

```java
public class Driver{

    private Scanner input = new Scanner(System.in);
    private Product product;

    public static void main(String[] args) {

        Driver c = new Driver();
        c.addProduct();
        c.printProduct();
    }

    //gather the product data from the user and create a new product.
    private void addProduct(){
        System.out.print("Enter the Product Name:  ");
        String productName = input.nextLine();

        System.out.print("Enter the Product Code:  ");
        int productCode = input.nextInt();

        System.out.print("Enter the Unit Cost:  ");
        double unitCost = input.nextDouble();

        System.out.print("Is this product in your current line (y/n): ");
        char currentProduct = input.next().charAt(0);

        boolean inCurrentProductLine = false;
        if ((currentProduct == 'y') || (currentProduct == 'Y'))
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        product = new Product(productName, productCode, unitCost, inCurrentProductLine);
    }

    //print the product (the toString method is automatically called).
    private void printProduct(){
        System.out.println(product);
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}
```

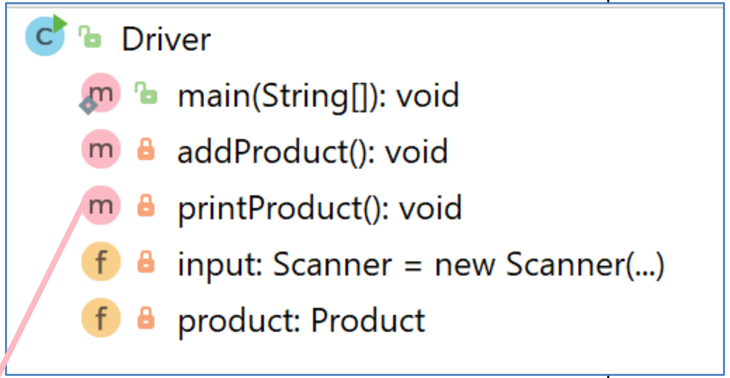

```
Driver
    main(String[]): void
    addProduct(): void
    printProduct(): void
    input: Scanner = new Scanner(...)
    product: Product
```

Questions?