

# Shop V2.0 - An Array of Product

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Produced      Dr. Siobhán Drohan  
by:            Mr. Colm Dunphy  
                Mr. Diarmuid O'Connor  
                Dr. Frank Walsh

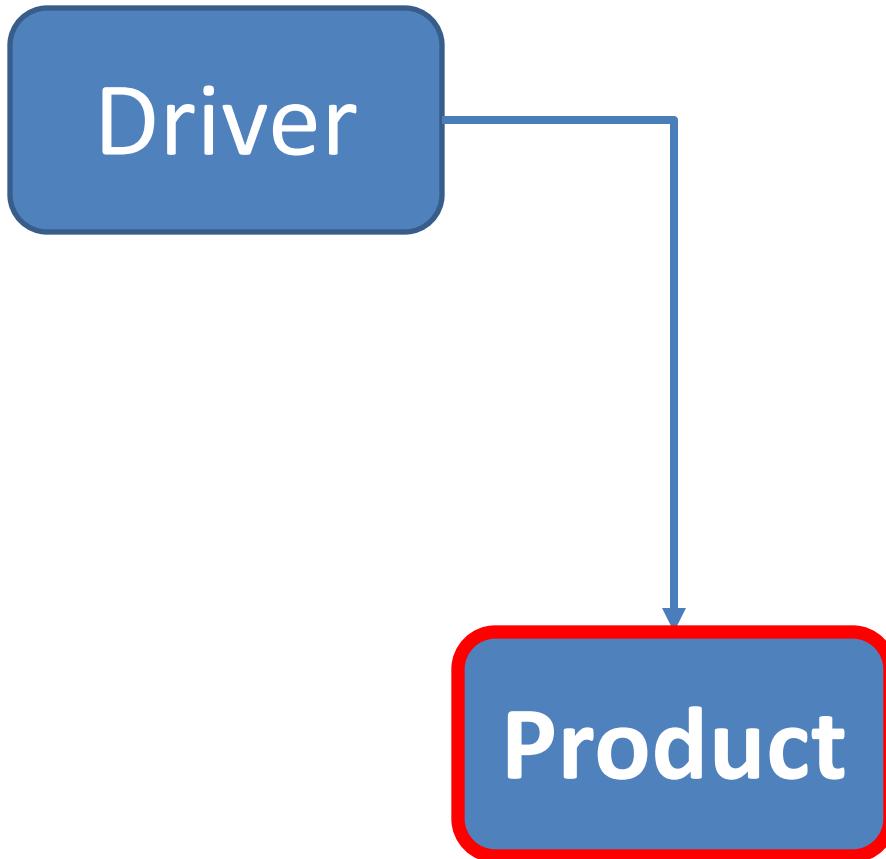


Waterford Institute *of* Technology  
INSTITIÚID TEICNEOLAÍOCHTA PHORT LÁIRGE

Department of Computing and Mathematics  
<http://www.wit.ie/>

# Recap: Shop V1.0 - Product

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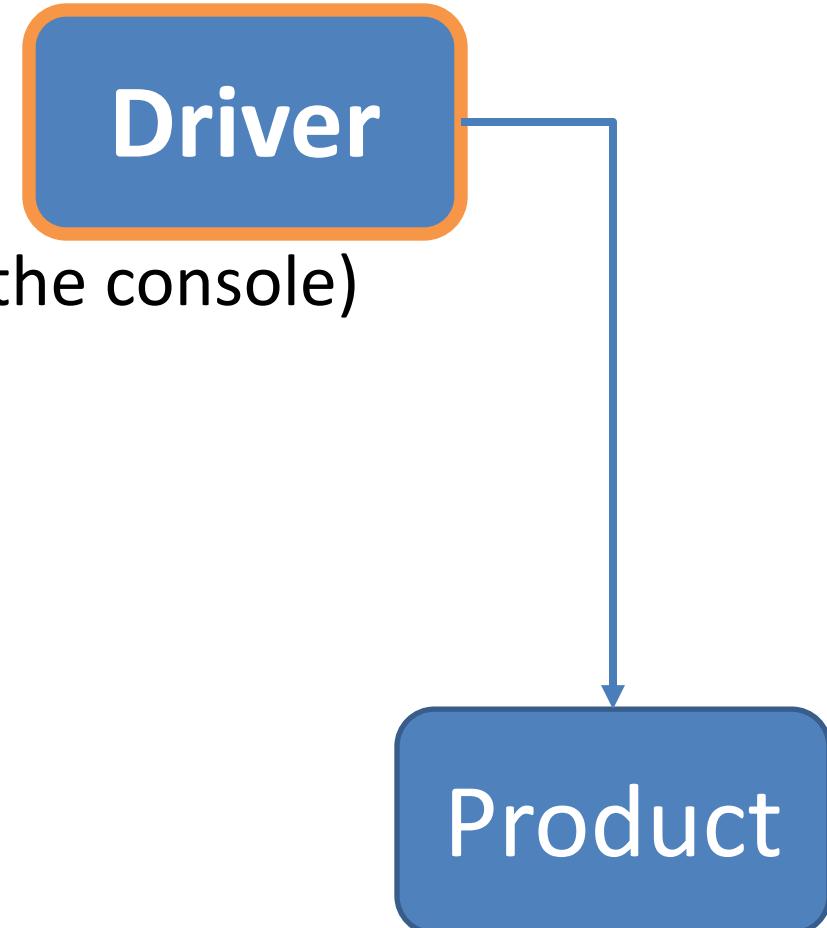


- The **Product** class stores **details** about a product
  - name
  - code
  - unit cost
  - in the current product line or not?

# Recap: Shop V1.0 - Driver

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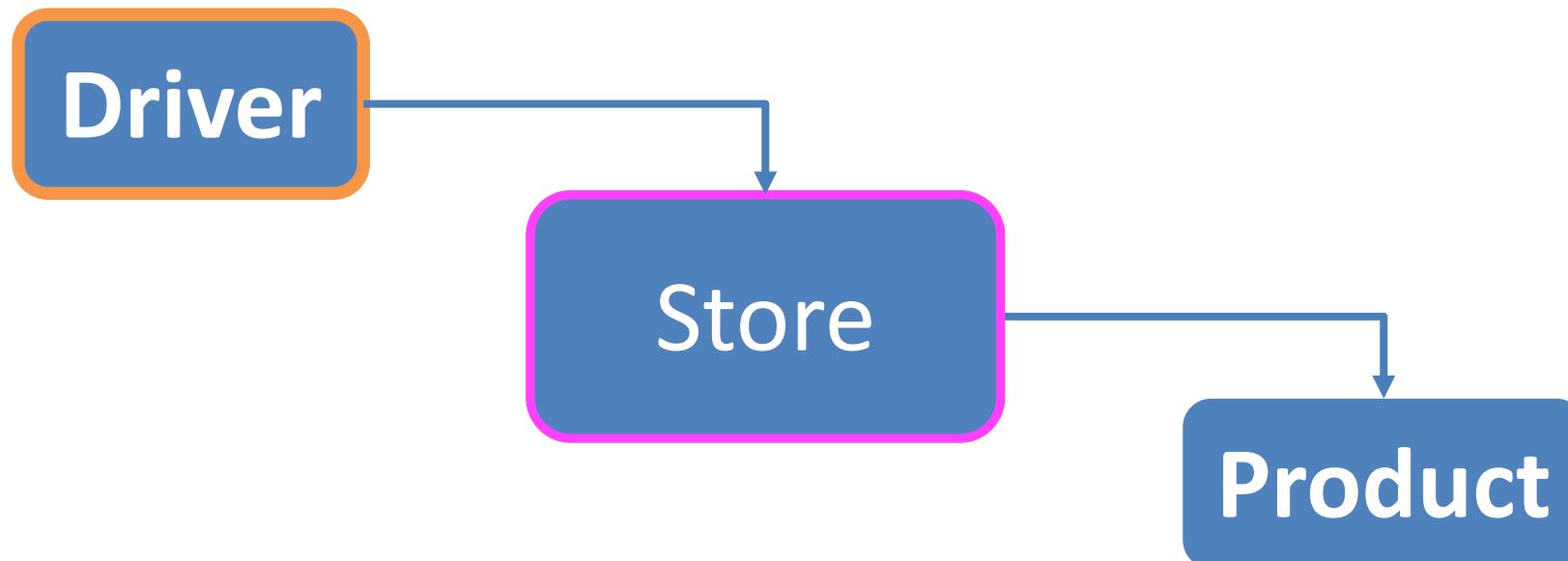
- The **Driver** class
  - has the **main()** method.
  - **reads** the product details from the user (via the console)
  - **creates** a new **Product** object.
  - **prints** the product object (to the console)



# Shop V2.0

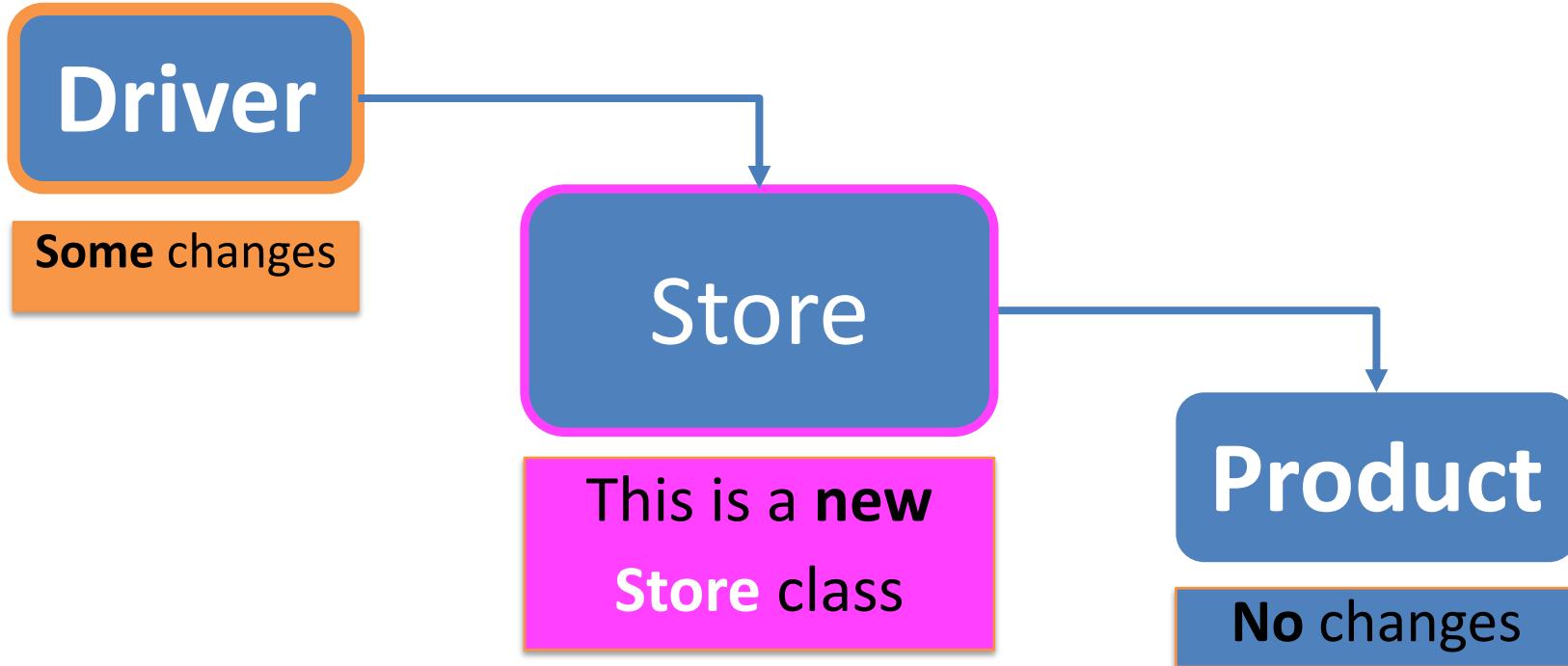
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- New **Store** class is responsible for maintaining a collection of Products
  - i.e. an **array of Products**.
- **Driver** will now allow the user to decide **how many product details** they want to store.



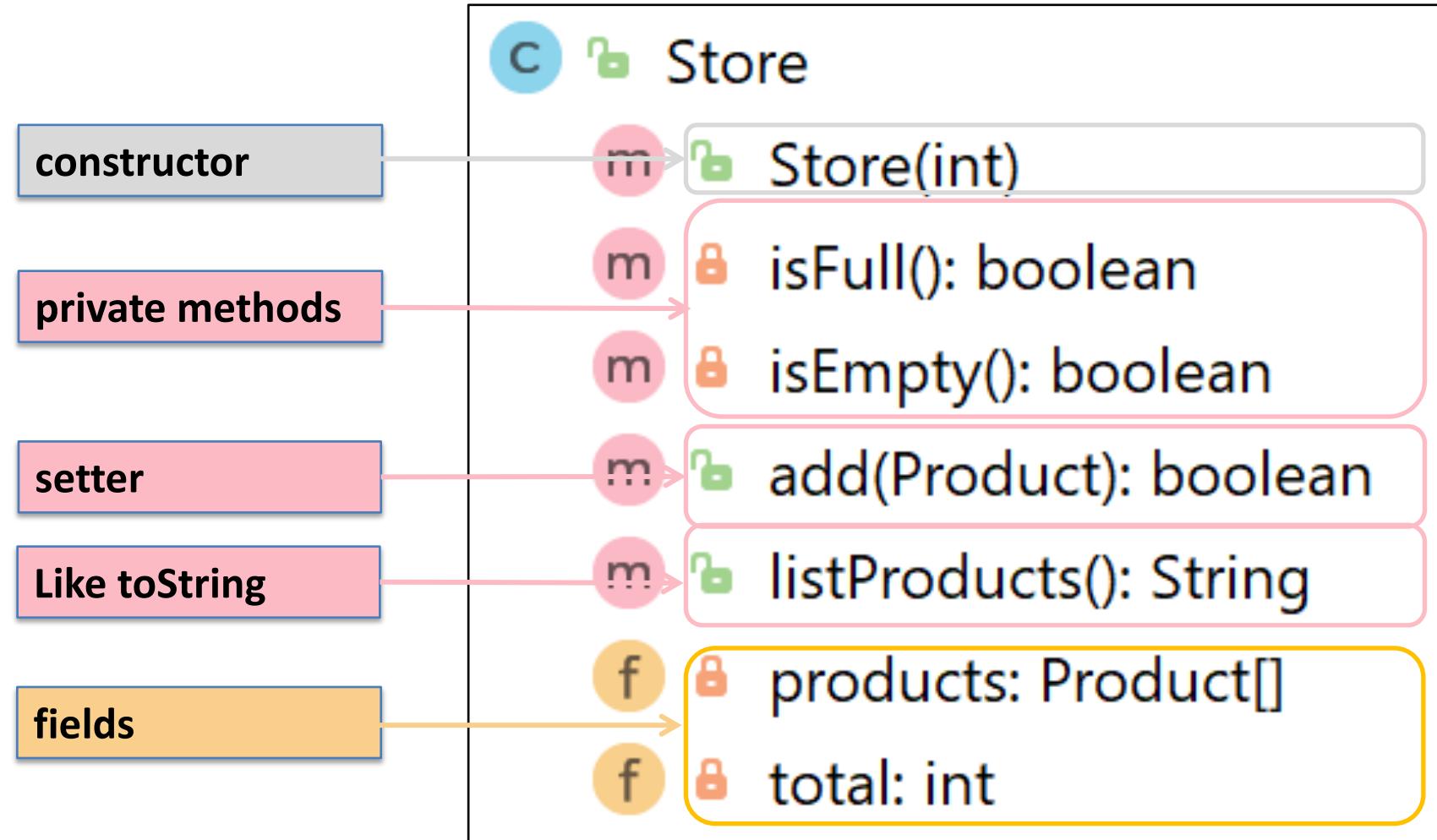
# Shop V2.0 – changes to classes

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# Store – new class





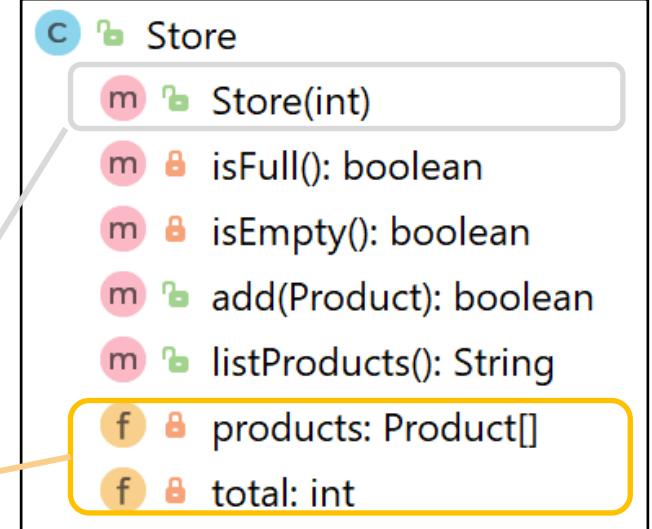
```
public class Store {  
  
    private Product[] products;  
    private int total;  
  
    public Store(int numberItems) {  
        products = new Product[numberItems];  
        total = 0;  
    }  
  
    //other methods  
}
```

fields

constructor

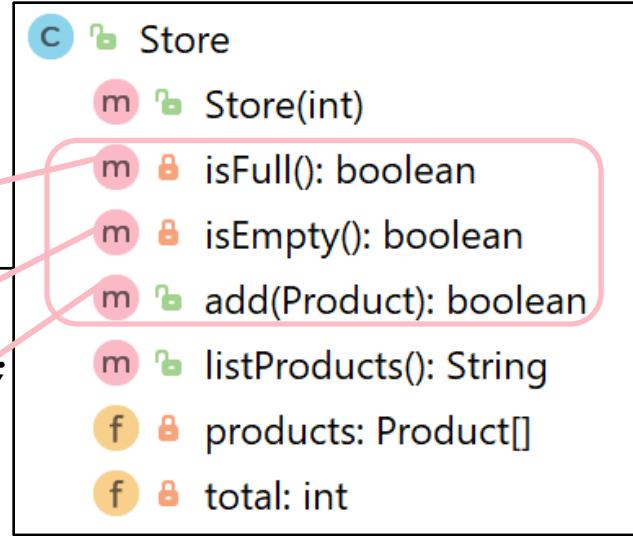


Why private?





```
private boolean isFull() {  
    return (total == products.length);  
}  
  
private boolean isEmpty() {  
    return (total == 0);  
}  
  
public boolean add(Product product) {  
    if (isFull()) {  
        return false;  
    }  
    else {  
        products[total] = product;  
        total++;  
        return true;  
    }  
}
```



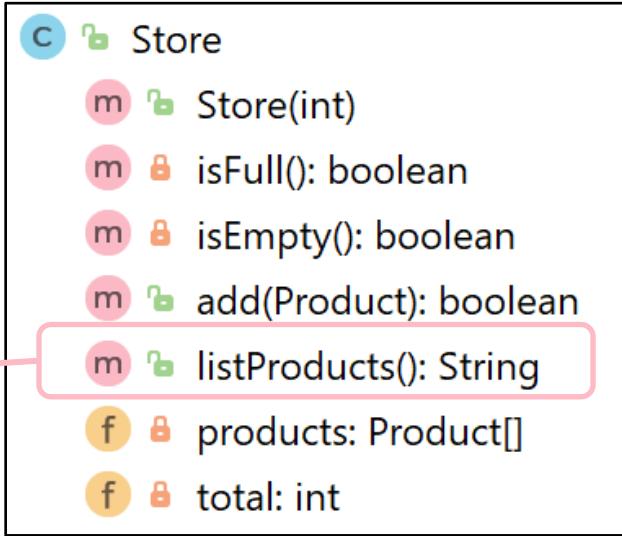
**getters**  
**isFull()** & **isEmpty()**  
return state of fields.

They are private  
member methods

**setter**  
**add()** makes use of  
private method **isFull()**



```
public String listProducts() {  
    if (isEmpty()) {  
        return "No products";  
    }  
    else {  
        String listOfProducts = "";  
        for (int i = 0; i < total; i++) {  
            listOfProducts += i + ": " + products[i] + "\n";  
        }  
        return listOfProducts;  
    }  
}
```



toString type method **listProducts()**  
makes use of private method **isEmpty()**



Write a `toString()` method for `Store`?

# Driver

5 changes

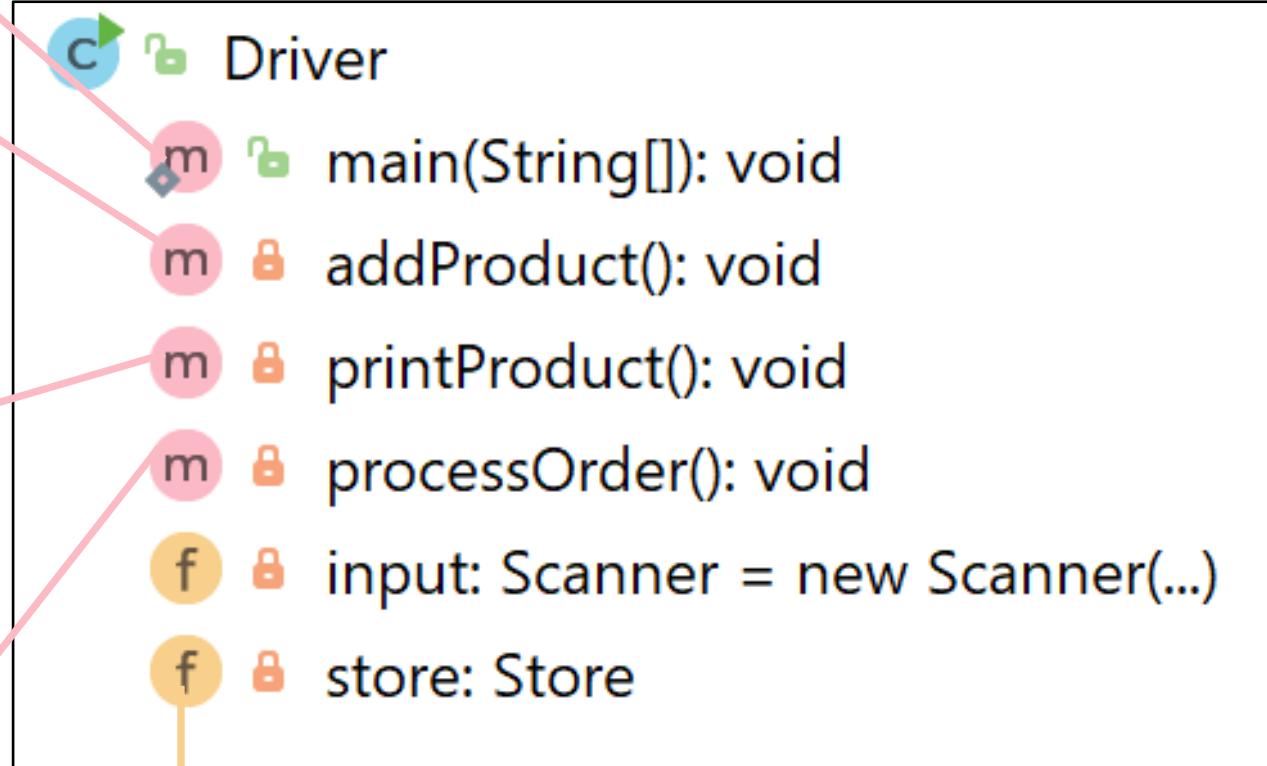


4) `main()` changed to call `processOrder()`

2) `addProduct()` changed to add the entered product to the array.

5) `printProduct()` changed to print out all products in the array.

3) New method, `processOrder()`, reads in products from the user.



1) Product object removed and replaced with `Store` object.



**Driver**

Change - 1

C Driver

- m main(String[]): void
- m addProduct(): void
- m printProduct(): void
- m processOrder(): void
- f input: Scanner = new Scanner(...)
- f store: Store

```
import java.util.Scanner;

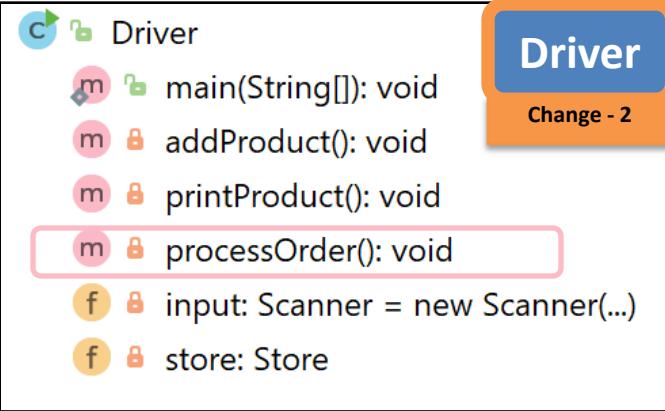
public class Driver{

    private Scanner input = new Scanner(System.in);
    private Store store;

    //code omitted
}
```

1) Product object removed and replaced with **Store** object.

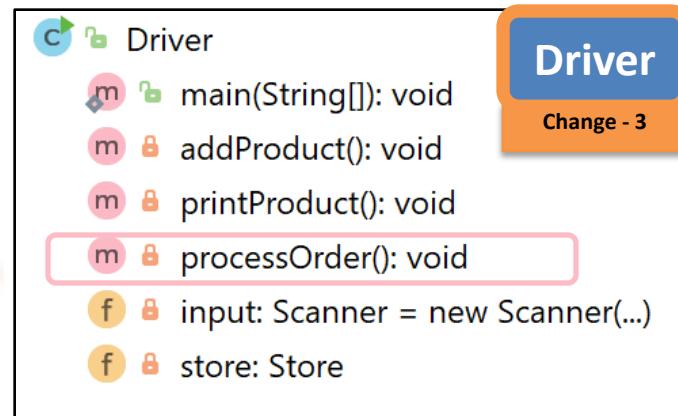
2) New method,  
**processOrder()**,  
reads in products  
from the user.



```
private void processOrder() {  
    //find out from the user how many products they would like to order  
    System.out.print("How many Products would you like to have in your Store? ");  
    int numberProducts = input.nextInt();  
  
    store = new Store(numberProducts);   
  
    //ask the user for the details of the products and add them to the order  
    for (int i = 0; i < numberProducts; i++) {  
        addProduct();  
    }  
}
```

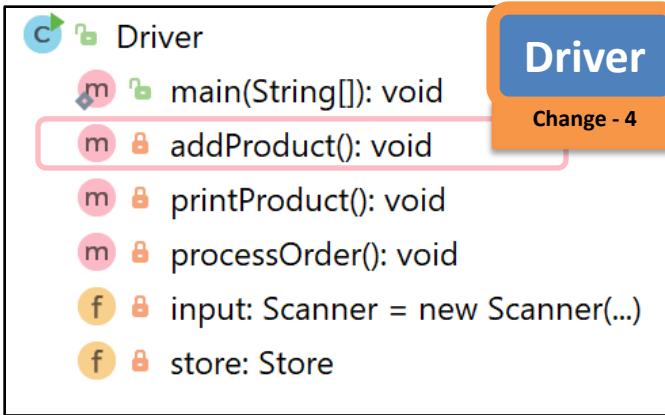
- Asks how many?
- Pass into Store constructor to initialise an array to that size
- Calls addProduct() for each one

3) main() changed  
to call  
**processOrder()**



```
public static void main(String[] args) {  
    Driver c = new Driver();  
    c.processOrder();  
    c.printProduct();  
}
```

**4) addProduct()**  
changed to add the entered product to the array.



```

//gather the product data from the user and create a new product.
private void addProduct(){
    //dummy read of String to clear the buffer - bug in Scanner class.
    input.nextLine();

    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;

    store.add(new Product(productName, productCode, unitCost, inCurrentProductLine));
}
  
```

Read in a string

Read in an int

Read in an double

Read in an char

Set boolean based on char value



5) **printProduct()**  
changed to print out  
all products in the  
array.

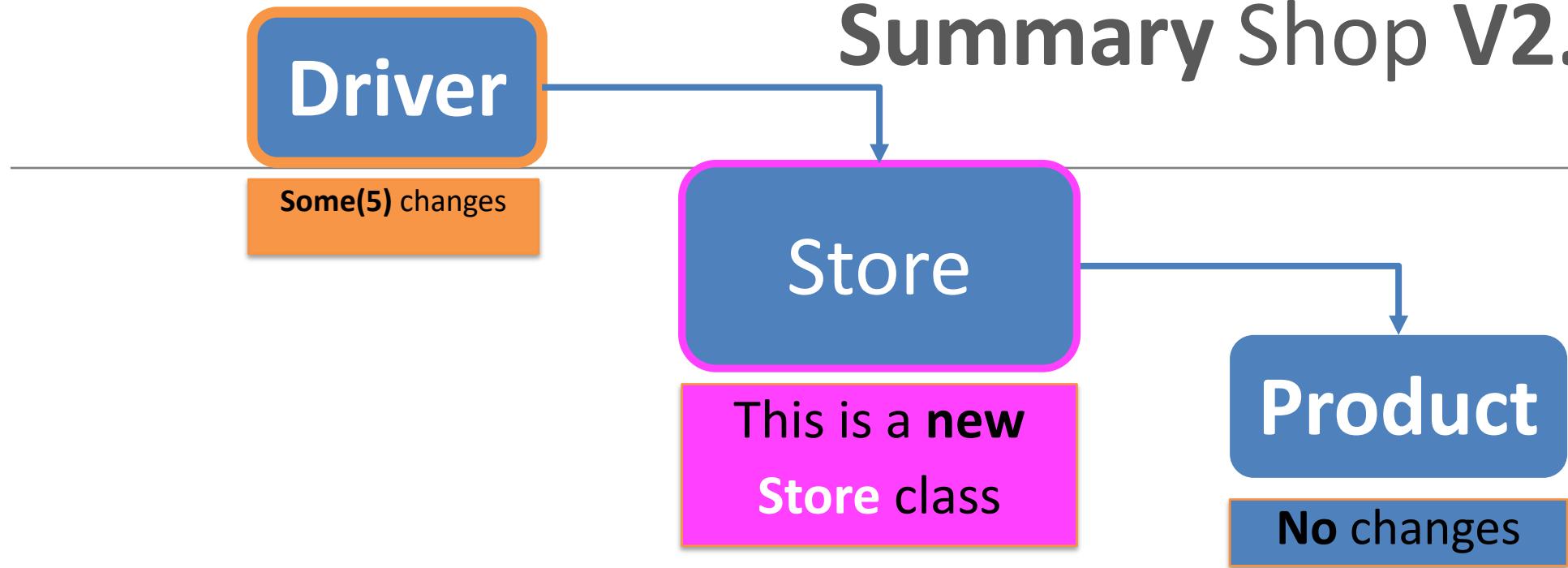
The screenshot shows a code editor interface with a class named "Driver". The class contains the following members:

- main(String[]): void** (Method, Public)
- addProduct(): void** (Method, Private)
- printProduct(): void** (Method, Private, Boxed in pink)
- processOrder(): void** (Method, Private)
- input: Scanner = new Scanner(...)** (Field, Private)
- store: Store** (Field, Private)

A blue box labeled "Driver" is at the top right, and a smaller box below it says "Change - 5".

```
private void printProduct () {  
    System.out.println(store.listProducts());  
}
```

# Summary Shop V2.0



- **Store** class maintains a collection of Products  
i.e. an **array of Products**; `store.Products[]`
- **Driver** allows the user to decide **how many product** details they want to store.  
Methods updated to work with this new `store.Products[]` array

# Questions?

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