

Introducing groups of classes

Produced Dr. Siobhán Drohan
by: Ms. Maireád Meagher
 Ms. Siobhan Roche



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

A Shop with one Product isn't really that great, we need to be able to have multiple products



How about an Array of Products?

An array can store any type of data.

Primitive Types

```
int numbers[] = new int[10];
```

```
byte smallNumbers[] = new byte[4];
```

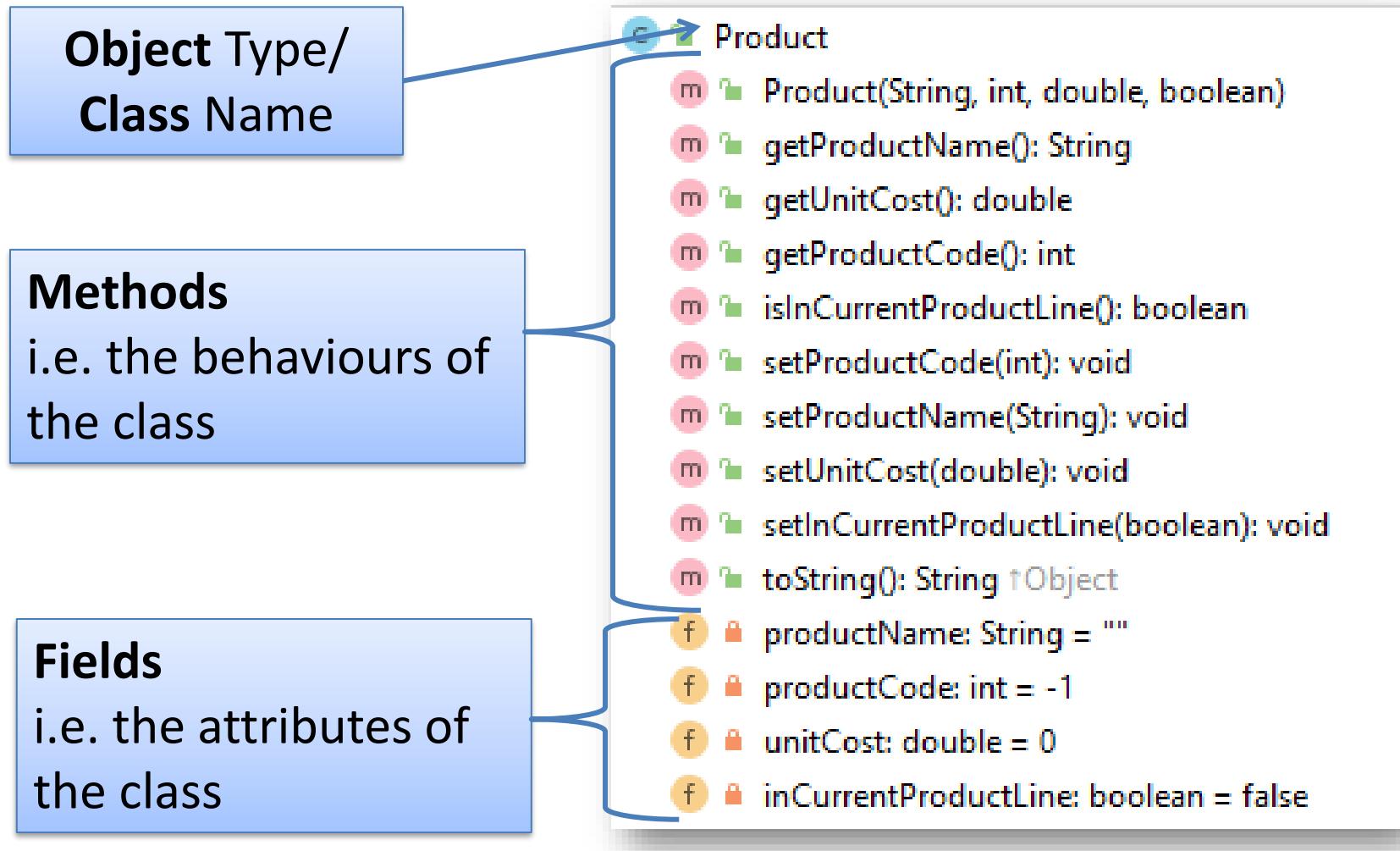
```
char characters[] = new char[26];
```

Object Types

```
String[] words = new String[4];
```

```
Product products[] = new Product[10];
```

Product Class



Structure of a **Product** primitive array

Product[] products;

products

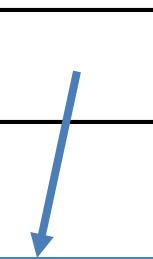
null

Structure of a **Product** primitive array

```
Product[] products;
```

```
products = new Product[4];
```

products



0	null
1	null
2	null
3	null

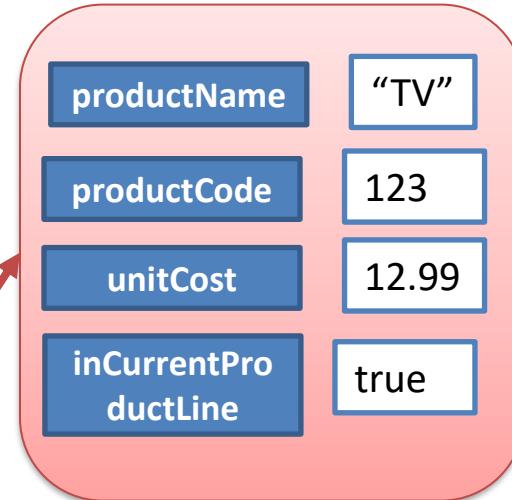
Structure of a **Product** primitive array

```
Product[] products;
```

```
products = new Product[4];
```

products

0	null
1	
2	null
3	null



```
products[1] = new Product("TV", 123, 12.99, true);
```

Example using a **Product** object array

```
public String listProducts() {  
  
    String listOfProducts = "";  
  
    for (int i = 0; i < total; i++) {  
        listOfProducts += i + ":" + products[i].toString() + "\n";  
    }  
  
    return listOfProducts;  
}  
}
```

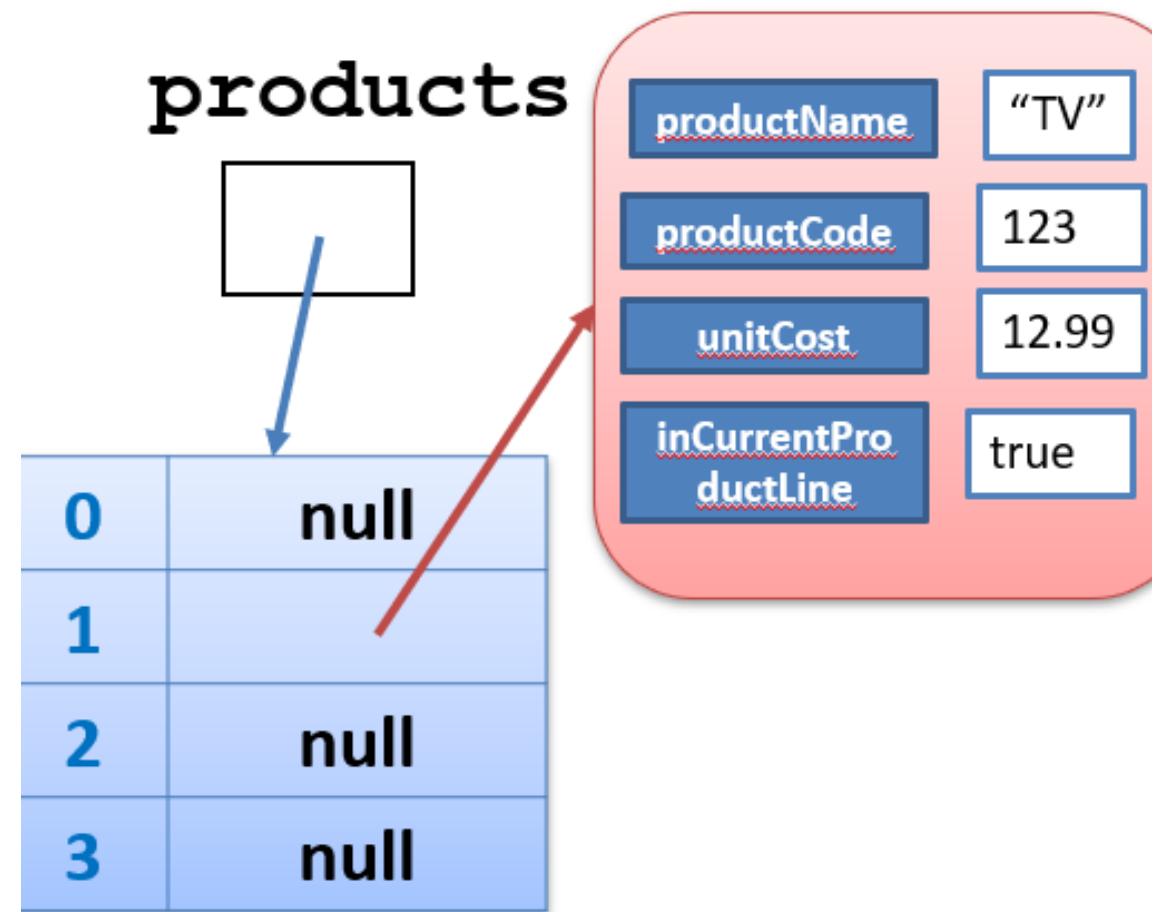
Returns a String containing all the products stored in the primitive array.

Arrays in Java

- Fixed size — must know size in advance
- Stored sequentially in memory
- Useful for simple, fixed collections of data
- Limitations: no automatic resizing, limited built-in methods

Why Not Always Arrays?

- Adding/removing elements is difficult
- No built-in search, sort, or utilities
- Errors occur when guessing array size
- Collections solve these limitations



When to Use an ArrayList

- When the number of items changes over time
- When convenient operations matter
- When modelling real-world lists of objects



Shop Program Evolution

- Current: Driver → Product
- Next: Driver → Store → Product
- Store will manage a collection of Products
- `ArrayList<Product>` is ideal because the number of products can grow

Why ArrayList for Store?

- Store needs to:
 - add products
 - remove products
 - search products
 - list products
- ArrayList provides simple, clean methods to support all of this

Questions?

